# #Const Directive Example

This example uses the **#Const** directive to declare conditional compiler constants for use in **#If...#Else...#End If** constructs.

```
#Const DebugVersion = 1 ' Will evaluate true in #If block.
```

# #If...Then...#Else Directive Example

This example references conditional compiler constants in an **#If...Then...#Else** construct to determine whether to compile certain statements.

```
' If Mac evaluates as true, do the statements following the #If.
#If Mac Then
   '. Place exclusively Mac  statements here.
   '.
   '.
' Otherwise, if it is a 32-bit Windows program, do this:
#ElseIf Win32 Then
   '. Place exclusively 32-bit Windows statements here.
   '.
   '.
' Otherwise, if it is neither, do this:
#Else
   '. Place other platform statements here.
   '.
   '.
#End If
```

# #Const Directive

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadirConstC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadirConstX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadirConstS"}

Used to define conditional compiler constants for Visual Basic.

**Syntax**

**#Const** *constname = expression*

The **#Const** compiler directive syntax has these parts:

| Part | Description |
| --- | --- |
| *constname* | Required; **Variant** (**String**). Name of the constant; follows standard variable naming conventions. |
| *expression* | Required. Literal, other conditional compiler constant, or any combination that includes any or all arithmetic or logical operators except **Is**. |

**Remarks**

Conditional compiler constants are always Private to the module in which they appear. It is not possible to create Public  compiler constants using the **#Const** directive. **Public** compiler constants can only be created in the user interface.

Only conditional compiler constants and literals can be used in *expression*. Using a standard constant defined with **Const**, or using a constant that is undefined, causes an error to occur. Conversely, constants defined using the **#Const** keyword can only be used for conditional compilation.

Conditional compiler constants are always evaluated at the module level, regardless of their placement in code.

# #If...Then...#Else Directive

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadirIfC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadirIfX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadirIfS"}

Conditionally compiles selected blocks of Visual Basic code.

**Syntax**

**#If** *expression* **Then**

   *statements*

[**#ElseIf** *expression-n* **Then**

   [*elseifstatements*]]

[**#Else**

   [*elsestatements*]]

**#End If**

The **#If...Then...#Else** directive syntax has these parts:

| Part | Description |
| --- | --- |
| *expression* | Required. Any <u>expression</u>, consisting exclusively of one or more <u>conditional compiler constants</u>, literals, and operators, that evaluates to **True** or **False**. |
| *statements* | Required. Visual Basic program lines or compiler directives that are evaluated if the associated expression is **True**. |
| *expression-n* | Optional. Any expression, consisting exclusively of one or more conditional compiler constants, literals, and operators, that evaluates to **True** or **False**. |
| *elseifstatements* | Optional. One or more program lines or compiler directives that are evaluated if *expression-n* is **True**. |
| *elsestatements* | Optional. One or more program lines or compiler directives that are evaluated if no previous *expression* or *expression-n* is **True**. |

**Remarks**

The behavior of the **#If...Then...#Else** directive is the same as the **If...Then...Else** statement, except that there is no single-line form of the **#If**, **#Else**, **#ElseIf**, and **#End If** directives; that is, no other code can appear on the same line as any of the directives. Conditional compilation is typically used to compile the same program for different platforms. It is also used to prevent debugging code from appearing in an executable file. Code excluded during conditional compilation is completely omitted from the final executable file, so it has no size or performance effect.

Regardless of the outcome of any evaluation, all expressions are evaluated. Therefore, all <u>constants</u> used in expressions must be defined — any undefined constant evaluates as <u>Empty</u>.

   **Note**   The **Option Compare** statement does not affect expressions in **#If** and **#ElseIf** statements. Expressions in a conditional-compiler directive are always evaluated with **Option Compare Text**.

# Visual Basic Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscTypeLibConstantsC"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamscTypeLibConstantsS"}

Visual Basic for Applications defines constants to simplify your programming. The following
constants can be used anywhere in your code in place of the actual values:

Calendar Constants

CallType Constants

Color Constants

Comparison Constants

Compiler Constants

Date Constants

Date Format Constants

Dir, GetAttr, and SetAttr Constants

DriveType Constants

File Attribute Constants

File Input/Output Constants

Form Constants

IMEStatus Constants

Keycode Constants

Miscellaneous Constants

MsgBox Constants

QueryClose Constants

Shell Constants

SpecialFolder Constants

StrConv Constants

System Color Constants

Tristate Constants

VarType Constants

Visual Basic Constants

# QueryClose Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscQueryCloseConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscQueryCloseConstantsS"}

The following <u>constants</u> can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
|---|---|---|
| **vbFormControlMenu** | 0 | The user chose the **Close** command from the **Control** menu on the form. |
| **vbFormCode** | 1 | The **Unload** statement is invoked from code. |
| **vbAppWindows** | 2 | The current Microsoft Windows operating environment session is ending. |
| **vbAppTaskManager** | 3 | The Windows **Task Manager** is closing the application. |

# Calendar Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscCalendarConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscCalendarConstantsS"}

The following <u>constants</u> can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbCalGreg** | 0 | Indicates that the Gregorian calendar is used. |
| **vbCalHijri** | 1 | Indicates that the Hijri calendar is used. |

# Compiler Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscCompilerConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscCompilerConstantsS"}

Visual Basic for Applications defines <u>constants</u> for exclusive use with the **#If...Then...#Else** directive. These constants are functionally equivalent to constants defined with the **#If...Then...#Else** directive except that they are global in <u>scope</u>; that is, they apply everywhere in a <u>project</u>.

On 16-bit development platforms, the compiler constants are defined as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **Win16** | **True** | Indicates development environment is 16-bit. |
| **Win32** | **False** | Indicates that the development environment is not 32-bit. |

On 32-bit development platforms, the compiler constants are defined as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **Vba6** | **True** | Indicates that the development environment is Visual Basic for Applications, version 6.0. |
| **Vba6** | **False** | Indicates that the development environment is not Visual Basic for Applications, version 6.0. |
| **Win16** | **False** | Indicates that the development environment is not 16-bit. |
| **Win32** | **True** | Indicates that the development environment is 32-bit. |
| **Mac** | **False** | Indicates that the development environment is not Macintosh. |
| **Win16** | **False** | Indicates that the development environment is not 16-bit. |
| **Win32** | **False** | Indicates that the development environment is 32-bit Windows. |
| **Mac** | **True** | Indicates that the development environment is Macintosh. |

**Note**   These constants are provided by Visual Basic, so you cannot define your own constants with these same names at any level.

# Date Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscDateConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscDateConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

## Argument Values

The *firstdayofweek* argument has the following values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbUseSystem** | 0 | Use NLS API setting. |
| **vbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

The *firstdayofyear* argument has the following values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbUseSystem** | 0 | Use NLS API setting. |
| **VbUseSystem DayOfWeek** | 0 | Use the day of the week specified in your system settings for the first day of the week. |
| **VbFirstJan1** | 1 | Start with week in which January 1 occurs (default). |
| **vbFirstFourDays** | 2 | Start with the first week that has at least four days in the new year. |
| **vbFirstFullWeek** | 3 | Start with the first full week of the year. |

## Return Values

| Constant | Value | Description |
| --- | --- | --- |
| **vbSunday** | 1 | Sunday |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

# Dir, GetAttr, and SetAttr Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscDirGetAttrSetAttrConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscDirGetAttrSetAttrConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
|---|---|---|
| **vbNormal** | 0 | Normal (default for **Dir** and **SetAttr**) |
| **vbReadOnly** | 1 | Read-only |
| **vbHidden** | 2 | Hidden |
| **vbSystem** | 4 | System file |
| **vbVolume** | 8 | Volume label |
| **vbDirectory** | 16 | Directory or folder |
| **vbArchive** | 32 | File has changed since last backup |
| **vbAlias** | 64 | On the Macintosh, identifier is an alias. |

Only **VbNormal**, **vbReadOnly**, **vbHidden**, and **vbAlias** are available on the Macintosh.

# IMEStatus Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscIMEStatusConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscIMEStatusConstantsS"}

The following <u>constants</u> can be used anywhere in your code in place of the actual values.

The constants for the Japanese <u>locale</u> are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME (default) |
| **vbIMEModeOn** | 1 | IME on |
| **vbIMEModeOff** | 2 | IME off |
| **vbIMEModeDisable** | 3 | IME disabled |
| **vbIMEModeHiragana** | 4 | Full-width Hiragana mode |
| **vbIMEModeKatakana** | 5 | Full-width Katakana mode |
| **vbIMEModeKatakanaHalf** | 6 | Half-width Katakana mode |
| **vbIMEModeAlphaFull** | 7 | Full-width Alphanumeric mode |
| **vbIMEModeAlpha** | 8 | Half-width Alphanumeric mode |

The constant values for the Korean locale are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME(default) |
| **vbIMEModeAlphaFull** | 7 | Full-width Alphanumeric mode |
| **vbIMEModeAlpha** | 8 | Half-width Alphanumeric mode |
| **vbIMEModeHangulFull** | 9 | Full-width Hangul mode |
| **vbIMEModeHangul** | 10 | Half-width Hangul mode |

The constant values for the Chinese locale are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME (default) |
| **vbIMEModeOn** | 1 | IME on |
| **vbIMEModeOff** | 2 | IME off |

# Comparison Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscInstrStrCompConstantsC"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamscInstrStrCompConstantsS"}

The following <u>constants</u> are defined in the Visual Basic for Applications <u>type library</u> and can
be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbUseCompareOption** | -1 | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | For Microsoft Access (Windows only), performs a comparison based on information contained in your database. |

# Miscellaneous Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscMiscellaneousConstantsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscMiscellaneousConstantsS"}

The following <u>constants</u> are defined in the Visual Basic for Applications <u>type library</u> and can be used anywhere in your code in place of the actual values:

| Constant | Equivalent | Description |
|---|---|---|
| **vbCrLf** | **Chr(**13**) + Chr(**10**)** | Carriage return–linefeed combination |
| **vbCr** | **Chr(**13**)** | Carriage return character |
| **vbLf** | **Chr(**10**)** | Linefeed character |
| **vbNewLine** | **Chr(**13**) + Chr(**10**)**  or, on the Macintosh, **Chr(**13**)** | Platform-specific new line character; whichever is appropriate for current platform |
| **vbNullChar** | **Chr(**0**)** | Character having value 0 |
| **vbNullString** | String having value 0 | Not the same as a zero-length string (""); used for calling external procedures |
| **vbObjectError** | -2147221504 | User-defined error numbers should be greater than this value. For example:<br>`Err.Raise Number = vbObjectError + 1000` |
| **vbTab** | **Chr(**9**)** | Tab character |
| **vbBack** | **Chr(**8**)** | Backspace character |
| **vbFormFeed** | **Chr(**12**)** | Not useful in Microsoft Windows or on the Macintosh |
| **vbVerticalTab** | **Chr(**11**)** | Not useful in Microsoft Windows or on the Macintosh |

# MsgBox Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscmsgboxConstantsC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscMsgBoxConstantsS"}

The following <u>constants</u> can be used anywhere in your code in place of the actual values:

## MsgBox Arguments

| Constant | Value | Description |
|----------|-------|-------------|
| **vbOKOnly** | 0 | **OK** button only (default) |
| **vbOKCancel** | 1 | **OK** and **Cancel** buttons |
| **vbAbortRetryIgnore** | 2 | **Abort**, **Retry**, and **Ignore** buttons |
| **vbYesNoCancel** | 3 | **Yes**, **No**, and **Cancel** buttons |
| **vbYesNo** | 4 | **Yes** and **No** buttons |
| **vbRetryCancel** | 5 | **Retry** and **Cancel** buttons |
| **vbCritical** | 16 | Critical message |
| **vbQuestion** | 32 | Warning query |
| **vbExclamation** | 48 | Warning message |
| **vbInformation** | 64 | Information message |
| **vbDefaultButton1** | 0 | First button is default (default) |
| **vbDefaultButton2** | 256 | Second button is default |
| **vbDefaultButton3** | 512 | Third button is default |
| **vbDefaultButton4** | 768 | Fourth button is default |
| **vbApplicationModal** | 0 | Application modal message box (default) |
| **vbSystemModal** | 4096 | System modal message box |
| **vbMsgBoxHelpButton** | 16384 | Adds Help button to the message box |
| **VbMsgBoxSetForeground** | 65536 | Specifies the message box window as the foreground window |
| **vbMsgBoxRight** | 524288 | Text is right aligned |
| **vbMsgBoxRtlReading** | 1048576 | Specifies text should appear as right-to-left reading on Hebrew and Arabic systems |

## MsgBox Return Values

| Constant | Value | Description |
|----------|-------|-------------|
| **vbOK** | 1 | **OK** button pressed |
| **vbCancel** | 2 | **Cancel** button pressed |
| **vbAbort** | 3 | **Abort** button pressed |
| **vbRetry** | 4 | **Retry** button pressed |
| **vbIgnore** | 5 | **Ignore** button pressed |
| **vbYes** | 6 | **Yes** button pressed |

| **vbNo** | 7 | **No** button pressed |

# Shell Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscShellConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscShellConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbHide** | 0 | Window is hidden and focus is passed to the hidden window. |
| **vbNormalFocus** | 1 | Window has focus and is restored to its original size and position. |
| **vbMinimizedFocus** | 2 | Window is displayed as an icon with focus. |
| **vbMaximizedFocus** | 3 | Window is maximized with focus. |
| **vbNormalNoFocus** | 4 | Window is restored to its most recent size and position. The currently active window remains active. |
| **vbMinimizedNoFocus** | 6 | Window is displayed as an icon. The currently active window remains active. |

On the Macintosh, **vbNormalFocus**, **vbMinimizedFocus**, and **vbMaximizedFocus** all place the application in the foreground; **vbHide**, **vbNoFocus**, **vbMinimizedFocus** all place the application in the background.

# StrConv Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscStrConvConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscStrConvConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbUpperCase** | 1 | Converts the string to uppercase characters. |
| **vbLowerCase** | 2 | Converts the string to lowercase characters. |
| **vbProperCase** | 3 | Converts the first letter of every word in string to uppercase. |
| **vbWide** | 4 | Converts narrow (single-byte) characters in string to wide (double-byte) characters. Applies to Far East locales. |
| **vbNarrow** | 8 | Converts wide (double-byte) characters in string to narrow (single-byte) characters. Applies to Far East locales. |
| **vbKatakana** | 16 | Converts Hiragana characters in string to Katakana characters. Applies to Japan only. |
| **vbHiragana** | 32 | Converts Katakana characters in string to Hiragana characters. Applies to Japan only. |
| **vbUnicode** | 64 | Converts the string to Unicode using the default code page of the system. (Not available on the Macintosh.) |
| **vbFromUnicode** | 128 | Converts the string from Unicode to the default code page of the system. (Not available on the Macintosh.) |

# VarType Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVarTypeConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVarTypeConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
| --- | --- | --- |
| **vbEmpty** | 0 | Uninitialized (default) |
| **vbNull** | 1 | Contains no valid data |
| **vbInteger** | 2 | Integer |
| **vbLong** | 3 | Long integer |
| **vbSingle** | 4 | Single-precision floating-point number |
| **vbDouble** | 5 | Double-precision floating-point number |
| **vbCurrency** | 6 | Currency |
| **vbDate** | 7 | Date |
| **vbString** | 8 | String |
| **vbObject** | 9 | Object |
| **vbError** | 10 | Error |
| **vbBoolean** | 11 | Boolean |
| **vbVariant** | 12 | Variant (used only for arrays of variants) |
| **vbDataObject** | 13 | Data access object |
| **vbDecimal** | 14 | Decimal |
| **vbByte** | 17 | Byte |
| **vbUserDefinedType** | 36 | Variants that contain user-defined types |
| **vbArray** | 8192 | Array |

# Color Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscColorConstantsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscColorConstantsS"}

The following <u>constants</u> can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbBlack** | 0x0 | Black |
| **vbRed** | 0xFF | Red |
| **vbGreen** | 0xFF00 | Green |
| **vbYellow** | 0xFFFF | Yellow |
| **vbBlue** | 0xFF0000 | Blue |
| **vbMagenta** | 0xFF00FF | Magenta |
| **vbCyan** | 0xFFFF00 | Cyan |
| **vbWhite** | 0xFFFFFF | White |

# Keycode Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscKeycodeConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscKeycodeConstantsS"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
|---|---|---|
| **vbKeyLButton** | 0x1 | Left mouse button |
| **vbKeyRButton** | 0x2 | Right mouse button |
| **vbKeyCancel** | 0x3 | CANCEL key |
| **vbKeyMButton** | 0x4 | Middle mouse button |
| **vbKeyBack** | 0x8 | BACKSPACE key |
| **vbKeyTab** | 0x9 | TAB key |
| **vbKeyClear** | 0xC | CLEAR key |
| **vbKeyReturn** | 0xD | ENTER key |
| **vbKeyShift** | 0x10 | SHIFT key |
| **vbKeyControl** | 0x11 | CTRL key |
| **vbKeyMenu** | 0x12 | MENU key |
| **vbKeyPause** | 0x13 | PAUSE key |
| **vbKeyCapital** | 0x14 | CAPS LOCK key |
| **vbKeyEscape** | 0x1B | ESC key |
| **vbKeySpace** | 0x20 | SPACEBAR key |
| **vbKeyPageUp** | 0x21 | PAGE UP key |
| **vbKeyPageDown** | 0x22 | PAGE DOWN key |
| **vbKeyEnd** | 0x23 | END key |
| **vbKeyHome** | 0x24 | HOME key |
| **vbKeyLeft** | 0x25 | LEFT ARROW key |
| **vbKeyUp** | 0x26 | UP ARROW key |
| **vbKeyRight** | 0x27 | RIGHT ARROW key |
| **vbKeyDown** | 0x28 | DOWN ARROW key |
| **vbKeySelect** | 0x29 | SELECT key |
| **vbKeyPrint** | 0x2A | PRINT SCREEN key |
| **vbKeyExecute** | 0x2B | EXECUTE key |
| **vbKeySnapshot** | 0x2C | SNAPSHOT key |
| **vbKeyInsert** | 0x2D | INSERT key |
| **vbKeyDelete** | 0x2E | DELETE key |
| **vbKeyHelp** | 0x2F | HELP key |
| **vbKeyNumlock** | 0x90 | NUM LOCK key |

The A key through the Z key are the same as the ASCII equivalents A – Z:

| Constant | Value | Description |
| --- | --- | --- |
| **vbKeyA** | 65 | A key |
| **vbKeyB** | 66 | B key |
| **vbKeyC** | 67 | C key |
| **vbKeyD** | 68 | D key |
| **vbKeyE** | 69 | E key |
| **vbKeyF** | 70 | F key |
| **vbKeyG** | 71 | G key |
| **vbKeyH** | 72 | H key |
| **vbKeyI** | 73 | I key |
| **vbKeyJ** | 74 | J key |
| **vbKeyK** | 75 | K key |
| **vbKeyL** | 76 | L key |
| **vbKeyM** | 77 | M key |
| **vbKeyN** | 78 | N key |
| **vbKeyO** | 79 | O key |
| **vbKeyP** | 80 | P key |
| **vbKeyQ** | 81 | Q key |
| **vbKeyR** | 82 | R key |
| **vbKeyS** | 83 | S key |
| **vbKeyT** | 84 | T key |
| **vbKeyU** | 85 | U key |
| **vbKeyV** | 86 | V key |
| **vbKeyW** | 87 | W key |
| **vbKeyX** | 88 | X key |
| **vbKeyY** | 89 | Y key |
| **vbKeyZ** | 90 | Z key |

The 0 key through 9 key are the same as their ASCII equivalents 0 – 9:

| Constant | Value | Description |
| --- | --- | --- |
| **vbKey0** | 48 | 0 key |
| **vbKey1** | 49 | 1 key |
| **vbKey2** | 50 | 2 key |
| **vbKey3** | 51 | 3 key |
| **vbKey4** | 52 | 4 key |
| **vbKey5** | 53 | 5 key |
| **vbKey6** | 54 | 6 key |

| Constant | Value | Description |
|---|---|---|
| **vbKey7** | 55 | 7 key |
| **vbKey8** | 56 | 8 key |
| **vbKey9** | 57 | 9 key |

The following constants represent keys on the numeric keypad:

| Constant | Value | Description |
|---|---|---|
| **vbKeyNumpad0** | 0x60 | 0 key |
| **vbKeyNumpad1** | 0x61 | 1 key |
| **vbKeyNumpad2** | 0x62 | 2 key |
| **vbKeyNumpad3** | 0x63 | 3 key |
| **vbKeyNumpad4** | 0x64 | 4 key |
| **vbKeyNumpad5** | 0x65 | 5 key |
| **vbKeyNumpad6** | 0x66 | 6 key |
| **vbKeyNumpad7** | 0x67 | 7 key |
| **vbKeyNumpad8** | 0x68 | 8 key |
| **vbKeyNumpad9** | 0x69 | 9 key |
| **vbKeyMultiply** | 0x6A | MULTIPLICATION SIGN (**\***) key |
| **vbKeyAdd** | 0x6B | PLUS SIGN (**+**) key |
| **vbKeySeparator** | 0x6C | ENTER key |
| **vbKeySubtract** | 0x6D | MINUS SIGN (–) key |
| **vbKeyDecimal** | 0x6E | DECIMAL POINT (**.**) key |
| **vbKeyDivide** | 0x6F | DIVISION SIGN (**/**) key |

The following constants represent function keys:

| Constant | Value | Description |
|---|---|---|
| **vbKeyF1** | 0x70 | F1 key |
| **vbKeyF2** | 0x71 | F2 key |
| **vbKeyF3** | 0x72 | F3 key |
| **vbKeyF4** | 0x73 | F4 key |
| **vbKeyF5** | 0x74 | F5 key |
| **vbKeyF6** | 0x75 | F6 key |
| **vbKeyF7** | 0x76 | F7 key |
| **vbKeyF8** | 0x77 | F8 key |
| **vbKeyF9** | 0x78 | F9 key |
| **vbKeyF10** | 0x79 | F10 key |
| **vbKeyF11** | 0x7A | F11 key |
| **vbKeyF12** | 0x7B | F12 key |
| **vbKeyF13** | 0x7C | F13 key |

| **vbKeyF14** | 0x7D | F14 key |
| **vbKeyF15** | 0x7E | F15 key |
| **vbKeyF16** | 0x7F | F16 key |

# System Color Constants

The following <u>constants</u> can be used anywhere in your code in place of the actual values:

| Constant | Value | Description |
|---|---|---|
| **vbScrollBars** | 0x80000000 | Scroll bar color |
| **vbDesktop** | 0x80000001 | Desktop color |
| **vbActiveTitleBar** | 0x80000002 | Color of the title bar for the active window |
| **vbInactiveTitleBar** | 0x80000003 | Color of the title bar for the inactive window |
| **vbMenuBar** | 0x80000004 | Menu background color |
| **vbWindowBackground** | 0x80000005 | Window background color |
| **vbWindowFrame** | 0x80000006 | Window frame color |
| **vbMenuText** | 0x80000007 | Color of text on menus |
| **vbWindowText** | 0x80000008 | Color of text in windows |
| **vbTitleBarText** | 0x80000009 | Color of text in caption, size box, and scroll arrow |
| **vbActiveBorder** | 0x8000000A | Border color of active window |
| **vbInactiveBorder** | 0x8000000B | Border color of inactive window |
| **vbApplicationWorkspace** | 0x8000000C | Background color of multiple-document interface (MDI) applications |
| **vbHighlight** | 0x8000000D | Background color of items selected in a control |
| **vbHighlightText** | 0x8000000E | Text color of items selected in a control |
| **vbButtonFace** | 0x8000000F | Color of shading on the face of command buttons |
| **vbButtonShadow** | 0x80000010 | Color of shading on the edge of command buttons |
| **vbGrayText** | 0x80000011 | Grayed (disabled) text |
| **vbButtonText** | 0x80000012 | Text color on push buttons |
| **vbInactiveCaptionText** | 0x80000013 | Color of text in an inactive caption |
| **vb3DHighlight** | 0x80000014 | Highlight color for 3-D display elements |
| **vb3DDKShadow** | 0x80000015 | Darkest shadow color for 3-D display elements |

| | | |
|---|---|---|
| **vb3DLight** | 0x80000016 | Second lightest 3-D color after **vb3DHighlight** |
| **vbInfoText** | 0x80000017 | Color of text in ToolTips |
| **vbInfoBackground** | 0x80000018 | Background color of ToolTips |

# CallType Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vacstCallType_C"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vacstCallType_X":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vacstCallType_S"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Decription |
|----------|-------|------------|
| **vbMethod** | 1 | Indicates that a method has been invoked. |
| **vbGet** | 2 | Indicates a **Property Get** procedure. |
| **vbLet** | 4 | Indicates a **Property Let** procedure. |
| **vbSet** | 8 | Indicates a **Property Set** procedure. |

# Form Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vacstForm_C"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vacstForm_X":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vacstForm_S"}

The following constants can be used anywhere in your code in place of the actual values:

| Constant | Value | Decription |
|---|---|---|
| **vbModeless** | 0 | **UserForm** is modeless. |
| **vbModal** | 1 | **UserForm** is modal (default). |

# Call Statement Example

This example illustrates how the **Call** statement is used to transfer control to a **Sub** procedure, an intrinsic function, and a dynamic-link library (DLL) procedure.DLLs are not used on the Macintosh.

```
' Call a Sub procedure.
Call PrintToDebugWindow("Hello World")
' The above statement causes control to be passed to the following
' Sub procedure.
Sub PrintToDebugWindow(AnyString)
    Debug.Print AnyString   ' Print to the Immediate window.
End Sub


' Call an intrinsic function. The return value of the function is
' discarded.
Call Shell(AppName, 1)  ' AppName contains the path of the
       ' executable file.


' Call a Microsoft Windows DLL procedure. The Declare statement must be
' Private in a Class Module, but not in a standard Module.
Private Declare Sub MessageBeep Lib "User" (ByVal N As Integer)
Sub CallMyDll()
   Call MessageBeep(0)  ' Call Windows DLL procedure.
   MessageBeep 0  ' Call again without Call keyword.
End Sub
```

# Choose Function Example

This example uses the **Choose** function to display a name in response to an index passed into the procedure in the `Ind` parameter.

```
Function GetChoice(Ind As Integer)
    GetChoice = Choose(Ind, "Speedy", "United", "Federal")
End Function
```

# DoEvents Function Example

This example uses the **DoEvents** function to cause execution to yield to the operating system once every 1000 iterations of the loop. **DoEvents** returns the number of open Visual Basic forms, but only when the host application is Visual Basic.

```
' Create a variable to hold number of Visual Basic forms loaded
' and visible.
Dim I, OpenForms
For I = 1 To 150000  ' Start loop.
   If I Mod 1000 = 0 Then  ' If loop has repeated 1000 times.
      OpenForms = DoEvents ' Yield to operating system.
   End If
Next I   ' Increment loop counter.
```

# Do...Loop Statement Example

This example shows how **Do...Loop** statements can be used. The inner **Do...Loop** statement loops 10 times, sets the value of the flag to **False**, and exits prematurely using the **Exit Do** statement. The outer loop exits immediately upon checking the value of the flag.

```
Dim Check, Counter
Check = True: Counter = 0  ' Initialize variables.
Do ' Outer loop.
   Do While Counter < 20   ' Inner loop.
      Counter = Counter + 1   ' Increment Counter.
      If Counter = 10 Then ' If condition is True.
         Check = False  ' Set value of flag to False.
         Exit Do  ' Exit inner loop.
      End If
   Loop
Loop Until Check = False   ' Exit outer loop immediately.
```

# End Statement Example

This example uses the **End** Statement to end code execution if the user enters an invalid password.

```
Sub Form_Load
    Dim Password, Pword
    PassWord = "Swordfish"
    Pword = InputBox("Type in your password")
    If Pword <> PassWord Then
        MsgBox "Sorry, incorrect password"
        End
    End If
End Sub
```

# Exit Statement Example

This example uses the **Exit** statement to exit a **For...Next** loop, a **Do...Loop**, and a **Sub** procedure.

```
Sub ExitStatementDemo()
Dim I, MyNum
    Do              ' Set up infinite loop.
        For I = 1 To 1000 ' Loop 1000 times.
            MyNum = Int(Rnd * 1000)    ' Generate random numbers.
            Select Case MyNum ' Evaluate random number.
                Case 7: Exit For  ' If 7, exit For...Next.
                Case 29: Exit Do  ' If 29, exit Do...Loop.
                Case 54: Exit Sub ' If 54, exit Sub procedure.
            End Select
        Next I
    Loop
End Sub
```

# For Each...Next Statement Example

This example uses the **For Each...Next** statement to search the **Text** property of all elements in a collection for the existence of the string "Hello". In the example, `MyObject` is a text-related object and is an element of the collection `MyCollection`. Both are generic names used for illustration purposes only.

```
Dim Found, MyObject, MyCollection
Found = False  ' Initialize variable.
For Each MyObject In MyCollection   ' Iterate through each element.
   If MyObject.Text = "Hello" Then  ' If Text equals "Hello".
      Found = True   ' Set Found to True.
      Exit For ' Exit loop.
   End If
Next
```

# For...Next Statement Example

This example uses the **For...Next** statement to create a string that contains 10 instances of the numbers 0 through 9, each string separated from the other by a single space. The outer loop uses a loop counter variable that is decremented each time through the loop.

```
Dim Words, Chars, MyString
For Words = 10 To 1 Step -1   ' Set up 10 repetitions.
   For Chars = 0 To 9   ' Set up 10 repetitions.
      MyString = MyString & Chars   ' Append number to string.
   Next Chars  ' Increment counter
   MyString = MyString & " "  ' Append a space.
Next Words
```

# GoSub...Return Statement Example

This example uses **GoSub** to call a subroutine within a **Sub** procedure. The **Return** statement causes the execution to resume at the statement immediately following the **GoSub** statement. The **Exit Sub** statement is used to prevent control from accidentally flowing into the subroutine.

```
Sub GosubDemo()
Dim Num
' Solicit a number from the user.
   Num = InputBox("Enter a positive number to be divided by 2.")
' Only use routine if user enters a positive number.
   If Num > 0 Then GoSub MyRoutine
   Debug.Print Num
   Exit Sub ' Use Exit to prevent an error.
MyRoutine:
   Num = Num/2 ' Perform the division.
   Return   ' Return control to statement.
End Sub  ' following the GoSub statement.
```

# GoTo Statement Example

This example uses the **GoTo** statement to branch to line labels within a procedure.

```vb
Sub GotoStatementDemo()
Dim Number, MyString
   Number = 1  ' Initialize variable.
   ' Evaluate Number and branch to appropriate label.
   If Number = 1 Then GoTo Line1 Else GoTo Line2

Line1:
   MyString = "Number equals 1"
   GoTo LastLine  ' Go to LastLine.
Line2:
   ' The following statement never gets executed.
   MyString = "Number equals 2"
LastLine:
   Debug.Print MyString ' Print "Number equals 1" in
      ' the Immediate window.
End Sub
```

# If...Then...Else Statement Example

This example shows both the block and single-line forms of the **If...Then...Else** statement. It also illustrates the use of **If TypeOf...Then...Else**.

```
Dim Number, Digits, MyString
Number = 53 ' Initialize variable.
If Number < 10 Then
    Digits = 1
ElseIf Number < 100 Then
' Condition evaluates to True so the next statement is executed.
    Digits = 2
Else
    Digits = 3
End If


' Assign a value using the single-line form of syntax.
If Digits = 1 Then MyString = "One" Else MyString = "More than one"
```

Use **If TypeOf** construct to determine whether the Control passed into a procedure is a text box.

```
Sub ControlProcessor(MyControl As Control)
    If TypeOf MyControl Is CommandButton Then
        Debug.Print "You passed in a " & TypeName(MyControl)
    ElseIf TypeOf MyControl Is CheckBox Then
        Debug.Print "You passed in a " & TypeName(MyControl)
    ElseIf TypeOf MyControl Is TextBox Then
        Debug.Print "You passed in a " & TypeName(MyControl)
    End If
End Sub
```

# IIf Function Example

This example uses the **IIf** function to evaluate the `TestMe` parameter of the `CheckIt` procedure and returns the word "Large" if the amount is greater than 1000; otherwise, it returns the word "Small".

```
Function CheckIt (TestMe As Integer)
    CheckIt = IIf(TestMe > 1000, "Large", "Small")
End Function
```

# On…GoSub, On…GoTo Statements Example

This example uses the **On…GoSub** and **On…GoTo** statements to branch to subroutines and line labels, respectively.

```
Sub OnGosubGotoDemo()
Dim Number, MyString
   Number = 2  ' Initialize variable.
   ' Branch to Sub2.
   On Number GoSub Sub1, Sub2 ' Execution resumes here after
      ' On...GoSub.
   On Number GoTo Line1, Line2' Branch to Line2.
   ' Execution does not resume here after On...GoTo.
   Exit Sub
Sub1:
   MyString = "In Sub1" : Return
Sub2:
   MyString = "In Sub2" : Return
Line1:
   MyString = "In Line1"
Line2:
   MyString = "In Line2"
End Sub
```

# Partition Function Example

This example assumes you have an Orders table that contains a Freight field. It creates a select procedure that counts the number of orders for which freight cost falls into each of several ranges. The **Partition** function is used first to establish these ranges, then the SQL Count function counts the number of orders in each range. In this example, the arguments to the **Partition** function are *start* = 0, *stop* = 500, *interval* = 50. The first range would therefore be 0:49, and so on up to 500.

```
SELECT DISTINCTROW Partition([freight],0, 500, 50) AS Range,
Count(Orders.Freight) AS Count
FROM Orders
GROUP BY Partition([freight],0,500,50);
```

# Select Case Statement Example

This example uses the **Select Case** statement to evaluate the value of a variable. The second **Case** clause contains the value of the variable being evaluated, and therefore only the statement associated with it is executed.

```
Dim Number
Number = 8  ' Initialize variable.
Select Case Number   ' Evaluate Number.
Case 1 To 5 ' Number between 1 and 5, inclusive.
   Debug.Print "Between 1 and 5"
' The following is the only Case clause that evaluates to True.
Case 6, 7, 8   ' Number between 6 and 8.
   Debug.Print "Between 6 and 8"
Case 9 To 10   ' Number is 9 or 10.
Debug.Print "Greater than 8"
Case Else   ' Other values.
   Debug.Print "Not between 1 and 10"
End Select
```

# Shell Function Example

This example uses the **Shell** function to run an application specified by the user. On the MacIntosh, the default drive name is "HD" and portions of the pathname are separated by colons instead of backslashes. Similarly, you would specify Macintosh folders instead of \Windows.

```
' Specifying 1 as the second argument opens the application in
' normal size and gives it the focus.
Dim RetVal
RetVal = Shell("C:\WINDOWS\CALC.EXE", 1)  ' Run Calculator.
```

# Stop Statement Example

This example uses the **Stop** statement to suspend execution for each iteration through the **For...Next** loop.

```
Dim I
For I = 1 To 10   ' Start For...Next loop.
    Debug.Print I  ' Print I to the Immediate window.
    Stop   ' Stop during each iteration.
Next I
```

# Switch Function Example

This example uses the **Switch** function to return the name of a language that matches the name of a city.

```
Function MatchUp (CityName As String)
   Matchup = Switch(CityName = "London", "English", CityName _
             = "Rome", "Italian", CityName = "Paris", "French")
End Function
```

# While...Wend Statement Example

This example uses the **While...Wend** statement to increment a counter variable. The statements in the loop are executed as long as the condition evaluates to **True**.

```
Dim Counter
Counter = 0 ' Initialize variable.
While Counter < 20   ' Test value of Counter.
   Counter = Counter + 1   ' Increment Counter.
Wend  ' End While loop when Counter > 19.
Debug.Print Counter  ' Prints 20 in the Immediate window.
```

# With Statement Example

This example uses the **With** statement to execute a series of statements on a single object. The object `MyObject` and its properties are generic names used for illustration purposes only.

```
With MyObject
    .Height = 100      ' Same as MyObject.Height = 100.
    .Caption = "Hello World"   ' Same as MyObject.Caption = "Hello World".
    With .Font
        .Color = Red       ' Same as MyObject.Font.Color = Red.
        .Bold = True       ' Same as MyObject.Font.Bold = True.
    End With
End With
```

# Call Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmCallC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmCallX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmCallS"}

Transfers control to a **Sub** procedure, **Function** procedure, or <u>dynamic-link library (DLL) procedure</u>.

**Syntax**

[**Call**] *name* [*argumentlist*]

The **Call** statement syntax has these parts:

| Part | Description |
|---|---|
| **Call** | Optional; <u>keyword</u>. If specified, you must enclose *argumentlist* in parentheses. For example:<br><br>`Call MyProc(0)` |
| *name* | Required. Name of the procedure to call. |
| *argumentlist* | Optional. Comma-delimited list of <u>variables</u>, <u>arrays</u>, or <u>expressions</u> to pass to the procedure. Components of *argumentlist* may include the keywords **ByVal** or **ByRef** to describe how the <u>arguments</u> are treated by the called procedure. However, **ByVal** and **ByRef** can be used with **Call** only when calling a DLL procedure. On the Macintosh, **ByVal** and **ByRef** can be used with **Call** when making a call to a Macintosh code resource. |

**Remarks**

You are not required to use the **Call** keyword when calling a procedure. However, if you use the **Call** keyword to call a procedure that requires arguments, *argumentlist* must be enclosed in parentheses. If you omit the **Call** keyword, you also must omit the parentheses around *argumentlist*. If you use either **Call** syntax to call any intrinsic or user-defined function, the function's return value is discarded.

To pass a whole array to a procedure, use the array name followed by empty parentheses.

# Choose Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctChooseC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctChooseX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctChooseS"}

Selects and returns a value from a list of <u>arguments</u>.

**Syntax**

**Choose(**index, choice-1[, choice-2, ... [, choice-n]]**)**

The **Choose** function syntax has these parts:

| Part | Description |
|------|-------------|
| *index* | Required. <u>Numeric expression</u> or field that results in a value between 1 and the number of available choices. |
| *choice* | Required. <u>Variant expression</u> containing one of the possible choices. |

**Remarks**

**Choose** returns a value from the list of choices based on the value of *index*. If *index* is 1, **Choose** returns the first choice in the list; if *index* is 2, it returns the second choice, and so on.

You can use **Choose** to look up a value in a list of possibilities. For example, if *index* evaluates to 3 and *choice-1* = "one", *choice-2* = "two", and *choice-3* = "three", **Choose** returns "three". This capability is particularly useful if *index* represents the value in an option group.

**Choose** evaluates every choice in the list, even though it returns only one. For this reason, you should watch for undesirable side effects. For example, if you use the **MsgBox** function as part of an <u>expression</u> in all the choices, a message box will be displayed for each choice as it is evaluated, even though **Choose** returns the value of only one of them.

The **Choose** function returns a <u>Null</u> if *index* is less than 1 or greater than the number of choices listed.

If *index* is not a whole number, it is rounded to the nearest whole number before being evaluated.

# DoEvents Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDoEventsC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctDoEventsX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctDoEventsS"}

Yields execution so that the operating system can process other events.

**Syntax**

**DoEvents( )**

**Remarks**

The **DoEvents** function returns an <u>Integer</u> representing the number of open forms in stand-alone versions of Visual Basic, such as Visual Basic, Professional Edition. **DoEvents** returns zero in all other applications.

**DoEvents** passes control to the operating system. Control is returned after the operating system has finished processing the events in its queue and all keys in the **SendKeys** queue have been sent.

**DoEvents** is most useful for simple things like allowing a user to cancel a process after it has started, for example a search for a file. For long-running processes, yielding the processor is better accomplished by using a Timer or delegating the task to an ActiveX EXE component.. In the latter case, the task can continue completely independent of your application, and the operating system takes case of multitasking and time slicing.

> **Caution**   Any time you temporarily yield the processor within an event procedure, make sure the <u>procedure</u> is not executed again from a different part of your code before the first call returns; this could cause unpredictable results. In addition, do not use **DoEvents** if other applications could possibly interact with your procedure in unforeseen ways during the time you have yielded control.

# Do...Loop Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmDoC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmDoX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmDoS"}

Repeats a block of <u>statements</u> while a condition is **True** or until a condition becomes **True**.

**Syntax**

**Do** [{**While** | **Until**} *condition*]
[*statements*]
[**Exit Do**]
[*statements*]

**Loop**

    Or, you can use this syntax:

**Do**
[*statements*]
[**Exit Do**]
[*statements*]

**Loop** [{**While** | **Until**} *condition*]

The **Do Loop** statement syntax has these parts:

| Part | Description |
|---|---|
| *condition* | Optional. <u>Numeric expression</u> or <u>string expression</u> that is **True** or **False**. If *condition* is <u>Null</u>, *condition* is treated as **False**. |
| *statements* | One or more statements that are repeated while, or until, *condition* is **True**. |

**Remarks**

Any number of **Exit Do** statements may be placed anywhere in the **Do...Loop** as an alternate way to exit a **Do...Loop**. **Exit Do** is often used after evaluating some condition, for example, **If...Then**, in which case the **Exit Do** statement transfers control to the statement immediately following the **Loop**.

When used within nested **Do...Loop** statements, **Exit Do** transfers control to the loop that is one nested level above the loop where **Exit Do** occurs.

# End Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmEndC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmEndX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmEndS"}

Ends a procedure or block.

**Syntax**

**End**

**End Function**

**End If**

**End Property**

**End Select**

**End Sub**

**End Type**

**End With**

The **End** statement syntax has these forms:

| Statement | Description |
|---|---|
| **End** | Terminates execution immediately. Never required by itself but may be placed anywhere in a procedure to end code execution, close files opened with the **Open** statement and to clear variables. |
| **End Function** | Required to end a **Function** statement. |
| **End If** | Required to end a block **If...Then...Else** statement. |
| **End Property** | Required to end a **Property Let**, **Property Get**, or **Property Set** procedure. |
| **End Select** | Required to end a **Select Case** statement. |
| **End Sub** | Required to end a **Sub** statement. |
| **End Type** | Required to end a user-defined type definition (**Type** statement). |
| **End With** | Required to end a **With** statement. |

**Remarks**

When executed, the **End** statement resets all module-level variables and all static local variables in all modules. To preserve the value of these variables, use the **Stop** statement instead. You can then resume execution while preserving the value of those variables.

> **Note**   The **End** statement stops code execution abruptly, without invoking the Unload, QueryUnload, or Terminate event, or any other Visual Basic code. Code you have placed in the Unload, QueryUnload, and Terminate events of forms and class modules is not executed. Objects created from class modules are destroyed, files opened using the **Open** statement are closed, and memory used by your program is freed. Object references held by other programs are invalidated.

> The **End** statement provides a way to force your program to halt. For normal termination of a Visual Basic program, you should unload all forms. Your program closes as soon as

there are no other programs holding references to objects created from your public class modules and no code executing.

# Exit Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmExitC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmExitX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmExitS"}

Exits a block of **Do...Loop**, **For...Next**, **Function**, **Sub**, or **Property** code.

**Syntax**

**Exit Do**

**Exit For**

**Exit Function**

**Exit Property**

**Exit Sub**

The **Exit** statement syntax has these forms:

| Statement | Description |
| --- | --- |
| **Exit Do** | Provides a way to exit a **Do...Loop** statement. It can be used only inside a **Do...Loop** statement. **Exit Do** transfers control to the <u>statement</u> following the **Loop** statement. When used within nested **Do...Loop** statements, **Exit Do** transfers control to the loop that is one nested level above the loop where **Exit Do** occurs. |
| **Exit For** | Provides a way to exit a **For** loop. It can be used only in a **For...Next** or **For Each...Next** loop. **Exit For** transfers control to the statement following the **Next** statement. When used within nested **For** loops, **Exit For** transfers control to the loop that is one nested level above the loop where **Exit For** occurs. |
| **Exit Function** | Immediately exits the **Function** <u>procedure</u> in which it appears. Execution continues with the statement following the statement that called the **Function**. |
| **Exit Property** | Immediately exits the **Property** procedure in which it appears. Execution continues with the statement following the statement that called the **Property** procedure. |
| **Exit Sub** | Immediately exits the **Sub** procedure in which it appears. Execution continues with the statement following the statement that called the **Sub** procedure. |

**Remarks**

Do not confuse **Exit** statements with **End** statements. **Exit** does not define the end of a structure.

# For Each...Next Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmForEachC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmForEachX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmForEachS"}

Repeats a group of <u>statements</u> for each element in an <u>array</u> or <u>collection</u>.

**Syntax**

**For Each** *element* **In** *group*
[*statements*]
[**Exit For**]
[*statements*]

**Next** [*element*]

The **For...Each...Next** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *element* | Required. <u>Variable</u> used to iterate through the elements of the collection or array. For collections, *element* can only be a <u>Variant</u> variable, a generic object variable, or any specific object variable. For arrays, *element* can only be a **Variant** variable. |
| *group* | Required. Name of an object collection or array (except an array of <u>user-defined types</u>). |
| *statements* | Optional. One or more statements that are executed on each item in *group*. |

**Remarks**

The **For...Each** block is entered if there is at least one element in *group*. Once the loop has been entered, all the statements in the loop are executed for the first element in *group*. If there are more elements in *group*, the statements in the loop continue to execute for each element. When there are no more elements in *group*, the loop is exited and execution continues with the statement following the **Next** statement.

Any number of **Exit For** statements may be placed anywhere in the loop as an alternative way to exit. **Exit For** is often used after evaluating some condition, for example **If...Then**, and transfers control to the statement immediately following **Next**.

You can nest **For...Each...Next** loops by placing one **For...Each...Next** loop within another. However, each loop *element* must be unique.

> **Note**   If you omit *element* in a **Next** statement, execution continues as if *element* is included. If a **Next** statement is encountered before its corresponding **For** statement, an error occurs.

You can't use the **For...Each...Next** statement with an array of <u>user-defined types</u> because a **Variant** can't contain a user-defined type.

# For...Next Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmForC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmForX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmForS"}

Repeats a group of <u>statements</u> a specified number of times.

**Syntax**

**For** *counter* **=** *start* **To** *end* [**Step** *step*]
[*statements*]
[**Exit For**]
[*statements*]

**Next** [*counter*]

The **For...Next** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *counter* | Required. Numeric <u>variable</u> used as a loop counter. The variable can't be a <u>Boolean</u> or an <u>array</u> element. |
| *start* | Required. Initial value of *counter*. |
| *end* | Required. Final value of *counter*. |
| *step* | Optional. Amount *counter* is changed each time through the loop. If not specified, *step* defaults to one. |
| *statements* | Optional. One or more statements between **For** and **Next** that are executed the specified number of times. |

**Remarks**

The *step* <u>argument</u> can be either positive or negative. The value of the *step* argument determines loop processing as follows:

| Value | Loop executes if |
|-------|------------------|
| Positive or 0 | *counter <= end* |
| Negative | *counter >= end* |

After all statements in the loop have executed, *step* is added to *counter*. At this point, either the statements in the loop execute again (based on the same test that caused the loop to execute initially), or the loop is exited and execution continues with the statement following the **Next** statement.

> **Tip**   Changing the value of *counter* while inside a loop can make it more difficult to read and debug your code.

Any number of **Exit For** statements may be placed anywhere in the loop as an alternate way to exit. **Exit For** is often used after evaluating of some condition, for example **If...Then**, and transfers control to the statement immediately following **Next**.

You can nest **For...Next** loops by placing one **For...Next** loop within another. Give each loop a unique variable name as its *counter*. The following construction is correct:

```
For I = 1 To 10
   For J = 1 To 10
      For K = 1 To 10
```

```
        ...
      Next K
    Next J
Next I
```

**Note**   If you omit *counter* in a **Next** statement, execution continues as if *counter* is included. If a **Next** statement is encountered before its corresponding **For** statement, an error occurs.

# GoSub…Return Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmGoSubC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmGoSubX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmGoSubS"}

Branches to and returns from a subroutine within a <u>procedure</u>.

**Syntax**

**GoSub** *line*

. . .

*line*

. . .

**Return**

The *line* <u>argument</u> can be any <u>line label</u> or <u>line number</u>.

**Remarks**

You can use **GoSub** and **Return** anywhere in a procedure, but **GoSub** and the corresponding **Return** statement must be in the same procedure. A subroutine can contain more than one **Return** statement, but the first **Return** statement encountered causes the flow of execution to branch back to the <u>statement</u> immediately following the most recently executed **GoSub** statement.

> **Note**   You can't enter or exit **Sub** procedures with **GoSub…Return**.

> **Tip**   Creating separate procedures that you can call may provide a more structured alternative to using **GoSub…Return**.

# GoTo Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmGoToC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmGoToX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmGoToS"}

Branches unconditionally to a specified line within a <u>procedure</u>.

**Syntax**

**GoTo** *line*

The required *line* <u>argument</u> can be any <u>line label</u> or <u>line number</u>.

**Remarks**

**GoTo** can branch only to lines within the procedure where it appears.

> **Note**   Too many **GoTo** statements can make code difficult to read and debug. Use structured control <u>statements</u> (**Do...Loop**, **For...Next**, **If...Then...Else**, **Select Case**) whenever possible.

# If...Then...Else Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmIfC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmIfX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmIfS"}

Conditionally executes a group of underlined statements, depending on the value of an underlined expression.

**Syntax**

**If** *condition* **Then** [*statements*] [**Else** *elsestatements*]

Or, you can use the block form syntax:

**If** *condition* **Then**
[*statements*]

[**ElseIf** *condition-n* **Then**
[*elseifstatements*] . . .

[**Else**
[*elsestatements*]]

**End If**

The **If...Then...Else** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *condition* | Required. One or more of the following two types of expressions: |
| | A numeric expression or string expression that evaluates to **True** or **False**. If *condition* is Null, *condition* is treated as **False**. |
| | An expression of the form **TypeOf** *objectname* **Is** *objecttype*. The *objectname* is any object reference and *objecttype* is any valid object type. The expression is **True** if *objectname* is of the object type specified by *objecttype*; otherwise it is **False**. |
| *statements* | Optional in block form; required in single-line form that has no **Else** clause. One or more statements separated by colons; executed if *condition* is **True**. |
| *condition-n* | Optional. Same as *condition*. |
| *elseifstatements* | Optional. One or more statements executed if associated *condition-n* is **True**. |
| *elsestatements* | Optional. One or more statements executed if no previous *condition* or *condition-n* expression is **True**. |

**Remarks**

You can use the single-line form (first syntax) for short, simple tests. However, the block form (second syntax) provides more structure and flexibility than the single-line form and is usually easier to read, maintain, and debug.

> **Note**   With the single-line form, it is possible to have multiple statements executed as the result of an **If...Then** decision. All statements must be on the same line and separated by colons, as in the following statement:
>
> ```
> If A > 10 Then A = A + 1 : B = B + A : C = C + B
> ```

A block form **If** statement must be the first statement on a line. The **Else**, **ElseIf**, and **End If** parts of the statement can have only a <u>line number</u> or <u>line label</u> preceding them. The block **If** must end with an **End If** statement.

To determine whether or not a statement is a block **If**, examine what follows the **Then** <u>keyword</u>. If anything other than a <u>comment</u> appears after **Then** on the same line, the statement is treated as a single-line **If** statement.

The **Else** and **ElseIf** clauses are both optional. You can have as many **ElseIf** clauses as you want in a block **If**, but none can appear after an **Else** clause. Block **If** statements can be nested; that is, contained within one another.

When executing a block **If** (second syntax), *condition* is tested. If *condition* is **True**, the statements following **Then** are executed. If *condition* is **False**, each **ElseIf** condition (if any) is evaluated in turn. When a **True** condition is found, the statements immediately following the associated **Then** are executed. If none of the **ElseIf** conditions are **True** (or if there are no **ElseIf** clauses), the statements following **Else** are executed. After executing the statements following **Then** or **Else**, execution continues with the statement following **End If**.

> **Tip**   **Select Case** may be more useful when evaluating a single expression that has several possible actions. However, the **TypeOf** *objectname* **Is** *objecttype* clause can't be used with the **Select Case** statement.

> **Note**   **TypeOf** cannot be used with hard data types such as Long, Integer, and so forth other than Object.

# IIf Function

Returns one of two parts, depending on the evaluation of an <u>expression</u>.

**Syntax**

**IIf(*expr*, *truepart*, *falsepart*)**

The **IIf** function syntax has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| *expr* | Required. Expression you want to evaluate. |
| *truepart* | Required. Value or expression returned if *expr* is **True**. |
| *falsepart* | Required. Value or expression returned if *expr* is **False**. |

**Remarks**

**IIf** always evaluates both *truepart* and *falsepart*, even though it returns only one of them. Because of this, you should watch for undesirable side effects. For example, if evaluating *falsepart* results in a division by zero error, an error occurs even if *expr* is **True**.

# On…GoSub, On…GoTo Statements

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOnGoSubC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOnGoSubX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOnGoSubS"}

Branch to one of several specified lines, depending on the value of an expression.

**Syntax**

**On** *expression* **GoSub** *destinationlist*

**On** *expression* **GoTo** *destinationlist*

The **On…GoSub** and **On…GoTo** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *expression* | Required. Any numeric expression that evaluates to a whole number between 0 and 255, inclusive. If *expression* is any number other than a whole number, it is rounded before it is evaluated. |
| *destinationlist* | Required. List of line numbers or line labels separated by commas. |

**Remarks**

The value of *expression* determines which line is branched to in *destinationlist*. If the value of *expression* is less than 1 or greater than the number of items in the list, one of the following results occurs:

| If *expression* is | Then |
|--------------------|------|
| Equal to 0 | Control drops to the statement following **On…GoSub** or **On…GoTo**. |
| Greater than number of items in list | Control drops to the statement following **On…GoSub** or **On…GoTo**. |
| Negative | An error occurs. |
| Greater than 255 | An error occurs. |

You can mix line numbers and line labels in the same list. You can use as many line labels and line numbers as you like with **On…GoSub** and **On…GoTo**. However, if you use more labels or numbers than fit on a single line, you must use the line-continuation character to continue the logical line onto the next physical line.

> **Tip**  **Select Case** provides a more structured and flexible way to perform multiple branching.

# Partition Function

Returns a **Variant** (**String**) indicating where a number occurs within a calculated series of ranges.

**Syntax**

**Partition(*number*, *start*, *stop*, *interval*)**

The **Partition** function syntax has these named arguments:

| Part | Description |
| --- | --- |
| *number* | Required. Whole number that you want to evaluate against the ranges. |
| *start* | Required. Whole number that is the start of the overall range of numbers. The number can't be less than 0. |
| *stop* | Required. Whole number that is the end of the overall range of numbers. The number can't be equal to or less than *start*. |

**Remarks**

The **Partition** function identifies the particular range in which *number* falls and returns a **Variant** (**String**) describing that range. The **Partition** function is most useful in queries. You can create a select query that shows how many orders fall within various ranges, for example, order values from 1 to 1000, 1001 to 2000, and so on.

The following table shows how the ranges are determined using three sets of *start*, *stop*, and *interval* parts. The First Range and Last Range columns show what **Partition** returns. The ranges are represented by *lowervalue*:*uppervalue*, where the low end (*lowervalue*) of the range is separated from the high end (*uppervalue*) of the range with a colon (**:**).

| start | stop | interval | Before First | First Range | Last Range | After Last |
| --- | --- | --- | --- | --- | --- | --- |
| 0 | 99 | 5 | "   :-1" | "   0:  4" | "  95: 99" | "  100: " |
| 20 | 199 | 10 | "  : 19" | "  20: 29" | " 190: 199" | "  200: " |
| 100 | 1010 | 20 | "  :  99" | " 100: 119" | " 1000: 1010" | " 1011: " |

In the table shown above, the third line shows the result when *start* and *stop* define a set of numbers that can't be evenly divided by *interval*. The last range extends to *stop* (11 numbers) even though *interval* is 20.

If necessary, **Partition** returns a range with enough leading spaces so that there are the same number of characters to the left and right of the colon as there are characters in *stop*, plus one. This ensures that if you use **Partition** with other numbers, the resulting text will be handled properly during any subsequent sort operation.

If *interval* is 1, the range is *number:number*, regardless of the *start* and *stop* arguments. For example, if *interval* is 1, *number* is 100 and *stop* is 1000, **Partition** returns "  100:  100".

If any of the parts is Null, **Partition** returns a **Null**.

# Select Case Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSelectCaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmSelectCaseX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmSelectCaseS"}

Executes one of several groups of statements, depending on the value of an expression.

**Syntax**

**Select Case** *testexpression*
[**Case** *expressionlist-n*
    [*statements-n*]] . . .
[**Case Else**
    [*elsestatements*]]

**End Select**

The **Select Case** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *testexpression* | Required. Any numeric expression or string expression. |
| *expressionlist-n* | Required if a **Case** appears. Delimited list of one or more of the following forms: *expression*, *expression* **To** *expression*, **Is** *comparisonoperator expression*. The **To** keyword specifies a range of values. If you use the **To** keyword, the smaller value must appear before **To**. Use the **Is** keyword with comparison operators (except **Is** and **Like**) to specify a range of values. If not supplied, the **Is** keyword is automatically inserted. |
| *statements-n* | Optional. One or more statements executed if *testexpression* matches any part of *expressionlist-n.* |
| *elsestatements* | Optional. One or more statements executed if *testexpression* doesn't match any of the **Case** clause. |

**Remarks**

If *testexpression* matches any **Case** *expressionlist* expression, the *statements* following that **Case** clause are executed up to the next **Case** clause, or, for the last clause, up to **End Select**. Control then passes to the statement following **End Select**. If *testexpression* matches an *expressionlist* expression in more than one **Case** clause, only the statements following the first match are executed.

The **Case Else** clause is used to indicate the *elsestatements* to be executed if no match is found between the *testexpression* and an *expressionlist* in any of the other **Case** selections. Although not required, it is a good idea to have a **Case Else** statement in your **Select Case** block to handle unforeseen *testexpression* values. If no **Case** *expressionlist* matches *testexpression* and there is no **Case Else** statement, execution continues at the statement following **End Select**.

You can use multiple expressions or ranges in each **Case** clause. For example, the following line is valid:

```
Case 1 To 4, 7 To 9, 11, 13, Is > MaxNumber
```

   **Note**   The **Is** comparison operator is not the same as the **Is** keyword used in the **Select Case** statement.

You also can specify ranges and multiple expressions for character strings. In the following example, **Case** matches strings that are exactly equal to `everything`, strings that fall between `nuts` and `soup` in alphabetic order, and the current value of `TestItem`:

```
Case "everything", "nuts" To "soup", TestItem
```

**Select Case** statements can be nested. Each nested **Select Case** statement must have a matching **End Select** statement.

# Shell Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctShellC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctShellX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctShellS"}

Runs an executable program and returns a **Variant** (**Double**) representing the program's
task ID if successful, otherwise it returns zero.

**Syntax**

**Shell(***pathname***[,***windowstyle***])**

The **Shell** function syntax has these named arguments:

| Part | Description |
|---|---|
| *pathname* | Required; **Variant** (**String**). Name of the program to execute and any required arguments or command-line switches; may include directory or folder and drive. On the Macintosh, you can use the **MacID** function to specify an application's signature instead of its name. The following example uses the signature for Microsoft Word:<br>`Shell MacID("MSWD")` |
| *windowstyle* | Optional. **Variant** (**Integer**) corresponding to the style of the window in which the program is to be run. If *windowstyle* is omitted, the program is started minimized with focus. On the Macintosh (System 7.0 or later), *windowstyle* only determines whether or not the application gets the focus when it is run. |

The *windowstyle* named argument has these values:

| Constant | Value | Description |
|---|---|---|
| **vbHide** | 0 | Window is hidden and focus is passed to the hidden window. The **vbHide** constant is not applicable on Macintosh platforms. |
| **vbNormalFocus** | 1 | Window has focus and is restored to its original size and position. |
| **vbMinimizedFocus** | 2 | Window is displayed as an icon with focus. |
| **vbMaximizedFocus** | 3 | Window is maximized with focus. |
| **vbNormalNoFocus** | 4 | Window is restored to its most recent size and position. The currently active window remains active. |
| **vbMinimizedNoFocus** | 6 | Window is displayed as an icon. The currently active window remains active. |

**Remarks**

If the **Shell** function successfully executes the named file, it returns the task ID of the
started program. The task ID is a unique number that identifies the running program. If the
**Shell** function can't start the named program, an error occurs.

On the Macintosh, **vbNormalFocus**, **vbMinimizedFocus**, and **vbMaximizedFocus** all
place the application in the foreground; **vbHide**, **vbNoFocus**, **vbMinimizeFocus** all place

the application in the background.

**Note**   By default, the **Shell** function runs other programs asynchronously. This means that a program started with **Shell** might not finish executing before the statements following the **Shell** function are executed.

# Stop Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmStopC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmStopX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmStopS"}

Suspends execution.

**Syntax**

**Stop**

**Remarks**

You can place **Stop** statements anywhere in procedures to suspend execution. Using the **Stop** statement is similar to setting a breakpoint in the code.

The **Stop** statement suspends execution, but unlike **End**, it doesn't close any files or clear variables, unless it is in a compiled executable (.exe) file.

# Switch Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSwitchC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSwitchX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSwitchS"}

Evaluates a list of expressions and returns a **Variant** value or an expression associated with the first expression in the list that is **True**.

**Syntax**

**Switch(**expr-1**,** value-1[**,** expr-2**,** value-2 **…** [**,** expr-n**,**value-n]]**)**

The **Switch** function syntax has these parts:

| Part | Description |
|------|-------------|
| expr | Required. Variant expression you want to evaluate. |
| value | Required. Value or expression to be returned if the corresponding expression is **True**. |

**Remarks**

The **Switch** function argument list consists of pairs of expressions and values. The expressions are evaluated from left to right, and the value associated with the first expression to evaluate to **True** is returned. If the parts aren't properly paired, a run-time error occurs. For example, if expr-1 is **True**, **Switch** returns value-1. If expr-1 is **False**, but expr-2 is **True**, **Switch** returns value-2, and so on.

**Switch** returns a Null value if:

- None of the expressions is **True**.
- The first **True** expression has a corresponding value that is **Null**.

**Switch** evaluates all of the expressions, even though it returns only one of them. For this reason, you should watch for undesirable side effects. For example, if the evaluation of any expression results in a division by zero error, an error occurs.

# While...Wend Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmWhileC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmWhileX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmWhileS"}

Executes a series of <u>statements</u> as long as a given condition is **True**.

**Syntax**

**While** *condition*
[*statements*]

**Wend**

The **While...Wend** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *condition* | Required. <u>Numeric expression</u> or <u>string expression</u> that evaluates to **True** or **False**. If *condition* is <u>Null</u>, *condition* is treated as **False**. |
| *statements* | Optional. One or more statements executed while condition is **True**. |

**Remarks**

If *condition* is **True**, all *statements* are executed until the **Wend** statement is encountered. Control then returns to the **While** statement and *condition* is again checked. If *condition* is still **True**, the process is repeated. If it is not **True**, execution resumes with the statement following the **Wend** statement.

**While...Wend** loops can be nested to any level. Each **Wend** matches the most recent **While**.

> **Tip**   The **Do...Loop** statement provides a more structured and flexible way to perform looping.

# With Statement

Executes a series of <u>statements</u> on a single object or a <u>user-defined type</u>.

**Syntax**

**With** *object*
[*statements*]

**End With**

The **With** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *object* | Required. Name of an object or a user-defined type. |
| *statements* | Optional. One or more statements to be executed on *object*. |

**Remarks**

The **With** statement allows you to perform a series of statements on a specified object without requalifying the name of the object. For example, to change a number of different <u>properties</u> on a single object, place the property assignment statements within the **With** control structure, referring to the object once instead of referring to it with each property assignment. The following example illustrates use of the **With** statement to assign values to several properties of the same object.

```
With MyLabel
    .Height = 2000
    .Width = 2000
    .Caption = "This is MyLabel"
End With
```

> **Note**   Once a **With** block is entered, *object* can't be changed. As a result, you can't use a single **With** statement to affect a number of different objects.

You can nest **With** statements by placing one **With** block within another. However, because members of outer **With** blocks are masked within the inner **With** blocks, you must provide a fully qualified object reference in an inner **With** block to any member of an object in an outer **With** block.

> **Note**   In general, it's recommended that you don't jump into or out of **With** blocks. If statements in a **With** block are executed, but either the **With** or **End With** statement is not executed, a temporary variable containing a reference to the object remains in memory until you exit the procedure.

# Asc Function Example

This example uses the **Asc** function to return a character code corresponding to the first letter in the string.

```
Dim MyNumber

MyNumber = Asc("A")   ' Returns 65.

MyNumber = Asc("a")   ' Returns 97.

MyNumber = Asc("Apple") ' Returns 65.
```

# CBool Function Example

This example uses the **CBool** function to convert an expression to a **Boolean**. If the expression evaluates to a nonzero value, **CBool** returns **True**; otherwise, it returns **False**.

```
Dim A, B, Check
A = 5: B = 5   ' Initialize variables.
Check = CBool(A = B) ' Check contains True.

A = 0 ' Define variable.
Check = CBool(A)  ' Check contains False.
```

# CByte Function Example

This example uses the **CByte** function to convert an expression to a **Byte**.

```
Dim MyDouble, MyByte
MyDouble = 125.5678  ' MyDouble is a Double.
MyByte = CByte(MyDouble)   ' MyByte contains 126.
```

# CDate Function Example

This example uses the **CDate** function to convert a string to a **Date**. In general, hard-coding dates and times as strings (as shown in this example) is not recommended. Use date literals and time literals, such as #2/12/1969# and #4:45:23 PM#, instead.

```
Dim MyDate, MyShortDate, MyTime, MyShortTime
MyDate = "February 12, 1969"  ' Define date.
MyShortDate = CDate(MyDate)   ' Convert to Date data type.

MyTime = "4:35:47 PM"   ' Define time.
MyShortTime = CDate(MyTime)   ' Convert to Date data type.
```

# CCur Function Example

This example uses the **CCur** function to convert an expression to a **Currency**.

```
Dim MyDouble, MyCurr
MyDouble = 543.214588   ' MyDouble is a Double.
MyCurr = CCur(MyDouble * 2)   ' Convert result of MyDouble * 2
      ' (1086.429176) to a
      ' Currency (1086.4292).
```

# CDbl Function Example

This example uses the **CDbl** function to convert an expression to a **Double**.

```
Dim MyCurr, MyDouble
MyCurr = CCur(234.456784)  ' MyCurr is a Currency.
MyDouble = CDbl(MyCurr * 8.2 * 0.01)        ' Convert result to a Double.
```

# CInt Function Example

This example uses the **CInt** function to convert a value to an **Integer**.

```
Dim MyDouble, MyInt
MyDouble = 2345.5678 ' MyDouble is a Double.
MyInt = CInt(MyDouble)  ' MyInt contains 2346.
```

# CLng Function Example

This example uses the **CLng** function to convert a value to a **Long**.

```
Dim MyVal1, MyVal2, MyLong1, MyLong2
MyVal1 = 25427.45: MyVal2 = 25427.55      ' MyVal1, MyVal2 are Doubles.
MyLong1 = CLng(MyVal1)  ' MyLong1 contains 25427.
MyLong2 = CLng(MyVal2)  ' MyLong2 contains 25428.
```

# CSng Function Example

This example uses the **CSng** function to convert a value to a **Single**.

```
Dim MyDouble1, MyDouble2, MySingle1, MySingle2
' MyDouble1, MyDouble2 are Doubles.
MyDouble1 = 75.3421115: MyDouble2 = 75.3421555
MySingle1 = CSng(MyDouble1)   ' MySingle1 contains 75.34211.
MySingle2 = CSng(MyDouble2)   ' MySingle2 contains 75.34216.
```

# CStr Function Example

This example uses the **CStr** function to convert a numeric value to a **String**.

```
Dim MyDouble, MyString
MyDouble = 437.324    ' MyDouble is a Double.
MyString = CStr(MyDouble)  ' MyString contains "437.324".
```

# CVar Function Example

This example uses the **CVar** function to convert an expression to a **Variant**.

```
Dim MyInt, MyVar
MyInt = 4534   ' MyInt is an Integer.
MyVar = CVar(MyInt & "000")   ' MyVar contains the string
      ' 4534000.
```

# CVErr Function Example

This example uses the **CVErr** function to return a **Variant** whose **VarType** is **vbError** (10). The user-defined function `CalculateDouble` returns an error if the argument passed to it isn't a number. You can use **CVErr** to return user-defined errors from user-defined procedures or to defer handling of a run-time error. Use the **IsError** function to test if the value represents an error.

```
' Call CalculateDouble with an error-producing argument.
Sub Test()
    Debug.Print CalculateDouble("345.45robert")
End Sub
' Define CalculateDouble Function procedure.
Function CalculateDouble(Number)
    If IsNumeric(Number) Then
        CalculateDouble = Number * 2  ' Return result.
    Else
        CalculateDouble = CVErr(2001) ' Return a user-defined error
    End If    ' number.
End Function
```

# Val Function Example

This example uses the **Val** function to return the numbers contained in a string.

```
Dim MyValue
MyValue = Val("2457")   ' Returns 2457.
MyValue = Val(" 2 45 7")   ' Returns 2457.
MyValue = Val("24 and 57") ' Returns 24.
```

# CDec Function Example

This example uses the **CDec** function to convert a numeric value to a **Decimal**.

```
Dim MyDecimal, MyCurr
MyCurr = 10000000.0587  ' MyCurr is a Currency.
MyDecimal = CDec(MyCurr)   ' MyDecimal is a Decimal.
```

# Conversion Functions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxConversionC"}

Asc Function

CBool Function

CByte Function

CCur Function

CDate Function

CDec Function

CDbl Function

Chr Function

CInt Function

CLng Function

CSng Function

CStr Function

CVar Function

CVErr Function

Format Function

Hex Function

Oct Function

Str Function

Val Function

# Asc Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctAscC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctAscX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctAscS"}

Returns an <u>Integer</u> representing the <u>character code</u> corresponding to the first letter in a string.

**Syntax**

**Asc(**_string_**)**

The required _string_ <u>argument</u> is any valid <u>string expression</u>. If the _string_ contains no characters, a <u>run-time error</u> occurs.

**Remarks**

The range for returns is 0 − 255 on non-DBCS systems, but −32768 − 32767 on <u>DBCS</u> systems.

> **Note**   The **AscB** function is used with byte data contained in a string. Instead of returning the character code for the first character, **AscB** returns the first byte. The **AscW** function returns the <u>Unicode</u> character code except on platforms where Unicode is not supported, in which case, the behavior is identical to the **Asc** function.

> **Note**   Visual Basic for the Macintosh does not support Unicode strings. Therefore, **AscW**(_n_) cannot return all Unicode characters for n values   in the range of 128 − 65,535, as it does in the Windows environment. Instead, **AscW**(_n_) attempts a "best guess" for Unicode values n greater than 127. Therefore, you should not use **AscW** in the Macintosh environment.

# CVErr Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCVErrC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctCVErrX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctCVErrS"}

Returns a <u>Variant</u> of subtype **Error** containing an <u>error number</u> specified by the user.

**Syntax**

**CVErr(***errornumber***)**

The required *errornumber* <u>argument</u> is any valid error number.

**Remarks**

Use the **CVErr** function to create user-defined errors in user-created <u>procedures</u>. For example, if you create a function that accepts several arguments and normally returns a string, you can have your function evaluate the input arguments to ensure they are within acceptable range. If they are not, it is likely your function will not return what you expect. In this event, **CVErr** allows you to return an error number that tells you what action to take.

Note that implicit conversion of an **Error** is not allowed. For example, you can't directly assign the return value of **CVErr** to a <u>variable</u> that is not a **Variant**. However, you can perform an explicit conversion (using **CInt**, **CDbl**, and so on) of the value returned by **CVErr** and assign that to a variable of the appropriate <u>data type</u>.

# Val Function

Returns the numbers contained in a string as a numeric value of appropriate type.

**Syntax**

**Val(**_string_**)**

The required _string_ argument is any valid string expression.

**Remarks**

The **Val** function stops reading the string at the first character it can't recognize as part of a number. Symbols and characters that are often considered parts of numeric values, such as dollar signs and commas, are not recognized. However, the function recognizes the radix prefixes `&O` (for octal) and `&H` (for hexadecimal). Blanks, tabs, and linefeed characters are stripped from the argument.

The following returns the value 1615198:

```
Val("    1615 198th Street N.E.")
```

In the code below, **Val** returns the decimal value -1 for the hexadecimal value shown:

```
Val("&HFFFF")
```

> **Note**   The **Val** function recognizes only the period (**.**) as a valid decimal separator. When different decimal separators are used, as in international applications, use **CDbl** instead to convert a string to a number.

# Type Conversion Functions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaGrpTypeConversionC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaGrpTypeConversionX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpTypeConversionS"}

Each function coerces an expression to a specific data type.

**Syntax**

**CBool(***expression***)**

**CByte(***expression***)**

**CCur(***expression***)**

**CDate(***expression***)**

**CDbl(***expression***)**

**CDec(***expression***)**

**CInt(***expression***)**

**CLng(***expression***)**

**CSng(***expression***)**

**CStr(***expression***)**

**CVar(***expression***)**

The required *expression* argument is any string expression or numeric expression.

**Return Types**

The function name determines the return type as shown in the following:

| Function | Return Type | Range for *expression* argument |
|---|---|---|
| **CBool** | Boolean | Any valid **string** or numeric expression. |
| **CByte** | Byte | 0 to 255. |
| **CCur** | Currency | -922,337,203,685,477.5808 to 922,337,203,685,477.5807. |
| **CDate** | Date | Any valid date expression. |
| **CDbl** | Double | -1.79769313486231E308 to -4.94065645841247E-324 for negative values; 4.94065645841247E-324 to 1.79769313486232E308 for positive values. |
| **CDec** | Decimal | +/-79,228,162,514,264,337,593,543,950,335 for zero-scaled numbers, that is, numbers with no decimal places. For |

|  |  | numbers with 28 decimal places, the range is +/-7.9228162514264337593543950335. The smallest possible non-zero number is 0.0000000000000000000000000001. |
|---|---|---|
| **CInt** | Integer | -32,768 to 32,767; fractions are rounded. |
| **CLng** | Long | -2,147,483,648 to 2,147,483,647; fractions are rounded. |
| **CSng** | Single | -3.402823E38 to -1.401298E-45 for negative values; 1.401298E-45 to 3.402823E38 for positive values. |
| **CStr** | String | Returns for CStr depend on the *expression* argument. |
| **CVar** | Variant | Same range as **Double** for numerics. Same range as **String** for non-numerics. |

**Remarks**

If the *expression* passed to the function is outside the range of the data type being converted to, an error occurs.

In general, you can document your code using the data-type conversion functions to show that the result of some operation should be expressed as a particular data type rather than the default data type. For example, use **CCur** to force currency arithmetic in cases where single-precision, double-precision, or integer arithmetic normally would occur.

You should use the data-type conversion functions instead of **Val** to provide internationally aware conversions from one data type to another. For example, when you use **CCur**, different decimal separators, different thousand separators, and various currency options are properly recognized depending on the locale setting of your computer.

When the fractional part is exactly 0.5, **CInt** and **CLng** always round it to the nearest even number. For example, 0.5 rounds to 0, and 1.5 rounds to 2. **CInt** and **CLng** differ from the **Fix** and **Int** functions, which truncate, rather than round, the fractional part of a number. Also, **Fix** and **Int** always return a value of the same type as is passed in.

Use the **IsDate** function to determine if *date* can be converted to a date or time. **CDate** recognizes date literals and time literals as well as some numbers that fall within the range of acceptable dates. When converting a number to a date, the whole number portion is converted to a date. Any fractional part of the number is converted to a time of day, starting at midnight.

**CDate** recognizes date formats according to the locale setting of your system. The correct order of day, month, and year may not be determined if it is provided in a format other than one of the recognized date settings. In addition, a long date format is not recognized if it also contains the day-of-the-week string.

A **CVDate** function is also provided for compatibility with previous versions of Visual Basic. The syntax of the **CVDate** function is identical to the **CDate** function, however, **CVDate** returns a **Variant** whose subtype is **Date** instead of an actual **Date** type. Since there is now an intrinsic **Date** type, there is no further need for **CVDate**. The same effect can be achieved by converting an expression to a **Date,** and then assigning it to a **Variant**. This technique is consistent with the conversion of all other intrinsic types to their equivalent **Variant** subtypes.

> **Note**  The **CDec** function does not return a discrete data type; instead, it always returns a **Variant** whose value has been converted to a **Decimal** subtype.

**Returns for CStr**

| If *expression* is | CStr returns |
| --- | --- |
| **Boolean** | A string containing **True** or **False** |
| **Date** | A string containing a date in the short date format of your system |
| Null | A run-time error |
| Empty | A zero-length string ("") |
| **Error** | A string containing the word **Error** followed by the error number |
| Other numeric | A string containing the number |

# Boolean Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatBooleanC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vadatBooleanX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vadatBooleanS"}

Boolean variables are stored as 16-bit (2-byte) numbers, but they can only be **True** or **False**. **Boolean** variables display as either `True` or `False` (when **Print** is used) or `#TRUE#` or `#FALSE#` (when **Write #** is used). Use the keywords **True** and **False** to assign one of the two states to **Boolean** variables.

When other numeric types are converted to **Boolean** values, 0 becomes **False** and all other values become **True**. When **Boolean** values are converted to other data types, **False** becomes 0 and **True** becomes -1.

# Byte Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatByteC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatByteX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatByteS"}

Byte variables are stored as single, unsigned, 8-bit (1-byte) numbers ranging in value from 0–255.

The **Byte** data type is useful for containing binary data.

# Currency Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatCurrencyC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vadatCurrencyX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vadatCurrencyS"}

Currency variables are stored as 64-bit (8-byte) numbers in an integer format, scaled by 10,000 to give a fixed-point number with 15 digits to the left of the decimal point and 4 digits to the right. This representation provides a range of -922,337,203,685,477.5808 to 922,337,203,685,477.5807. The type-declaration character for **Currency** is the at sign (**@**).

The **Currency** data type is useful for calculations involving money and for fixed-point calculations in which accuracy is particularly important.

# Data Type Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpDataTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpDataTypeS"}

The following table shows the supported <u>data types</u>, including storage sizes and ranges.

| Data type | Storage size | Range |
|---|---|---|
| **Byte** | 1 byte | 0 to 255 |
| **Boolean** | 2 bytes | **True** or **False** |
| **Integer** | 2 bytes | -32,768 to 32,767 |
| **Long** (long integer) | 4 bytes | -2,147,483,648 to 2,147,483,647 |
| **Single** (single-precision floating-point) | 4 bytes | -3.402823E38 to -1.401298E-45 for negative values; 1.401298E-45 to 3.402823E38 for positive values |
| **Double** (double-precision floating-point) | 8 bytes | -1.79769313486231E308 to -4.94065645841247E-324 for negative values; 4.94065645841247E-324 to 1.79769313486232E308 for positive values |
| **Currency** (scaled integer) | 8 bytes | -922,337,203,685,477.5808 to 922,337,203,685,477.5807 |
| **Decimal** | 14 bytes | +/-79,228,162,514,264,337,593,543,950,335 with no decimal point; +/-7.9228162514264337593543950335 with 28 places to the right of the decimal; smallest non-zero number is +/-0.0000000000000000000000000001 |
| **Date** | 8 bytes | January 1, 100 to December 31, 9999 |
| **Object** | 4 bytes | Any **Object** reference |
| **String** (variable-length) | 10 bytes + string length | 0 to approximately 2 billion |
| **String** (fixed-length) | Length of string | 1 to approximately 65,400 |
| **Variant** (with numbers) | 16 bytes | Any numeric value up to the range of a **Double** |
| **Variant** (with characters) | 22 bytes + string length | Same range as for variable-length **String** |
| User-defined (using **Type**) | Number required by elements | The range of each element is the same as the range of its data type. |

**Note**  <u>Arrays</u> of any data type require 20 bytes of memory plus 4 bytes for each array dimension plus the number of bytes occupied by the data itself. The memory occupied by the data can be calculated by multiplying the number of data elements by the size of each element. For example, the data in a single-dimension array consisting of 4 **Integer** data elements of 2 bytes each occupies 8 bytes. The 8 bytes required for the data plus the 24 bytes of overhead brings the total memory requirement for the array to 32 bytes.

A **Variant** containing an array requires 12 bytes more than the array alone.

**Note**   Use the **StrConv** function to convert one type of string data to another.

# Date Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatDateC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatDateX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatDateS"}

Date variables are stored as IEEE 64-bit (8-byte) floating-point numbers that represent dates ranging from 1 January 100 to 31 December 9999 and times from 0:00:00 to 23:59:59. Any recognizable literal date values can be assigned to **Date** variables. Date literals must be enclosed within number signs (**#**), for example, `#January 1, 1993#` or `#1 Jan 93#`.

**Date** variables display dates according to the short date format recognized by your computer. Times display according to the time format (either 12-hour or 24-hour) recognized by your computer.

When other numeric types are converted to **Date**, values to the left of the decimal represent date information while values to the right of the decimal represent time. Midnight is 0 and midday is 0.5. Negative whole numbers represent dates before 30 December 1899.

# Decimal Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatDecimalC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vadatDecimalX":1}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vadatDecimalS"}

Decimal variables are stored as 96-bit (12-byte) signed integers scaled by a variable power of 10. The power of 10 scaling factor specifies the number of digits to the right of the decimal point, and ranges from 0 to 28. With a scale of 0 (no decimal places), the largest possible value is +/-79,228,162,514,264,337,593,543,950,335. With a 28 decimal places, the largest value is +/-7.9228162514264337593543950335 and the smallest, non-zero value is +/-0.0000000000000000000000000001.

> **Note**　At this time the **Decimal** data type can only be used within a Variant, that is, you cannot declare a variable to be of type **Decimal**. You can, however, create a **Variant** whose subtype is **Decimal** using the **CDec** function.

# Double Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatDoubleC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatDoubleX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatDoubleS"}

Double (double-precision floating-point) variables are stored as IEEE 64-bit (8-byte)
floating-point numbers ranging in value from -1.79769313486231E308 to
-4.94065645841247E-324 for negative values and from 4.94065645841247E-324 to
1.79769313486232E308 for positive values. The type-declaration character for **Double** is
the number sign (**#**).

# Integer Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatIntegerC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatIntegerX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatIntegerS"}

Integer variables are stored as 16-bit (2-byte) numbers ranging in value from -32,768 to
32,767. The type-declaration character for **Integer** is the percent sign (**%**).

You can also use **Integer** variables to represent enumerated values. An enumerated value
can contain a finite set of unique whole numbers, each of which has special meaning in the
context in which it is used. Enumerated values provide a convenient way to select among a
known number of choices, for example, black = 0, white = 1, and so on. It is good
programming practice to define constants using the **Const** statement for each enumerated
value.

# Long Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatLongC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatLongX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatLongS"}

Long (long integer) variables are stored as signed 32-bit (4-byte) numbers ranging in value
from -2,147,483,648 to 2,147,483,647. The type-declaration character for **Long** is the
ampersand (**&**).

# Object Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatObjectC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vadatObjectX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vadatObjectS"}

Object variables are stored as 32-bit (4-byte) addresses that refer to objects. Using the **Set** statement, a variable declared as an **Object** can have any object reference assigned to it.

> **Note**   Although a variable declared with **Object** type is flexible enough to contain a reference to any object, binding to the object referenced by that variable is always late (run-time binding). To force early binding (compile-time binding), assign the object reference to a variable declared with a specific class name.

# Single Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatSingleC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vadatSingleX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vadatSingleS"}

Single (single-precision floating-point) variables are stored as IEEE 32-bit (4-byte) floating-point numbers, ranging in value from -3.402823E38 to -1.401298E-45 for negative values and from 1.401298E-45 to 3.402823E38 for positive values. The type-declaration character for **Single** is the exclamation point (**!**).

# String Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatStringC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatStringX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatStringS"}

There are two kinds of strings: variable-length and fixed-length strings.

- A variable-length string can contain up to approximately 2 billion (2^31) characters.

- A fixed-length string can contain 1 to approximately 64K (2^16) characters.

  **Note**   A Public fixed-length string can't be used in a class module.

The codes for String characters range from 0–255. The first 128 characters (0–127) of the character set correspond to the letters and symbols on a standard U.S. keyboard. These first 128 characters are the same as those defined by the ASCII character set. The second 128 characters (128–255) represent special characters, such as letters in international alphabets, accents, currency symbols, and fractions. The type-declaration character for **String** is the dollar sign (**$**).

# User-Defined Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatUserDefinedC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatUserDefinedX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatUserDefinedS"}

Any data type you define using the **Type** statement. User-defined data types can contain
one or more elements of a data type, an array, or a previously defined user-defined type.
For example:

```
Type MyType
    MyName As String  ' String variable stores a name.
    MyBirthDate As Date  ' Date variable stores a birthdate.
    MySex As Integer  ' Integer variable stores sex (0 for
End Type            ' female, 1 for male).
```

# Variant Data Type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vadatVariantC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vadatVariantX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vadatVariantS"}

The **Variant** data type is the <u>data type</u> for all <u>variables</u> that are not explicitly declared as
some other type (using <u>statements</u> such as **Dim**, **Private**, **Public**, or **Static**). The **Variant**
data type has no <u>type-declaration character</u>.

A **Variant** is a special data type that can contain any kind of data except fixed-length <u>String</u>
data. (**Variant** types now support <u>user-defined types</u>.) A **Variant** can also contain the
special values <u>Empty</u>, **Error**, **Nothing**, and <u>Null</u>. You can determine how the data in a
**Variant** is treated using the **VarType** function or **TypeName** function.

Numeric data can be any integer or real number value ranging from
-1.797693134862315E308 to -4.94066E-324 for negative values and from 4.94066E-324 to
1.797693134862315E308 for positive values. Generally, numeric **Variant** data is
maintained in its original data type within the **Variant**. For example, if you assign an
<u>Integer</u> to a **Variant**, subsequent operations treat the **Variant** as an **Integer**. However, if
an arithmetic operation is performed on a **Variant** containing a <u>Byte</u>, an **Integer**, a <u>Long</u>,
or a <u>Single</u>, and the result exceeds the normal range for the original data type, the result is
promoted within the **Variant** to the next larger data type. A **Byte** is promoted to an
**Integer**, an **Integer** is promoted to a **Long**, and a **Long** and a **Single** are promoted to a
<u>Double</u>. An error occurs when **Variant** variables containing <u>Currency</u>, <u>Decimal</u>, and **Double**
values exceed their respective ranges.

You can use the **Variant** data type in place of any data type to work with data in a more
flexible way. If the contents of a **Variant** variable are digits, they may be either the string
representation of the digits or their actual value, depending on the context. For example:

```
Dim MyVar As Variant
MyVar = 98052
```

In the preceding example, `MyVar` contains a numeric representation—the actual value
`98052`. Arithmetic operators work as expected on **Variant** variables that contain numeric
values or string data that can be interpreted as numbers. If you use the **+** operator to add
`MyVar` to another **Variant** containing a number or to a variable of a <u>numeric type</u>, the result
is an arithmetic sum.

The value <u>Empty</u> denotes a **Variant** variable that hasn't been initialized (assigned an initial
value). A **Variant** containing **Empty** is 0 if it is used in a numeric context and a zero-length
string ("") if it is used in a string context.

Don't confuse **Empty** with <u>Null</u>. **Null** indicates that the **Variant** variable intentionally
contains no valid data.

In a **Variant**, **Error** is a special value used to indicate that an error condition has occurred
in a <u>procedure</u>. However, unlike for other kinds of errors, normal application-level error
handling does not occur. This allows you, or the application itself, to take some alternative
action based on the error value. **Error** values are created by converting real numbers to
error values using the **CVErr** function.

# Date Function Example

This example uses the **Date** function to return the current system date.

```
Dim MyDate
MyDate = Date  ' MyDate contains the current system date.
```

# Date Statement Example

This example uses the **Date** statement to set the computer system date. In the development environment, the date literal is displayed in short date format using the locale settings of your code.

```
Dim MyDate
MyDate = #February 12, 1985#  ' Assign a date.
Date = MyDate  ' Change system date.
```

# DateAdd Function Example

This example takes a date and, using the **DateAdd** function, displays a corresponding date a specified number of months in the future.

```
Dim FirstDate As Date    ' Declare variables.
Dim IntervalType As String
Dim Number As Integer
Dim Msg
IntervalType = "m"    ' "m" specifies months as interval.
FirstDate = InputBox("Enter a date")
Number = InputBox("Enter number of months to add")
Msg = "New date: " & DateAdd(IntervalType, Number, FirstDate)
MsgBox Msg
```

# DateDiff Function Example

This example uses the **DateDiff** function to display the number of days between a given date and today.

```
Dim TheDate As Date   ' Declare variables.
Dim Msg
TheDate = InputBox("Enter a date")
Msg = "Days from today: " & DateDiff("d", Now, TheDate)
MsgBox Msg
```

# DatePart Function Example

This example takes a date and, using the **DatePart** function, displays the quarter of the year in which it occurs.

```
Dim TheDate As Date  ' Declare variables.
Dim Msg
TheDate = InputBox("Enter a date:")
Msg = "Quarter: " & DatePart("q", TheDate)
MsgBox Msg
```

# DateSerial Function Example

This example uses the **DateSerial** function to return the date for the specified year, month, and day.

```
Dim MyDate
' MyDate contains the date for February 12, 1969.
MyDate = DateSerial(1969, 2, 12)    ' Return a date.
```

# DateValue Function Example

This example uses the **DateValue** function to convert a string to a date. You can also use date literals to directly assign a date to a **Variant** or **Date** variable, for example, MyDate = #2/12/69#.

```
Dim MyDate

MyDate = DateValue("February 12, 1969")   ' Return a date.
```

# Day Function Example

This example uses the **Day** function to obtain the day of the month from a specified date. In the development environment, the date literal is displayed in short format using the locale settings of your code.

```
Dim MyDate, MyDay
MyDate = #February 12, 1969#  ' Assign a date.
MyDay = Day(MyDate)  ' MyDay contains 12.
```

# Hour Function Example

This example uses the **Hour** function to obtain the hour from a specified time. In the development environment, the time literal is displayed in short time format using the locale settings of your code.

```
Dim MyTime, MyHour
MyTime = #4:35:17 PM#   ' Assign a time.
MyHour = Hour(MyTime)   ' MyHour contains 16.
```

# Minute Function Example

This example uses the **Minute** function to obtain the minute of the hour from a specified time. In the development environment, the time literal is displayed in short time format using the locale settings of your code.

```
Dim MyTime, MyMinute
MyTime = #4:35:17 PM#   ' Assign a time.
MyMinute = Minute(MyTime)  ' MyMinute contains 35.
```

# Month Function Example

This example uses the **Month** function to obtain the month from a specified date. In the development environment, the date literal is displayed in short date format using the locale settings of your code.

```
Dim MyDate, MyMonth
MyDate = #February 12, 1969#  ' Assign a date.
MyMonth = Month(MyDate) ' MyMonth contains 2.
```

# Now Function Example

This example uses the **Now** function to return the current system date and time.

```
Dim Today
Today = Now ' Assign current system date and time.
```

# Second Function Example

This example uses the **Second** function to obtain the second of the minute from a specified time. In the development environment, the time   literal is displayed in short time format using the locale settings of your code.

```
Dim MyTime, MySecond
MyTime = #4:35:17 PM#    ' Assign a time.
MySecond = Second(MyTime)   ' MySecond contains 17.
```

# Time Function Example

This example uses the **Time** function to return the current system time.

```
Dim MyTime
MyTime = Time   ' Return current system time.
```

# Time Statement Example

This example uses the **Time** statement to set the computer system time to a user-defined time.

```
Dim MyTime
MyTime = #4:35:17 PM#   ' Assign a time.
Time = MyTime  ' Set system time to MyTime.
```

# Timer Function Example

This example uses the **Timer** function to pause the application. The example also uses **DoEvents** to yield to other processes during the pause.

```
Dim PauseTime, Start, Finish, TotalTime
If (MsgBox("Press Yes to pause for 5 seconds", 4)) = vbYes Then
    PauseTime = 5  ' Set duration.
    Start = Timer  ' Set start time.
    Do While Timer < Start + PauseTime
        DoEvents ' Yield to other processes.
    Loop
    Finish = Timer ' Set end time.
    TotalTime = Finish - Start ' Calculate total time.
    MsgBox "Paused for " & TotalTime & " seconds"
Else
    End
End If
```

# TimeSerial Function Example

This example uses the **TimeSerial** function to return a time for the specified hour, minute, and second.

```
Dim MyTime
MyTime = TimeSerial(16, 35, 17)    ' MyTime contains serial
    ' representation of 4:35:17 PM.
```

# TimeValue Function Example

This example uses the **TimeValue** function to convert a string to a time. You can also use date literals to directly assign a time to a **Variant** or **Date** variable, for example, MyTime = #4:35:17 PM#.

```
Dim MyTime
MyTime = TimeValue("4:35:17 PM")    ' Return a time.
```

# Weekday Function Example

This example uses the **Weekday** function to obtain the day of the week from a specified date.

```
Dim MyDate, MyWeekDay
MyDate = #February 12, 1969#  ' Assign a date.
MyWeekDay = Weekday(MyDate)   ' MyWeekDay contains 4 because
    ' MyDate represents a Wednesday.
```

# Year Function Example

This example uses the **Year** function to obtain the year from a specified date. In the development environment, the date literal is displayed in short date format using the locale settings of your code.

```
Dim MyDate, MyYear
MyDate = #February 12, 1969#  ' Assign a date.
MyYear = Year(MyDate)   ' MyYear contains 1969.
```

# Date Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDateC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDateX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDateS"}

Returns a **Variant** (**Date**) containing the current system date.

**Syntax**

**Date**

**Remarks**

To set the system date, use the **Date** statement.

**Date**, and if the calendar is Gregorian, **Date$** behavior is unchanged by the **Calendar** property setting. If the calendar is Hijri, **Date$** returns a 10-character string of the form *mm-dd-yyyy*, where *mm* (01-12), *dd* (01-30) and *yyyy* (1400-1523) are the Hijri month, day and year. The equivalent Gregorian range is Jan 1, 1980 through Dec 31, 2099.

# Date Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmDateC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmDateX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmDateS"}

Sets the current system date.

**Syntax**

**Date =** *date*

For systems running Microsoft Windows 95, the required *date* specification must be a date
from January 1, 1980 through December 31, 2099. For systems running Microsoft Windows
NT, *date* must be a date from January 1, 1980 through December 31, 2079. For the
Macintosh, *date* must be a date from January 1, 1904 through February 5, 2040.

# DateAdd Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDateAddC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctDateAddX":1} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctDateAddS"}

Returns a **Variant** (**Date**) containing a date to which a specified time interval has been added.

**Syntax**

**DateAdd(*interval, number, date*)**

The **DateAdd** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *interval* | Required. String expression that is the interval of time you want to add. |
| *number* | Required. Numeric expression that is the number of intervals you want to add. It can be positive (to get dates in the future) or negative (to get dates in the past). |
| *date* | Required. **Variant** (**Date**) or literal representing date to which the interval is added. |

**Settings**

The *interval* argument has these settings:

| Setting | Description |
|---------|-------------|
| yyyy | Year |
| q | Quarter |
| m | Month |
| y | Day of year |
| d | Day |
| w | Weekday |
| ww | Week |
| h | Hour |
| n | Minute |
| s | Second |

**Remarks**

You can use the **DateAdd** function to add or subtract a specified time interval from a date. For example, you can use **DateAdd** to calculate a date 30 days from today or a time 45 minutes from now.

To add days to *date*, you can use Day of Year ("y"), Day ("d"), or Weekday ("w").

The **DateAdd** function won't return an invalid date. The following example adds one month to January 31:

```
DateAdd("m", 1, "31-Jan-95")
```

In this case, **DateAdd** returns 28-Feb-95, not 31-Feb-95. If *date* is 31-Jan-96, it returns 29-Feb-96 because 1996 is a leap year.

If the calculated date would precede the year 100 (that is, you subtract more years than are in *date*), an error occurs.

If *number* isn't a <u>Long</u> value, it is rounded to the nearest whole number before being evaluated.

> **Note**   The format of the return value for **DateAdd** is determined by **Control Panel** settings, not by the format that is passed in *date* argument.

> **Note**   For *date*, if the **Calendar** property setting is Gregorian, the supplied date must be Gregorian. If the calendar is Hijri, the supplied date must be Hijri. If month values are names, the name must be consistent with the current **Calendar** property setting. To minimize the possibility of month names conflicting with the current **Calendar** property setting, enter numeric month values (Short Date format).

# DateDiff Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDateDiffC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDateDiffX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDateDiffS"}

Returns a **Variant** (**Long**) specifying the number of time intervals between two specified dates.

**Syntax**

**DateDiff(***interval, date1, date2*[, ***firstdayofweek***[, ***firstweekofyear***]]**)**

The **DateDiff** function syntax has these named arguments:

| Part | Description |
|---|---|
| *interval* | Required. String expression that is the interval of time you use to calculate the difference between *date1* and *date2*. |
| *date1*, *date2* | Required; **Variant** (**Date**). Two dates you want to use in the calculation. |
| *firstdayofweek* | Optional. A constant that specifies the first day of the week. If not specified, Sunday is assumed. |
| *firstweekofyear* | Optional. A constant that specifies the first week of the year. If not specified, the first week is assumed to be the week in which January 1 occurs. |

**Settings**

The ***interval*** argument has these settings:

| Setting | Description |
|---|---|
| yyyy | Year |
| q | Quarter |
| m | Month |
| y | Day of year |
| d | Day |
| w | Weekday |
| ww | Week |
| h | Hour |
| n | Minute |
| s | Second |

The ***firstdayofweek*** argument has these settings:

| Constant | Value | Description |
|---|---|---|
| **vbUseSystem** | 0 | Use the NLS API setting. |
| **vbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |

| | | | |
|---|---|---|---|
| **vbWednesday** | 4 | | Wednesday |
| **vbThursday** | 5 | | Thursday |
| **vbFriday** | 6 | | Friday |
| **vbSaturday** | 7 | | Saturday |

| Constant | Value | Description |
|---|---|---|
| **vbUseSystem** | 0 | Use the NLS API setting. |
| **vbFirstJan1** | 1 | Start with week in which January 1 occurs (default). |
| **vbFirstFourDays** | 2 | Start with the first week that has at least four days in the new year. |
| **vbFirstFullWeek** | 3 | Start with first full week of the year. |

**Remarks**

You can use the **DateDiff** function to determine how many specified time intervals exist between two dates. For example, you might use **DateDiff** to calculate the number of days between two dates, or the number of weeks between today and the end of the year.

To calculate the number of days between *date1* and *date2*, you can use either Day of year ("y") or Day ("d"). When *interval* is Weekday ("w"), **DateDiff** returns the number of weeks between the two dates. If *date1* falls on a Monday, **DateDiff** counts the number of Mondays until *date2*. It counts *date2* but not *date1*. If *interval* is Week ("ww"), however, the **DateDiff** function returns the number of calendar weeks between the two dates. It counts the number of Sundays between *date1* and *date2*. **DateDiff** counts *date2* if it falls on a Sunday; but it doesn't count *date1*, even if it does fall on a Sunday.

If *date1* refers to a later point in time than *date2*, the **DateDiff** function returns a negative number.

The *firstdayofweek* argument affects calculations that use the "w" and "ww" interval symbols.

If *date1* or *date2* is a date literal, the specified year becomes a permanent part of that date. However, if *date1* or *date2* is enclosed in double quotation marks (" "), and you omit the year, the current year is inserted in your code each time the *date1* or *date2* expression is evaluated. This makes it possible to write code that can be used in different years.

When comparing December 31 to January 1 of the immediately succeeding year, **DateDiff** for Year ("yyyy") returns 1 even though only a day has elapsed.

   **Note**   For *date1* and *date2*, if the **Calendar** property setting is Gregorian, the supplied date must be Gregorian.   If the calendar is Hijri, the supplied date must be Hijri.

# DatePart Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDatePartC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDatePartX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDatePartS"}

Returns a **Variant** (**Integer**) containing the specified part of a given date.

**Syntax**

**DatePart(***interval, date*[,***firstdayofweek***[, ***firstweekofyear***]]**)**

The **DatePart** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *interval* | Required. String expression that is the interval of time you want to return. |
| *date* | Required. **Variant** (**Date**) value that you want to evaluate. |
| *firstdayofweek* | Optional. A constant that specifies the first day of the week. If not specified, Sunday is assumed. |
| *firstweekofyear* | Optional. A constant that specifies the first week of the year. If not specified, the first week is assumed to be the week in which January 1 occurs. |

**Settings**

The *interval* argument has these settings:

| Setting | Description |
|---------|-------------|
| yyyy | Year |
| q | Quarter |
| m | Month |
| y | Day of year |
| d | Day |
| w | Weekday |
| ww | Week |
| h | Hour |
| n | Minute |
| s | Second |

The *firstdayofweek* argument has these settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseSystem** | 0 | Use the NLS API setting. |
| **vbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |

| | | |
|---|---|---|
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

The *firstweekofyear* argument has these settings:

| Constant | Value | Description |
|---|---|---|
| **vbUseSystem** | 0 | Use the NLS API setting. |
| **vbFirstJan1** | 1 | Start with week in which January 1 occurs (default). |
| **vbFirstFourDays** | 2 | Start with the first week that has at least four days in the new year. |
| **vbFirstFullWeek** | 3 | Start with first full week of the year. |

**Remarks**

You can use the **DatePart** function to evaluate a date and return a specific interval of time. For example, you might use **DatePart** to calculate the day of the week or the current hour.

The *firstdayofweek* argument affects calculations that use the "w" and "ww" interval symbols.

If *date* is a date literal, the specified year becomes a permanent part of that date. However, if *date* is enclosed in double quotation marks (" "), and you omit the year, the current year is inserted in your code each time the *date* expression is evaluated. This makes it possible to write code that can be used in different years.

> **Note**    For *date*, if the **Calendar** property setting is Gregorian, the supplied date must be Gregorian. If the calendar is Hijri, the supplied date must be Hijri.

> The returned date part is in the time period units of the current Arabic calendar.    For example, if the current calendar is Hijri and the date part to be returned is the year, the year value is a Hijri year.

# DateSerial Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDateSerialC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDateSerialX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDateSerialS"}

Returns a **Variant** (**Date**) for a specified year, month, and day.

**Syntax**

**DateSerial(*year*, *month*, *day*)**

The **DateSerial** function syntax has these named arguments:

| Part | Description |
|---|---|
| *year* | Required; **Integer**. Number between 100 and 9999, inclusive, or a numeric expression. |
| *month* | Required; **Integer**. Any numeric expression. |
| *day* | Required; **Integer**. Any numeric expression. |

**Remarks**

To specify a date, such as December 31, 1991, the range of numbers for each **DateSerial** argument should be in the accepted range for the unit; that is, 1–31 for days and 1–12 for months. However, you can also specify relative dates for each argument using any numeric expression that represents some number of days, months, or years before or after a certain date.

The following example uses numeric expressions instead of absolute date numbers. Here the **DateSerial** function returns a date that is the day before the first day (`1 - 1`), two months before August (`8 - 2`), 10 years before 1990 (`1990 - 10`); in other words, May 31, 1980.

```
DateSerial(1990 - 10, 8 - 2, 1 - 1)
```

Under Windows 98 or Windows 2000, two digit years for the *year* argument are interpreted based on user-defined machine settings. The default settings are that values between 0 and 29, inclusive, are interpreted as the years 2000–2029. The default values between 30 and 99 are interpreted as the years 1930–1999. For all other *year* arguments, use a four-digit year (for example, 1800).

Earlier versions of Windows interpret two-digit years based on the defaults described above. To be sure the function returns the proper value, use a four-digit year.

When any argument exceeds the accepted range for that argument, it increments to the next larger unit as appropriate. For example, if you specify 35 days, it is evaluated as one month and some number of days, depending on where in the year it is applied. If any single argument is outside the range -32,768 to 32,767, an error occurs. If the date specified by the three arguments falls outside the acceptable range of dates, an error occurs.

   **Note**   For *year, month,* and *day*, if the **Calendar** property setting is Gregorian, the supplied value is assumed to be Gregorian.   If the **Calendar** property setting is Hijri, the supplied value is assumed to be Hijri.

   The returned date part is in the time period units of the current Visual Basic calendar. For example, if the current calendar is Hijri and the date part to be returned is the year, the year value is a Hijri year. For the argument *year*, values between 0 and 99, inclusive, are interpreted as the years 1400-1499. For all other *year* values, use the

complete four-digit year (for example, 1520).

# DateValue Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDateValueC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctDateValueX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctDateValueS"}

Returns a **Variant** (**Date**).

**Syntax**

**DateValue(**date**)**

The required *date* argument is normally a string expression representing a date from January 1, 100 through December 31, 9999. However, *date* can also be any expression that can represent a date, a time, or both a date and time, in that range.

**Remarks**

If *date* is a string that includes only numbers separated by valid date separators, **DateValue** recognizes the order for month, day, and year according to the Short Date format you specified for your system. **DateValue** also recognizes unambiguous dates that contain month names, either in long or abbreviated form. For example, in addition to recognizing 12/30/1991 and 12/30/91, **DateValue** also recognizes December 30, 1991 and Dec 30, 1991.

If the year part of *date* is omitted, **DateValue** uses the current year from your computer's system date.

If the *date* argument includes time information, **DateValue** doesn't return it. However, if *date* includes invalid time information (such as "89:98"), an error occurs.

> **Note**    For *date*, if the **Calendar** property setting is Gregorian, the supplied date must be Gregorian. If the calendar is Hijri, the supplied date must be Hijri. If the supplied date is Hijri, the argument *date* is a **String** representing a date from 1/1/100 (Gregorian Aug 2, 718) through 4/3/9666 (Gregorian Dec 31, 9999).

# Day Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDayC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDayX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDayS"}

Returns a **Variant** (**Integer**) specifying a whole number between 1 and 31, inclusive, representing the day of the month.

**Syntax**

**Day(**_date_**)**

The required _date_ argument is any Variant, numeric expression, string expression, or any combination, that can represent a date. If _date_ contains Null, **Null** is returned.

> **Note**    If the **Calendar** property setting is Gregorian, the returned integer represents the Gregorian day of the month for the date argument. If the calendar is Hijri, the returned integer represents the Hijri day of the month for the date argument.

# Hour Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctHourC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctHourX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctHourS"}

Returns a **Variant** (**Integer**) specifying a whole number between 0 and 23, inclusive, representing the hour of the day.

**Syntax**

**Hour(***time***)**

The required *time* argument is any Variant, numeric expression, string expression, or any combination, that can represent a time. If *time* contains Null, **Null** is returned.

# Minute Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMinuteC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctMinuteX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctMinuteS"}

Returns a **Variant** (**Integer**) specifying a whole number between 0 and 59, inclusive, representing the minute of the hour.

**Syntax**

**Minute(**_time_**)**

The required _time_ argument is any Variant, numeric expression, string expression, or any combination, that can represent a time. If _time_ contains Null, **Null** is returned.

# Month Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMonthC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctMonthX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctMonthS"}

Returns a **Variant** (**Integer**) specifying a whole number between 1 and 12, inclusive, representing the month of the year.

**Syntax**

**Month(**_date_**)**

The required _date_ <u>argument</u> is any <u>Variant</u>, <u>numeric expression</u>, <u>string expression</u>, or any combination, that can represent a date. If _date_ contains <u>Null</u>, **Null** is returned.

> **Note**    If the **Calendar** property setting is Gregorian, the returned integer represents the Gregorian day of the week for the date argument. If the calendar is Hijri, the returned integer represents the Hijri day of the week for the date argument. For Hijri dates, the argument number is any numeric expression that can represent a date and/or time from 1/1/100 (Gregorian Aug 2, 718) through 4/3/9666 (Gregorian Dec 31, 9999).

# Now Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctNowC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctNowX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctNowS"}

Returns a **Variant** (**Date**) specifying the current date and time according your computer's system date and time.

**Syntax**

**Now**

# Second Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSecondC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSecondX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSecondS"}

Returns a **Variant** (**Integer**) specifying a whole number between 0 and 59, inclusive,
representing the second of the minute.

**Syntax**

**Second(**_time_**)**

The required _time_ <u>argument</u> is any <u>Variant</u>, <u>numeric expression</u>, <u>string expression</u>, or any
combination, that can represent a time. If _time_ contains <u>Null</u>, **Null** is returned.

# Time Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTimeC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctTimeX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctTimeS"}

Returns a **Variant** (**Date**) indicating the current system time.

**Syntax**

**Time**

**Remarks**

To set the system time, use the **Time** statement.

# Time Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmTimeC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmTimeX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmTimeS"}

Sets the system time.

**Syntax**

**Time =** *time*

The required *time* <u>argument</u> is any <u>numeric expression</u>, <u>string expression</u>, or any combination, that can represent a time.

**Remarks**

If *time* is a string, **Time** attempts to convert it to a time using the time separators you specified for your system. If it can't be converted to a valid time, an error occurs.

# Timer Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTimerC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctTimerX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctTimerS"}

Returns a **Single** representing the number of seconds elapsed since midnight.

**Syntax**

**Timer**

**Remarks**

In Microsoft Windows the **Timer** function returns fractional portions of a second. On the Macintosh, timer resolution is one second.

# TimeSerial Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTimeSerialC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctTimeSerialX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctTimeSerialS"}

Returns a **Variant** (**Date**) containing the time for a specific hour, minute, and second.

**Syntax**

**TimeSerial(*hour, minute, second*)**

The **TimeSerial** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *hour* | Required; **Variant** (**Integer**). Number between 0 (12:00 A.M.) and 23 (11:00 P.M.), inclusive, or a numeric expression. |
| *minute* | Required; **Variant** (**Integer**). Any numeric expression. |
| *second* | Required; **Variant** (**Integer**). Any numeric expression. |

**Remarks**

To specify a time, such as 11:59:59, the range of numbers for each **TimeSerial** argument should be in the normal range for the unit; that is, 0–23 for hours and 0–59 for minutes and seconds. However, you can also specify relative times for each argument using any numeric expression that represents some number of hours, minutes, or seconds before or after a certain time. The following example uses expressions instead of absolute time numbers. The **TimeSerial** function returns a time for 15 minutes before (–15) six hours before noon (12 – 6), or 5:45:00 A.M.

```
TimeSerial(12 - 6, -15, 0)
```

When any argument exceeds the normal range for that argument, it increments to the next larger unit as appropriate. For example, if you specify 75 minutes, it is evaluated as one hour and 15 minutes. If any single argument is outside the range -32,768 to 32,767, an error occurs. If the time specified by the three arguments causes the date to fall outside the acceptable range of dates, an error occurs.

# TimeValue Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTimeValueC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctTimeValueX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctTimeValueS"}

Returns a **Variant** (**Date**) containing the time.

**Syntax**

**TimeValue(***time***)**

The required *time* argument is normally a string expression representing a time from
0:00:00 (12:00:00 A.M.) to 23:59:59 (11:59:59 P.M.), inclusive. However, *time* can also be
any expression that represents a time in that range. If *time* contains Null, **Null** is returned.

**Remarks**

You can enter valid times using a 12-hour or 24-hour clock. For example, `"2:24PM"` and
`"14:24"` are both valid *time* arguments.

If the *time* argument contains date information, **TimeValue** doesn't return it. However, if
*time* includes invalid date information, an error occurs.

# Weekday Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctWeekdayC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctWeekdayX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctWeekdayS"}

Returns a **Variant** (**Integer**) containing a whole number representing the day of the week.

**Syntax**

**Weekday(**date, [**firstdayofweek**]**)**

The **Weekday** function syntax has these named arguments:

| Part | Description |
|---|---|
| *date* | Required. Variant, numeric expression, string expression, or any combination, that can represent a date. If *date* contains Null, **Null** is returned. |
| *firstdayofweek* | Optional. A constant that specifies the first day of the week. If not specified, **vbSunday** is assumed. |

**Settings**

The *firstdayofweek* argument has these settings:

| Constant | Value | Description |
|---|---|---|
| **vbUseSystem** | 0 | Use the NLS API setting. |
| **vbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

**Return Values**

The **Weekday** function can return any of these values:

| Constant | Value | Description |
|---|---|---|
| **vbSunday** | 1 | Sunday |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

**Remarks**

If the **Calendar** property setting is Gregorian, the returned integer represents the

Gregorian day of the week for the date argument. If the calendar is Hijri, the returned integer represents the Hijri day of the week for the date argument. For Hijri dates, the argument number is any numeric expression that can represent a date and/or time from 1/1/100 (Gregorian Aug 2, 718) through 4/3/9666 (Gregorian Dec 31, 9999).

# Year Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctYearC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctYearX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctYearS"}

Returns a **Variant** (**Integer**) containing a whole number representing the year.

**Syntax**

**Year(**_date_**)**

The required _date_ argument is any Variant, numeric expression, string expression, or any
combination, that can represent a date. If _date_ contains Null, **Null** is returned.

> **Note**    If the **Calendar** property setting is Gregorian, the returned integer represents
> the Gregorian year for the date argument. If the calendar is Hijri, the returned integer
> represents the Hijri year for the date argument. For Hijri dates, the argument number is
> any numeric expression that can represent a date and/or time from 1/1/100 (Gregorian
> Aug 2, 718) through 4/3/9666 (Gregorian Dec 31, 9999).

# Array Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctArrayC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctArrayX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctArrayS"}

Returns a <u>Variant</u> containing an <u>array</u>.

**Syntax**

**Array(***arglist***)**

The required *arglist* <u>argument</u> is a comma-delimited list of values that are assigned to the elements of the array contained within the **Variant**. If no arguments are specified, an array of zero length is created.

**Remarks**

The notation used to refer to an element of an array consists of the <u>variable</u> name followed by parentheses containing an index number indicating the desired element. In the following example, the first <u>statement</u> creates a variable named `A` as a **Variant**. The second statement assigns an array to variable `A`. The last statement assigns the value contained in the second array element to another variable.

```
Dim A As Variant
A = Array(10,20,30)
B = A(2)
```

The lower bound of an array created using the **Array** function is determined by the lower bound specified with the **Option Base** statement, unless **Array** is qualified with the name of the type library (for example **VBA.Array**). If qualified with the type-library name, **Array** is unaffected by **Option Base**.

> **Note**   A **Variant** that is not declared as an array can still contain an array. A **Variant** variable can contain an array of any type, except fixed-length strings and <u>user-defined types</u>. Although a **Variant** containing an array is conceptually different from an array whose elements are of type **Variant**, the array elements are accessed in the same way.

# CallByName Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCallByNameFunction_C"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctCallByNameFunction_X":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctCallByNameFunction_S"}

Executes a method of an object, or sets or returns a property of an object.

**Syntax**

**CallByName(*object*, *procname*, *calltype*,*[args()]*)**

The **CallByName** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *object* | Required; **Variant** (**Object**). The name of the object on which the function will be executed. |
| *procname* | Required; **Variant** (**String**). A string expression containing the name of a property or method of the object. |
| *calltype* | Required; **Constant**. A constant of type **vbCallType** representing the type of procedure being called. |
| *args()* | Optional: **Variant** (**Array**). |

**Remarks**

The **CallByName** function is used to get or set a property, or invoke a method at run time using a string name.

In the following example, the first line uses **CallByName** to set the **MousePointer** property of a text box, the second line gets the value of the **MousePointe**r property, and the third line invokes the **Move** method to move the text box:

```
CallByName Text1, "MousePointer", vbLet, vbCrosshair
Result = CallByName (Text1, "MousePointer", vbGet)
CallByName Text1, "Move", vbMethod, 100, 100
```

# Const Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmConstC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmConstX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmConstS"}

Declares <u>constants</u> for use in place of literal values.

**Syntax**

[**Public** | **Private**] **Const** *constname* [**As** *type*] **=** *expression*

The **Const** statement syntax has these parts:

| Part | Description |
|---|---|
| **Public** | Optional. <u>Keyword</u> used at <u>module level</u> to declare constants that are available to all <u>procedures</u> in all <u>modules</u>. Not allowed in procedures. |
| **Private** | Optional. Keyword used at module level to declare constants that are available only within the module where the <u>declaration</u> is made. Not allowed in procedures. |
| *constname* | Required. Name of the constant; follows standard <u>variable</u> naming conventions. |
| *type* | Optional. <u>Data type</u> of the constant; may be <u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Currency</u>, <u>Single</u>, <u>Double</u>, <u>Decimal</u> (not currently supported), <u>Date</u>, <u>String</u>, or <u>Variant</u>. Use a separate **As** *type* clause for each constant being declared. |
| *expression* | Required. Literal, other constant, or any combination that includes all arithmetic or logical operators except **Is**. |

**Remarks**

Constants are private by default. Within procedures, constants are always private; their visibility can't be changed. In <u>standard modules</u>, the default visibility of module-level constants can be changed using the **Public** keyword. In <u>class modules</u>, however, constants can only be private and their visibility can't be changed using the **Public** keyword.

To combine several constant declarations on the same line, separate each constant assignment with a comma. When constant declarations are combined in this way, the **Public** or **Private** keyword, if used, applies to all of them.

You can't use variables, user-defined functions, or intrinsic Visual Basic functions (such as **Chr**) in <u>expressions</u> assigned to constants.

> **Note**   Constants can make your programs self-documenting and easy to modify. Unlike variables, constants can't be inadvertently changed while your program is running.

If you don't explicitly declare the constant type using **As** *type*, the constant has the data type that is most appropriate for *expression*.

Constants declared in a **Sub**, **Function**, or **Property** procedure are local to that procedure. A constant declared outside a procedure is defined throughout the module in which it is declared. You can use constants anywhere you can use an expression.

# CreateObject Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCreateObjectC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctCreateObjectX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctCreateObjectS"}

Creates and returns a reference to an ActiveX object.

**Syntax**

**CreateObject(**class,[servername]**)**

The **CreateObject** function syntax has these parts:

| Part | Description |
|------|-------------|
| class | Required; **Variant** (**String**). The application name and class of the object to create. |
| servername | Optional; **Variant** (**String**). The name of the network server where the object will be created. If servername is an empty string (""), the local machine is used. |

The class argument uses the syntax appname**.**objecttype and has these parts:

| Part | Description |
|------|-------------|
| appname | Required; **Variant** (**String**). The name of the application providing the object. |
| objecttype | Required; **Variant** (**String**). The type or class of object to create. |

**Remarks**

Every application that supports Automation provides at least one type of object. For example, a word processing application may provide an **Application** object, a **Document** object, and a **Toolbar** object.

To create an ActiveX object, assign the object returned by **CreateObject** to an object variable:

```
' Declare an object variable to hold the object
' reference. Dim as Object causes late binding.
Dim ExcelSheet As Object
Set ExcelSheet = CreateObject("Excel.Sheet")
```

This code starts the application creating the object, in this case, a Microsoft Excel spreadsheet. Once an object is created, you reference it in code using the object variable you defined. In the following example, you access properties and methods of the new object using the object variable, `ExcelSheet`, and other Microsoft Excel objects, including the `Application` object and the `Cells` collection.

```
' Make Excel visible through the Application object.
ExcelSheet.Application.Visible = True
' Place some text in the first cell of the sheet.
ExcelSheet.Application.Cells(1, 1).Value = "This is column A, row 1"
' Save the sheet to C:\test.xls directory.
ExcelSheet.SaveAs "C:\TEST.XLS"
```

```
' Close Excel with the Quit method on the Application object.
ExcelSheet.Application.Quit
' Release the object variable.
Set ExcelSheet = Nothing
```

Declaring an object variable with the `As Object` clause creates a variable that can contain a reference to any type of object. However, access to the object through that variable is late bound; that is, the binding occurs when your program is run. To create an object variable that results in early binding, that is, binding when the program is compiled, declare the object variable with a specific class ID. For example, you can declare and create the following Microsoft Excel references:

```
Dim xlApp As Excel.Application
Dim xlBook As Excel.Workbook
Dim xlSheet As Excel.WorkSheet
Set xlApp = CreateObject("Excel.Application")
Set xlBook = xlApp.Workbooks.Add
Set xlSheet = xlBook.Worksheets(1)
```

The reference through an early-bound variable can give better performance, but can only contain a reference to the <u>class</u> specified in the <u>declaration</u>.

You can pass an object returned by the **CreateObject** function to a function expecting an object as an argument. For example, the following code creates and passes a reference to a Excel.Application object:

```
Call MySub (CreateObject("Excel.Application"))
```

You can create an object on a remote networked computer by passing the name of the computer to the *servername* argument of **CreateObject**. That name is the same as the Machine Name portion of a share name: for a share named "\\MyServer\Public," *servername* is "MyServer."

> **Note**  Refer to COM documentation (see *Microsoft Developer Network*) for additional information on making an application visible on a remote networked computer. You may have to add a registry key for your application.

The following code returns the version number of an instance of Excel running on a remote computer named `MyServer`:

```
Dim xlApp As Object
Set xlApp = CreateObject("Excel.Application", "MyServer")
Debug.Print xlApp.Version
```

If the remote server doesn't exist or is unavailable, a run-time error occurs.

> **Note**  Use **CreateObject** when there is no current instance of the object. If an instance of the object is already running, a new instance is started, and an object of the specified type is created. To use the current instance, or to start the application and have it load a file, use the **GetObject** function.
>
> If an object has registered itself as a single-instance object, only one instance of the object is created, no matter how many times **CreateObject** is executed.

# Declare Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmDeclareC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmDeclareX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmDeclareS"}

Used at module level to declare references to external procedures in a dynamic-link library (DLL).

**Syntax 1**

[**Public** | **Private**] **Declare Sub** *name* **Lib "***libname***"** [**Alias "***aliasname***"**] [**(**[*arglist*]**)**]

**Syntax 2**

[**Public** | **Private**] **Declare Function** *name* **Lib "***libname***"** [**Alias "***aliasname***"**] [**(**[*arglist*]**)**] [**As** *type*]

The **Declare** statement syntax has these parts:

| Part | Description |
|------|-------------|
| **Public** | Optional. Used to declare procedures that are available to all other procedures in all modules. |
| **Private** | Optional. Used to declare procedures that are available only within the module where the declaration is made. |
| **Sub** | Optional (either **Sub** or **Function** must appear). Indicates that the procedure doesn't return a value. |
| **Function** | Optional (either **Sub** or **Function** must appear). Indicates that the procedure returns a value that can be used in an expression. |
| *name* | Required. Any valid procedure name. Note that DLL entry points are case sensitive. |
| **Lib** | Required. Indicates that a DLL or code resource contains the procedure being declared. The **Lib** clause is required for all declarations. |
| *libname* | Required. Name of the DLL or code resource that contains the declared procedure. |
| **Alias** | Optional. Indicates that the procedure being called has another name in the DLL. This is useful when the external procedure name is the same as a keyword. You can also use **Alias** when a DLL procedure has the same name as a public variable, constant, or any other procedure in the same scope. **Alias** is also useful if any characters in the DLL procedure name aren't allowed by the DLL naming convention. |
| *aliasname* | Optional. Name of the procedure in the DLL or code resource. If the first character is not a number sign (**#**), *aliasname* is the name of the procedure's entry point in the DLL. If (**#**) is the first character, all characters that follow must indicate the ordinal number of the procedure's entry point. |
| *arglist* | Optional. List of variables representing arguments that are passed to the procedure when it is called. |
| *type* | Optional. Data type of the value returned by a **Function** procedure; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (variable length |

only), or <u>Variant</u>, a <u>user-defined type</u>, or an <u>object type</u>.

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*]

| Part | Description |
|------|-------------|
| **Optional** | Optional. Indicates that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. **Optional** can't be used for any argument if **ParamArray** is used. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** <u>array</u> of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. The **ParamArray** keyword can't be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument being passed to the procedure; follows standard variable naming conventions. |
| **( )** | Required for array variables. Indicates that *varname* is an array. |
| *type* | Optional. Data type of the argument passed to the procedure; may be **Byte**, **Boolean**, **Integer**, **Long**, **Currency**, **Single**, **Double**, **Decimal** (not currently supported), **Date**, **String** (variable length only), **Object**, **Variant**, a user-defined type, or an object type. |

**Remarks**

For **Function** procedures, the data type of the procedure determines the data type it returns. You can use an **As** clause following *arglist* to specify the return type of the function. Within *arglist*, you can use an **As** clause to specify the data type of any of the arguments passed to the procedure. In addition to specifying any of the standard data types, you can specify **As Any** in *arglist* to inhibit type checking and allow any data type to be passed to the procedure.

Empty parentheses indicate that the **Sub** or **Function** procedure has no arguments and that Visual Basic should ensure that none are passed. In the following example, `First` takes no arguments. If you use arguments in a call to `First`, an error occurs:

```
Declare Sub First Lib "MyLib" ()
```

If you include an argument list, the number and type of arguments are checked each time the procedure is called. In the following example, `First` takes one **Long** argument:

```
Declare Sub First Lib "MyLib" (X As Long)
```

**Note**   You can't have fixed-length strings in the argument list of a **Declare** statement; only variable-length strings can be passed to procedures. Fixed-length strings can appear as procedure arguments, but they are converted to variable-length strings before being passed.

**Note**   The **vbNullString** constant is used when calling external procedures, where the external procedure requires a string whose value is zero. This is not the same thing as a zero-length string ("").

# Deftype Statements

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpDeftypeC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vagrpDeftypeX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vagrpDefTypeS"}

Used at module level to set the default data type for variables, arguments passed to procedures, and the return type for **Function** and **Property Get** procedures whose names start with the specified characters.

**Syntax**

**DefBool** *letterrange*[**,** *letterrange*] **. . .**

**DefByte** *letterrange*[**,** *letterrange*] **. . .**

**DefInt** *letterrange*[**,** *letterrange*] **. . .**

**DefLng** *letterrange*[**,** *letterrange*] **. . .**

**DefCur** *letterrange*[**,** *letterrange*] **. . .**

**DefSng** *letterrange*[**,** *letterrange*] **. . .**

**DefDbl** *letterrange*[**,** *letterrange*] **. . .**

**DefDec** *letterrange*[**,** *letterrange*] **. . .**

**DefDate** *letterrange*[**,** *letterrange*] **. . .**

**DefStr** *letterrange*[**,** *letterrange*] **. . .**

**DefObj** *letterrange*[**,** *letterrange*] **. . .**

**DefVar** *letterrange*[**,** *letterrange*] **. . .**

The required *letterrange* argument has the following syntax:

*letter1*[**-***letter2*]

The *letter1* and *letter2* arguments specify the name range for which you can set a default data type. Each argument represents the first letter of the variable, argument, **Function** procedure, or **Property Get** procedure name and can be any letter of the alphabet. The case of letters in *letterrange* isn't significant.

**Remarks**

The statement name determines the data type:

| Statement | Data Type |
|-----------|-----------|
| **DefBool** | Boolean |
| **DefByte** | Byte |
| **DefInt** | Integer |
| **DefLng** | Long |
| **DefCur** | Currency |
| **DefSng** | Single |
| **DefDbl** | Double |
| **DefDec** | Decimal (not currently supported) |
| **DefDate** | Date |
| **DefStr** | String |

| **DefObj** | Object |
| --- | --- |
| **DefVar** | Variant |

For example, in the following program fragment, `Message` is a string variable:

```
DefStr A-Q

. . .
Message = "Out of stack space."
```

A **Def**type statement affects only the <u>module</u> where it is used. For example, a **DefInt** statement in one module affects only the default data type of variables, arguments passed to procedures, and the return type for **Function** and **Property Get** procedures declared in that module; the default data type of variables, arguments, and return types in other modules is unaffected. If not explicitly declared with a **Def**type statement, the default data type for all variables, all arguments, all **Function** procedures, and all **Property Get** procedures is **Variant**.

When you specify a letter range, it usually defines the data type for variables that begin with letters in the first 128 characters of the character set. However, when you specify the letter range A–Z, you set the default to the specified data type for all variables, including variables that begin with international characters from the extended part of the character set (128–255).

Once the range A–Z has been specified, you can't further redefine any subranges of variables using **Def**type statements. Once a range has been specified, if you include a previously defined letter in another **Def**type statement, an error occurs. However, you can explicitly specify the data type of any variable, defined or not, using a **Dim** statement with an **As** type clause. For example, you can use the following code at module level to define a variable as a **Double** even though the default data type is **Integer**:

```
DefInt A-Z
Dim TaxRate As Double
```

**Def**type statements don't affect elements of <u>user-defined types</u> because the elements must be explicitly declared.

# Dim Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmDimC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmDimX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmDimS"}

Declares variables and allocates storage space.

**Syntax**

**Dim** [**WithEvents**] *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*] [**,** [**WithEvents**]
*varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*]] **. . .**

The **Dim** statement syntax has these parts:

| Part | Description |
|------|-------------|
| **WithEvents** | Optional. Keyword that specifies that *varname* is an object variable used to respond to events triggered by an ActiveX object. **WithEvents** is valid only in class modules. You can declare as many individual variables as you like using **WithEvents**, but you can't create arrays with **WithEvents**. You can't use **New** with **WithEvents**. |
| *varname* | Required. Name of the variable; follows standard variable naming conventions. |
| *subscripts* | Optional. Dimensions of an array variable; up to 60 multiple dimensions may be declared. The *subscripts* argument uses the following syntax: <br><br>[*lower* **To**] *upper* [**,** [*lower* **To**] *upper*] **. . .** <br><br>When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| **New** | Optional. Keyword that enables implicit creation of an object. If you use **New** when declaring the object variable, a new instance of the object is created on first reference to it, so you don't have to use the **Set** statement to assign the object reference. The **New** keyword can't be used to declare variables of any intrinsic data type, can't be used to declare instances of dependent objects, and can't be used with **WithEvents**. |
| *type* | Optional. Data type of the variable; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, a user-defined type, or an object type. Use a separate **As** *type* clause for each variable you declare. |

**Remarks**

Variables declared with **Dim** at the module level are available to all procedures within the module. At the procedure level, variables are available only within the procedure.

Use the **Dim** statement at module or procedure level to declare the data type of a variable. For example, the following statement declares a variable as an **Integer**.

```
Dim NumberOfEmployees As Integer
```

Also use a **Dim** statement to declare the object type of a variable. The following declares a variable for a new instance of a worksheet.

```
Dim X As New Worksheet
```

If the **New** keyword is not used when declaring an object variable, the variable that refers to the object must be assigned an existing object using the **Set** statement before it can be used. Until it is assigned an object, the declared object variable has the special value **Nothing**, which indicates that it doesn't refer to any particular instance of an object.

You can also use the **Dim** statement with empty parentheses to declare a dynamic array. After declaring a dynamic array, use the **ReDim** statement within a procedure to define the number of dimensions and elements in the array. If you try to redeclare a dimension for an array variable whose size was explicitly specified in a **Private**, **Public**, or **Dim** statement, an error occurs.

If you don't specify a data type or object type, and there is no **Def**_type_ statement in the module, the variable is **Variant** by default.

When variables are initialized, a numeric variable is initialized to 0, a variable-length string is initialized to a zero-length string (""), and a fixed-length string is filled with zeros. **Variant** variables are initialized to Empty. Each element of a user-defined type variable is initialized as if it were a separate variable.

> **Note**  When you use the **Dim** statement in a procedure, you generally put the **Dim** statement at the beginning of the procedure.

# Enum Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmEnumC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmEnumX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmEnumS"}

Declares a type for an enumeration.

**Syntax**

[**Public** | **Private**] **Enum** *name*

    *membername* [= *constantexpression*]

    *membername* [= *constantexpression*]

      **. . .**

**End Enum**

The **Enum** statement has these parts:

| Part | Description |
| --- | --- |
| **Public** | Optional. Specifies that the **Enum** type is visible throughout the <u>project</u>. **Enum** types are **Public** by default. |
| **Private** | Optional. Specifies that the **Enum** type is visible only within the <u>module</u> in which it appears. |
| *name* | Required. The name of the **Enum** type. The *name* must be a valid Visual Basic identifier and is specified as the type when declaring <u>variables</u> or <u>parameters</u> of the **Enum** type. |
| *membername* | Required. A valid Visual Basic identifier specifying the name by which a constituent element of the **Enum** type will be known. |
| *constantexpression* | Optional. Value of the element (evaluates to a **Long**). If no *constantexpression* is specified, the value assigned is either zero (if it is the first *membername*), or 1 greater than the value of the immediately preceding *membername*. |

**Remarks**

Enumeration variables are variables declared with an **Enum** type. Both variables and parameters can be declared with an **Enum** type. The elements of the **Enum** type are initialized to constant values within the **Enum** statement. The assigned values can't be modified at <u>run time</u> and can include both positive and negative numbers. For example:

```
Enum SecurityLevel
    IllegalEntry = -1
    SecurityLevel1 = 0
    SecurityLevel2 = 1
End Enum
```

An **Enum** statement can appear only at <u>module level</u>. Once the **Enum** type is defined, it can be used to declare variables, parameters, or <u>procedures</u> returning its type. You can't qualify an **Enum** type name with a module name. **Public Enum** types in a <u>class module</u> are not members of the class; however, they are written to the <u>type library</u>. **Enum** types defined in <u>standard modules</u> aren't written to type libraries. **Public Enum** types of the same name

can't be defined in both standard modules and class modules, since they share the same name space. When two **Enum** types in different type libraries have the same name, but different elements, a reference to a variable of the type depends on which type library has higher priority in the **References**.

You can't use an **Enum** type as the target in a **With** block.

# Erase Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmEraseC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmEraseX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmEraseS"}

Reinitializes the elements of fixed-size <u>arrays</u> and releases dynamic-array storage space.

**Syntax**

**Erase** *arraylist*

The required *arraylist* <u>argument</u> is one or more comma-delimited array <u>variables</u> to be erased.

**Remarks**

**Erase** behaves differently depending on whether an array is fixed-size (ordinary) or dynamic. **Erase** recovers no memory for fixed-size arrays. **Erase** sets the elements of a fixed array as follows:

| Type of Array | Effect of Erase on Fixed-Array Elements |
|---|---|
| Fixed numeric array | Sets each element to zero. |
| Fixed string array (variable length) | Sets each element to a zero-length string (""). |
| Fixed string array (fixed length) | Sets each element to zero. |
| Fixed <u>Variant</u> array | Sets each element to <u>Empty</u>. |
| Array of <u>user-defined types</u> | Sets each element as if it were a separate variable. |
| Array of objects | Sets each element to the special value **Nothing**. |

**Erase** frees the memory used by dynamic arrays. Before your program can refer to the dynamic array again, it must redeclare the array variable's dimensions using a **ReDim** statement.

# Event Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmEventC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmEventX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmEventS"}

Declares a user-defined event.

**Syntax**

[**Public**] **Event** *procedurename* [**(***arglist***)**]

The **Event** statement has these parts:

| Part | Description |
|------|-------------|
| **Public** | Optional. Specifies that the **Event** visible throughout the project. **Events** types are **Public** by default. Note that events can only be raised in the module in which they are declared. |
| *procedurename* | Required. Name of the event; follows standard variable naming conventions. |

The *arglist* argument has the following syntax and parts:

[**ByVal** | **ByRef**] *varname*[**( )**] [**As** *type*]

| Part | Description |
|------|-------------|
| **ByVal** | Optional. Indicates that the argument is passed by value. |
| **ByRef** | Optional. Indicates that the argument is passed by reference. **ByRef** is the default in Visual Basic. |
| *varname* | Required. Name of the variable representing the argument being passed to the procedure; follows standard variable naming conventions. |
| *type* | Optional. Data type of the argument passed to the procedure; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (variable length only), Object, Variant, a user-defined type, or an object type. |

**Remarks**

Once the event has been declared, use the **RaiseEvent** statement to fire the event. A syntax error occurs if an **Event** declaration appears in a standard module. An event can't be declared to return a value. A typical event might be declared and raised as shown in the following fragments:

```
' Declare an event at module level of a class module


Event LogonCompleted (UserName as String)


Sub
   RaiseEvent LogonCompleted("AntoineJan")
End Sub
```

**Note**  You can declare event arguments just as you do arguments of procedures, with the following exceptions: events cannot have named arguments, **Optional** arguments,

or **ParamArray** arguments. Events do not have return values.

# Function Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmFunctionC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmFunctionX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmFunctionS"}

Declares the name, <u>arguments</u>, and code that form the body of a **Function** <u>procedure</u>.

**Syntax**

[**Public** | **Private** | **Friend**] [**Static**] **Function** *name* [(*arglist*)] [**As** *type*]
    [*statements*]
    [*name* **=** *expression*]
    [**Exit Function**]
    [*statements*]
    [*name* **=** *expression*]

**End Function**

The **Function** statement syntax has these parts:

| Part | Description |
|---|---|
| **Public** | Optional. Indicates that the **Function** procedure is accessible to all other procedures in all <u>modules</u>. If used in a module that contains an **Option Private**, the procedure is not available outside the <u>project</u>. |
| **Private** | Optional. Indicates that the **Function** procedure is accessible only to other procedures in the module where it is declared. |
| **Friend** | Optional. Used only in a <u>class module</u>. Indicates that the **Function** procedure is visible throughout the project, but not visible to a controller of an instance of an object. |
| **Static** | Optional. Indicates that the **Function** procedure's local <u>variables</u> are preserved between calls. The **Static** attribute doesn't affect variables that are declared outside the **Function**, even if they are used in the procedure. |
| *name* | Required. Name of the **Function**; follows standard variable naming conventions. |
| *arglist* | Optional. List of variables representing arguments that are passed to the **Function** procedure when it is called. Multiple variables are separated by commas. |
| *type* | Optional. <u>Data type</u> of the value returned by the **Function** procedure; may be <u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Currency</u>, <u>Single</u>, <u>Double</u>, <u>Decimal</u> (not currently supported), <u>Date</u>, <u>String</u>, or  (except fixed length), <u>Object</u>, <u>Variant</u>, or any <u>user-defined type</u>. |
| *statements* | Optional. Any group of statements to be executed within the **Function** procedure. |
| *expression* | Optional. Return value of the **Function**. |

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*] [**=** *defaultvalue*]

| Part | Description |
|---|---|

| | |
|---|---|
| **Optional** | Optional. Indicates that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. **Optional** can't be used for any argument if **ParamArray** is used. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Optional. Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** array of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. It may not be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument; follows standard variable naming conventions. |
| *type* | Optional. Data type of the argument passed to the procedure; may be **Byte**, **Boolean**, **Integer**, **Long**, **Currency**, **Single**, **Double**, **Decimal** (not currently supported) **Date**, **String** (variable length only), **Object**, **Variant**, or a specific <u>object type</u>. If the parameter is not **Optional**, a user-defined type may also be specified. |
| *defaultvalue* | Optional. Any <u>constant</u> or constant expression. Valid for **Optional** parameters only. If the type is an **Object**, an explicit default value can only be **Nothing**. |

**Remarks**

If not explicitly specified using **Public**, **Private**, or **Friend**, **Function** procedures are public by default. If **Static** isn't used, the value of local variables is not preserved between calls. The **Friend** keyword can only be used in class modules. However, **Friend** procedures can be accessed by procedures in any module of a project. A **Friend** procedure does't appear in the <u>type library</u> of its parent class, nor can a **Friend** procedure be late bound.

> **Caution**   **Function** procedures can be recursive; that is, they can call themselves to perform a given task. However, recursion can lead to stack overflow. The **Static** keyword usually isn't used with recursive **Function** procedures.

All executable code must be in procedures. You can't define a **Function** procedure inside another **Function**, **Sub**, or **Property** procedure.

The **Exit Function** statement causes an immediate exit from a **Function** procedure. Program execution continues with the statement following the statement that called the **Function** procedure. Any number of **Exit Function** statements can appear anywhere in a **Function** procedure.

Like a **Sub** procedure, a **Function** procedure is a separate procedure that can take arguments, perform a series of statements, and change the values of its arguments. However, unlike a **Sub** procedure, you can use a **Function** procedure on the right side of an <u>expression</u> in the same way you use any intrinsic function, such as **Sqr**, **Cos**, or **Chr**, when you want to use the value returned by the function.

You call a **Function** procedure using the function name, followed by the argument list in parentheses, in an expression. See the **Call** statement for specific information on how to call **Function** procedures.

To return a value from a function, assign the value to the function name. Any number of such assignments can appear anywhere within the procedure. If no value is assigned to *name*, the procedure returns a default value: a numeric function returns 0, a string function returns a zero-length string (""), and a **Variant** function returns <u>Empty</u>. A function that

returns an object reference returns **Nothing** if no object reference is assigned to *name* (using **Set**) within the **Function**.

The following example shows how to assign a return value to a function named `BinarySearch`. In this case, **False** is assigned to the name to indicate that some value was not found.

```
Function BinarySearch(. . .) As Boolean
. . .
   ' Value not found. Return a value of False.
   If lower > upper Then
      BinarySearch = False
      Exit Function
   End If
. . .
End Function
```

Variables used in **Function** procedures fall into two categories: those that are explicitly declared within the procedure and those that are not. Variables that are explicitly declared in a procedure (using **Dim** or the equivalent) are always local to the procedure. Variables that are used but not explicitly declared in a procedure are also local unless they are explicitly declared at some higher level outside the procedure.

> **Caution**   A procedure can use a variable that is not explicitly declared in the procedure, but a naming conflict can occur if anything you defined at the module level has the same name. If your procedure refers to an undeclared variable that has the same name as another procedure, constant, or variable, it is assumed that your procedure refers to that module-level name. Explicitly declare variables to avoid this kind of conflict. You can use an **Option Explicit** statement to force explicit declaration of variables.

> **Caution**   Visual Basic may rearrange arithmetic expressions to increase internal efficiency. Avoid using a **Function** procedure in an arithmetic expression when the function changes the value of variables in the same expression.

# GetObject Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctGetObjectC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctGetObjectX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctGetObjectS"}

Returns a reference to an object provided by an ActiveX component.

**Syntax**

**GetObject(**[*pathname*] [**,** *class*]**)**

The **GetObject** function syntax has these underlined named arguments:

| Part | Description |
|------|-------------|
| *pathname* | Optional; **Variant** (**String**). The full path and name of the file containing the object to retrieve. If *pathname* is omitted, *class* is required. |
| *class* | Optional; **Variant** (**String**). A string representing the class of the object. |

The *class* argument uses the syntax *appname***.***objecttype* and has these parts:

| Part | Description |
|------|-------------|
| *appname* | Required; **Variant** (**String**). The name of the application providing the object. |
| *objecttype* | Required; **Variant** (**String**). The type or class of object to create. |

**Remarks**

Use the **GetObject** function to access an ActiveX object from a file and assign the object to an object variable. Use the **Set** statement to assign the object returned by **GetObject** to the object variable. For example:

```
Dim CADObject As Object
Set CADObject = GetObject("C:\CAD\SCHEMA.CAD")
```

When this code is executed, the application associated with the specified *pathname* is started and the object in the specified file is activated.

If *pathname* is a zero-length string (""), **GetObject** returns a new object instance of the specified type. If the *pathname* argument is omitted, **GetObject** returns a currently active object of the specified type. If no object of the specified type exists, an error occurs.

Some applications allow you to activate part of a file. Add an exclamation point (**!**) to the end of the file name and follow it with a string that identifies the part of the file you want to activate. For information on how to create this string, see the documentation for the application that created the object.

For example, in a drawing application you might have multiple layers to a drawing stored in a file. You could use the following code to activate a layer within a drawing called SCHEMA.CAD:

```
Set LayerObject = GetObject("C:\CAD\SCHEMA.CAD!Layer3")
```

If you don't specify the object's *class*, Automation determines the application to start and the object to activate, based on the file name you provide. Some files, however, may

support more than one class of object. For example, a drawing might support three different types of objects: an **Application** object, a **Drawing** object, and a **Toolbar** object, all of which are part of the same file. To specify which object in a file you want to activate, use the optional *class* argument. For example:

```
Dim MyObject As Object
Set MyObject = GetObject("C:\DRAWINGS\SAMPLE.DRW", "FIGMENT.DRAWING")
```

In the example, FIGMENT is the name of a drawing application and DRAWING is one of the object types it supports.

Once an object is activated, you reference it in code using the object variable you defined. In the preceding example, you access <u>properties</u> and <u>methods</u> of the new object using the object variable MyObject. For example:

```
MyObject.Line 9, 90
MyObject.InsertText 9, 100, "Hello, world."
MyObject.SaveAs "C:\DRAWINGS\SAMPLE.DRW"
```

> **Note**   Use the **GetObject** function when there is a current instance of the object or if you want to create the object with a file already loaded. If there is no current instance, and you don't want the object started with a file loaded, use the **CreateObject** function.
>
> If an object has registered itself as a single-instance object, only one instance of the object is created, no matter how many times **CreateObject** is executed. With a single-instance object, **GetObject** always returns the same instance when called with the zero-length string ("") syntax, and it causes an error if the *pathname* argument is omitted. You can't use **GetObject** to obtain a reference to a class created with Visual Basic.

# Implements Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmImplementsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmImplementsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmImplementsS"}

Specifies an interface or class that will be implemented in the class module in which it appears.

**Syntax**

**Implements** [*InterfaceName* | *Class*]

The required *InterfaceName* or *Class* is the name of an interface or class in a type library whose methods will be implemented by the corresponding methods in the Visual Basic class.

**Remarks**

An interface is a collection of prototypes representing the members (methods and properties) the interface encapsulates; that is, it contains only the declarations for the member procedures. A class provides an implementation of all of the methods and properties of one or more interfaces. Classes provide the code used when each function is called by a controller of the class. All classes implement at least one interface, which is considered the default interface of the class. In Visual Basic, any member that isn't explicitly a member of an implemented interface is implicitly a member of the default interface.

When a Visual Basic class implements an interface, the Visual Basic class provides its own versions of all the **Public** procedures specified in the type library of the Interface. In addition to providing a mapping between the interface prototypes and your procedures, the **Implements** statement causes the class to accept COM QueryInterface calls for the specified interface ID.

    **Note**   Visual Basic does not implement derived classes or interfaces.

When you implement an interface or class, you must include all the **Public** procedures involved. A missing member in an implementation of an interface or class causes an error. If you don't place code in one of the procedures in a class you are implementing, you can raise the appropriate error (**Const** E_NOTIMPL = &H80004001) so a user of the implementation understands that a member is not implemented.

The **Implements** statement can't appear in a standard module.

# LBound Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLBoundC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLBoundX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLBoundS"}

Returns a <u>Long</u> containing the smallest available subscript for the indicated dimension of an <u>array</u>.

**Syntax**

**LBound(***arrayname*[**,** *dimension*]**)**

The **LBound** function syntax has these parts:

| Part | Description |
|------|-------------|
| *arrayname* | Required. Name of the array <u>variable</u>; follows standard variable naming conventions. |
| *dimension* | Optional; **Variant** (**Long**). Whole number indicating which dimension's lower bound is returned. Use 1 for the first dimension, 2 for the second, and so on. If *dimension* is omitted, 1 is assumed. |

**Remarks**

The **LBound** function is used with the **UBound** function to determine the size of an array. Use the **UBound** function to find the upper limit of an array dimension.

**LBound** returns the values in the following table for an array with the following dimensions:

Dim A(1 To 100, 0 To 3, -3 To 4)

| Statement | Return Value |
|-----------|--------------|
| LBound(A, 1) | 1 |
| LBound(A, 2) | 0 |
| LBound(A, 3) | -3 |

The default lower bound for any dimension is either 0 or 1, depending on the setting of the **Option Base** statement. The base of an array created with the **Array** function is zero; it is unaffected by **Option Base**.

Arrays for which dimensions are set using the **To** clause in a **Dim**, **Private**, **Public**, **ReDim**, or **Static** statement can have any integer value as a lower bound.

# Let Statement

Assigns the value of an expression to a variable or property.

**Syntax**

[**Let**] *varname* **=** *expression*

The **Let** statement syntax has these parts:

| Part | Description |
| --- | --- |
| **Let** | Optional. Explicit use of the **Let** keyword is a matter of style, but it is usually omitted. |
| *varname* | Required. Name of the variable or property; follows standard variable naming conventions. |
| *expression* | Required. Value assigned to the variable or property. |

**Remarks**

A value expression can be assigned to a variable or property only if it is of a data type that is compatible with the variable. You can't assign string expressions to numeric variables, and you can't assign numeric expressions to string variables. If you do, an error occurs at compile time.

Variant variables can be assigned either string or numeric expressions. However, the reverse is not always true. Any **Variant** except a Null can be assigned to a string variable, but only a **Variant** whose value can be interpreted as a number can be assigned to a numeric variable. Use the **IsNumeric** function to determine if the **Variant** can be converted to a number.

> **Caution**   Assigning an expression of one numeric type to a variable of a different numeric type coerces the value of the expression into the numeric type of the resulting variable.

**Let** statements can be used to assign one record variable to another only when both variables are of the same user-defined type. Use the **LSet** statement to assign record variables of different user-defined types. Use the **Set** statement to assign object references to variables.

# Option Base Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOptionBaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOptionBaseX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOptionBaseS"}

Used at <u>module level</u> to declare the default lower bound for <u>array</u> subscripts.

**Syntax**

**Option Base** {**0 | 1**}

**Remarks**

Because the default base is **0**, the **Option Base** statement is never required. If used, the <u>statement</u> must appear in a <u>module</u> before any <u>procedures</u>. **Option Base** can appear only once in a module and must precede array <u>declarations</u> that include dimensions.

> **Note**   The **To** clause in the **Dim**, **Private**, **Public**, **ReDim**, and **Static** statements provides a more flexible way to control the range of an array's subscripts. However, if you don't explicitly set the lower bound with a **To** clause, you can use **Option Base** to change the default lower bound to 1.   The base of an array created with the the the **ParamArray** keyword is zero; **Option Base** does not affect **ParamArray** (or the **Array** function, when qualified with the name of its type library, for example **VBA.Array**).

The **Option Base** statement only affects the lower bound of arrays in the module where the statement is located.

# Option Compare Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOptionCompareC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOptionCompareX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOptionCompareS"}

Used at module level to declare the default comparison method to use when string data is compared.

**Syntax**

**Option Compare** {**Binary** | **Text** | **Database**}

**Remarks**

If used, the **Option Compare** statement must appear in a module before any procedures.

The **Option Compare** statement specifies the string comparison method (**Binary**, **Text**, or **Database**) for a module. If a module doesn't include an **Option Compare** statement, the default text comparison method is **Binary**.

**Option Compare Binary** results in string comparisons based on a sort order derived from the internal binary representations of the characters. In Microsoft Windows, sort order is determined by the code page. A typical binary sort order is shown in the following example:

```
A < B < E < Z < a < b < e < z < À < Ê < Ø < à < ê < ø
```

**Option Compare Text** results in string comparisons based on a case-insensitive text sort order determined by your system's locale. When the same characters are sorted using **Option Compare Text**, the following text sort order is produced:

```
(A=a) < ( À=à) < (B=b) < (E=e) < (Ê=ê) < (Z=z) < (Ø=ø)
```

**Option Compare Database** can only be used within Microsoft Access. This results in string comparisons based on the sort order determined by the locale ID of the database where the string comparisons occur.

# Option Explicit Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOptionExplicitC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOptionExplicitX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOptionExplicitS"}

Used at module level to force explicit declaration of all variables in that module.

**Syntax**

**Option Explicit**

**Remarks**

If used, the **Option Explicit** statement must appear in a module before any procedures.

When **Option Explicit** appears in a module, you must explicitly declare all variables using the **Dim**, **Private**, **Public**, **ReDim**, or **Static** statements. If you attempt to use an undeclared variable name, an error occurs at compile time.

If you don't use the **Option Explicit** statement, all undeclared variables are of **Variant** type unless the default type is otherwise specified with a **Def***type* statement.

> **Note**   Use **Option Explicit** to avoid incorrectly typing the name of an existing variable or to avoid confusion in code where the scope of the variable is not clear.

# Option Private Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOptionPrivateC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOptionPrivateX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOptionPrivateS"}

When used in host applications that allow references across multiple projects, **Option Private Module** prevents a module's contents from being referenced outside its project. In host applications that don't permit such references, for example, standalone versions of Visual Basic, **Option Private** has no effect.

**Syntax**

**Option Private Module**

**Remarks**

If used, the **Option Private** statement must appear at module level, before any procedures.

When a module contains **Option Private Module**, the public parts, for example, variables, objects, and user-defined types declared at module level, are still available within the project containing the module, but they are not available to other applications or projects.

> **Note**   **Option Private** is only useful for host applications that support simultaneous loading of multiple projects and permit references between the loaded projects. For example, Microsoft Excel permits loading of multiple projects and **Option Private Module** can be used to restrict cross-project visibility. Although Visual Basic permits loading of multiple projects, references between projects are never permitted in Visual Basic.

# Private Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPrivateC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmPrivateX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmPrivateS"}

Used at module level to declare private variables and allocate storage space.

**Syntax**

**Private** [**WithEvents**] *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*] [**,**[**WithEvents**] *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*]] **. . .**

The **Private** statement syntax has these parts:

| Part | Description |
|------|-------------|
| **WithEvents** | Optional. Keyword that specifies that *varname* is an object variable used to respond to events triggered by an ActiveX object. **WithEvents** is valid only in class modules. You can declare as many individual variables as you like using **WithEvents**, but you can't create arrays with **WithEvents**. You can't use **New** with **WithEvents**. |
| *varname* | Required. Name of the variable; follows standard variable naming conventions. |
| *subscripts* | Optional. Dimensions of an array variable; up to 60 multiple dimensions may be declared. The *subscripts* argument uses the following syntax: |
| | [*lower* **To**] *upper* [**,**[*lower* **To**] *upper*] **. . .** |
| | When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| **New** | Optional. Keyword that enables implicit creation of an object. If you use **New** when declaring the object variable, a new instance of the object is created on first reference to it, so you don't have to use the **Set** statement to assign the object reference. The **New** keyword can't be used to declare variables of any intrinsic data type, can't be used to declare instances of dependent objects, and can't be used with **WithEvents**. |
| *type* | Optional. Data type of the variable; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, a user-defined type, or an object type. Use a separate **As** *type* clause for each variable being defined. |

**Remarks**

**Private** variables are available only to the module in which they are declared.

Use the **Private** statement to declare the data type of a variable. For example, the following statement declares a variable as an **Integer**:

```
Private NumberOfEmployees As Integer
```

You can also use a **Private** statement to declare the object type of a variable. The following statement declares a variable for a new instance of a worksheet.

```
Private X As New Worksheet
```

If the **New** keyword isn't used when declaring an object variable, the variable that refers to the object must be assigned an existing object using the **Set** statement before it can be used. Until it's assigned an object, the declared object variable has the special value **Nothing**, which indicates that it doesn't refer to any particular instance of an object.

If you don't specify a data type or object type, and there is no **Def***type* statement in the module, the variable is **Variant** by default.

You can also use the **Private** statement with empty parentheses to declare a dynamic array. After declaring a dynamic array, use the **ReDim** statement within a procedure to define the number of dimensions and elements in the array. If you try to redeclare a dimension for an array variable whose size was explicitly specified in a **Private**, **Public**, or **Dim** statement, an error occurs.

When variables are initialized, a numeric variable is initialized to 0, a variable-length string is initialized to a zero-length string (""), and a fixed-length string is filled with zeros. **Variant** variables are initialized to Empty. Each element of a user-defined type variable is initialized as if it were a separate variable.

> **Note**   When you use the **Private** statement in a procedure, you generally put the **Private** statement at the beginning of the procedure.

# Property Get Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPropertyGetC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmPropertyGetX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmPropertyGetS"}

Declares the name, arguments, and code that form the body of a **Property** procedure, which gets the value of a property.

**Syntax**

[**Public** | **Private** | **Friend**] [**Static**] **Property Get** *name* [**(***arglist***)**] [**As** *type*]
    [*statements*]
    [*name* **=** *expression*]
    [**Exit Property**]
    [*statements*]
    [*name* **=** *expression*]

**End Property**

The **Property Get** statement syntax has these parts:

| Part | Description |
|---|---|
| **Public** | Optional. Indicates that the **Property Get** procedure is accessible to all other procedures in all modules. If used in a module that contains an **Option Private** statement, the procedure is not available outside the project. |
| **Private** | Optional. Indicates that the **Property Get** procedure is accessible only to other procedures in the module where it is declared. |
| **Friend** | Optional. Used only in a class module. Indicates that the **Property Get** procedure is visible throughout the project, but not visible to a controller of an instance of an object. |
| **Static** | Optional. Indicates that the **Property Get** procedure's local variables are preserved between calls. The **Static** attribute doesn't affect variables that are declared outside the **Property Get** procedure, even if they are used in the procedure. |
| *name* | Required. Name of the **Property Get** procedure; follows standard variable naming conventions, except that the name can be the same as a **Property Let** or **Property Set** procedure in the same module. |
| *arglist* | Optional. List of variables representing arguments that are passed to the **Property Get** procedure when it is called. Multiple arguments are separated by commas. The name and data type of each argument in a **Property Get** procedure must be the same as the corresponding argument in a **Property Let** procedure (if one exists). |
| *type* | Optional. Data type of the value returned by the **Property Get** procedure; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (except fixed length), Object, Variant, user-defined type, and Arrays. |
| | The return *type* of a **Property Get** procedure must be the same data type as the last (or sometimes the only) argument in a corresponding **Property Let** procedure (if one exists) that defines the value assigned to the property on the right side of an |

<u>expression</u>.

| | |
|---|---|
| *statements* | Optional. Any group of statements to be executed within the body of the **Property Get** procedure. |
| *expression* | Optional. Value of the property returned by the procedure defined by the **Property Get** statement. |

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*] [**=** *defaultvalue*]

| Part | Description |
|---|---|
| **Optional** | Optional. Indicates that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Optional. Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** array of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. It may not be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument; follows standard variable naming conventions. |
| *type* | Optional. Data type of the argument passed to the procedure; may be **Byte**, **Boolean**, **Integer**, **Long**, **Currency**, **Single**, **Double**, **Decimal** (not currently supported), **Date**, **String** (variable length only), **Object**, **Variant**, or a specific <u>object type</u>. If the parameter is not **Optional**, a user-defined type may also be specified. |
| *defaultvalue* | Optional. Any <u>constant</u> or constant expression. Valid for **Optional** parameters only. If the type is an **Object**, an explicit default value can only be **Nothing**. |

**Remarks**

If not explicitly specified using **Public**, **Private**, or **Friend**, **Property** procedures are public by default. If **Static** is not used, the value of local variables is not preserved between calls. The **Friend** keyword can only be used in class modules. However, **Friend** procedures can be accessed by procedures in any module of a project. A **Friend** procedure doesn't appear in the <u>type library</u> of its parent class, nor can a **Friend** procedure be late bound.

All executable code must be in procedures. You can't define a **Property Get** procedure inside another **Property**, **Sub**, or **Function** procedure.

The **Exit Property** statement causes an immediate exit from a **Property Get** procedure. Program execution continues with the statement following the statement that called the **Property Get** procedure. Any number of **Exit Property** statements can appear anywhere in a **Property Get** procedure.

Like a **Sub** and **Property Let** procedure, a **Property Get** procedure is a separate procedure that can take arguments, perform a series of statements, and change the values of its arguments. However, unlike a **Sub** or **Property Let** procedure, you can use a **Property Get** procedure on the right side of an expression in the same way you use a **Function** or a property name when you want to return the value of a property.

# Property Let Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPropertyLetC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmPropertyLetX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmPropertyLetS"}

Declares the name, arguments, and code that form the body of a **Property Let** procedure, which assigns a value to a property.

**Syntax**

[**Public** | **Private** | **Friend**] [**Static**] **Property Let** *name* **(**[*arglist***,**] *value***)**
    [*statements*]
    [**Exit Property**]
    [*statements*]

**End Property**

The **Property Let** statement syntax has these parts:

| Part | Description |
| --- | --- |
| **Public** | Optional. Indicates that the **Property Let** procedure is accessible to all other procedures in all modules. If used in a module that contains an **Option Private** statement, the procedure is not available outside the project. |
| **Private** | Optional. Indicates that the **Property Let** procedure is accessible only to other procedures in the module where it is declared. |
| **Friend** | Optional. Used only in a class module. Indicates that the **Property Let** procedure is visible throughout the project, but not visible to a controller of an instance of an object. |
| **Static** | Optional. Indicates that the **Property Let** procedure's local variables are preserved between calls. The **Static** attribute doesn't affect variables that are declared outside the **Property Let** procedure, even if they are used in the procedure. |
| *name* | Required. Name of the **Property Let** procedure; follows standard variable naming conventions, except that the name can be the same as a **Property Get** or **Property Set** procedure in the same module. |
| *arglist* | Required. List of variables representing arguments that are passed to the **Property Let** procedure when it is called. Multiple arguments are separated by commas. The name and data type of each argument in a **Property Let** procedure must be the same as the corresponding argument in a **Property Get** procedure. |
| *value* | Required. Variable to contain the value to be assigned to the property. When the procedure is called, this argument appears on the right side of the calling expression. The data type of *value* must be the same as the return type of the corresponding **Property Get** procedure. |
| *statements* | Optional. Any group of statements to be executed within the **Property Let** procedure. |

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*] [**=** *defaultvalue*]

| Part | Description |
|------|-------------|
| **Optional** | Optional. Indicates that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. Note that it is not possible for the right side of a **Property Let** expression to be **Optional**. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Optional. Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** array of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. It may not be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument; follows standard variable naming conventions. |
| *type* | Optional. Data type of the argument passed to the procedure; may be <u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Currency</u>, <u>Single</u>, <u>Double</u>, <u>Decimal</u> (not currently supported), <u>Date</u>, <u>String</u> (variable length only), <u>Object</u>, <u>Variant</u>, or a specific <u>object type</u>. If the parameter is not **Optional**, a <u>user-defined type</u> may also be specified. |
| *defaultvalue* | Optional. Any <u>constant</u> or constant expression. Valid for **Optional** parameters only. If the type is an **Object**, an explicit default value can only be **Nothing**. |

**Note**   Every **Property Let** statement must define at least one argument for the procedure it defines. That argument (or the last argument if there is more than one) contains the actual value to be assigned to the property when the procedure defined by the **Property Let** statement is invoked. That argument is referred to as *value* in the preceding syntax.

## Remarks

If not explicitly specified using **Public**, **Private**, or **Friend**, **Property** procedures are public by default. If **Static** isn't used, the value of local variables is not preserved between calls. The **Friend** keyword can only be used in class modules. However, **Friend** procedures can be accessed by procedures in any module of a project. A **Friend** procedure doesn't appear in the <u>type library</u> of its parent class, nor can a **Friend** procedure be late bound.

All executable code must be in procedures. You can't define a **Property Let** procedure inside another **Property**, **Sub**, or **Function** procedure.

The **Exit Property** statement causes an immediate exit from a **Property Let** procedure. Program execution continues with the statement following the statement that called the **Property Let** procedure. Any number of **Exit Property** statements can appear anywhere in a **Property Let** procedure.

Like a **Function** and **Property Get** procedure, a **Property Let** procedure is a separate procedure that can take arguments, perform a series of statements, and change the value of its arguments. However, unlike a **Function** and **Property Get** procedure, both of which return a value, you can only use a **Property Let** procedure on the left side of a property assignment expression or **Let** statement.

# Property Set Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPropertySetC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmPropertySetX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmPropertySetS"}

Declares the name, <u>arguments</u>, and code that form the body of a **Property** <u>procedure</u>, which sets a reference to an <u>object</u>.

**Syntax**

[**Public** | **Private** | **Friend**] [**Static**] **Property Set** *name* **(**[*arglist***,**] *reference***)**
    [*statements*]
    [**Exit Property**]
    [*statements*]

**End Property**

The **Property Set** statement syntax has these parts:

| Part | Description |
|---|---|
| **Optional** | Optional. Indicates that the argument may or may not be supplied by the caller. |
| **Public** | Optional. Indicates that the **Property Set** procedure is accessible to all other procedures in all <u>modules</u>. If used in a module that contains an **Option Private** statement, the procedure is not available outside the <u>project</u>. |
| **Private** | Optional. Indicates that the **Property Set** procedure is accessible only to other procedures in the module where it is declared. |
| **Friend** | Optional. Used only in a <u>class module</u>. Indicates that the **Property Set** procedure is visible throughout the <u>project</u>, but not visible to a controller of an instance of an object. |
| **Static** | Optional. Indicates that the **Property Set** procedure's local <u>variables</u> are preserved between calls. The **Static** attribute doesn't affect variables that are declared outside the **Property Set** procedure, even if they are used in the procedure. |
| *name* | Required. Name of the **Property Set** procedure; follows standard variable naming conventions, except that the name can be the same as a **Property Get** or **Property Let** procedure in the same module. |
| *arglist* | Required. List of variables representing arguments that are passed to the **Property Set** procedure when it is called. Multiple arguments are separated by commas. |
| *reference* | Required. Variable containing the object reference used on the right side of the object reference assignment. |
| *statements* | Optional. Any group of statements to be executed within the body of the **Property** procedure. |

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*] [**=** *defaultvalue*]

| Part | Description |
|---|---|

| | |
|---|---|
| **Optional** | Optional. Indicates that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. Note that it is not possible for the right side of a **Property Set** <u>expression</u> to be **Optional**. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Optional. Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** array of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. It may not be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument; follows standard variable naming conventions. |
| *type* | Optional. <u>Data type</u> of the argument passed to the procedure; may be <u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Currency</u>, <u>Single</u>, <u>Double</u>, <u>Decimal</u> (not currently supported), <u>Date</u>, <u>String</u> (variable length only), <u>Object</u>, <u>Variant</u>, or a specific <u>object type</u>. If the parameter is not **Optional**, a <u>user-defined type</u> may also be specified. |
| *defaultvalue* | Optional. Any <u>constant</u> or constant expression. Valid for **Optional** parameters only. If the type is an **Object**, an explicit default value can only be **Nothing**. |

**Note**   Every **Property Set** statement must define at least one argument for the procedure it defines. That argument (or the last argument if there is more than one) contains the actual object reference for the property when the procedure defined by the **Property Set** statement is invoked. It is referred to as *reference* in the preceding syntax. It can't be **Optional**.

**Remarks**

If not explicitly specified using **Public**, **Private**, or **Friend**, **Property** procedures are public by default. If **Static** isn't used, the value of local variables is not preserved between calls. The **Friend** keyword can only be used in class modules. However, **Friend** procedures can be accessed by procedures in any module of a project. A **Friend** procedure doesn't appear in the <u>type library</u> of its parent class, nor can a **Friend** procedure be late bound.

All executable code must be in procedures. You can't define a **Property Set** procedure inside another **Property**, **Sub**, or **Function** procedure.

The **Exit Property** statement causes an immediate exit from a **Property Set** procedure. Program execution continues with the statement following the statement that called the **Property Set** procedure. Any number of **Exit Property** statements can appear anywhere in a **Property Set** procedure.

Like a **Function** and **Property Get** procedure, a **Property Set** procedure is a separate procedure that can take arguments, perform a series of statements, and change the value of its arguments. However, unlike a **Function** and **Property Get** procedure, both of which return a value, you can only use a **Property Set** procedure on the left side of an object reference assignment (**Set** statement).

# Public Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPublicC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmPublicX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmPublicS"}

Used at module level to declare public variables and allocate storage space.

**Syntax**

**Public** [**WithEvents**] *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*] [**,**[**WithEvents**]
*varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*]] **. . .**

The **Public** statement syntax has these parts:

| Part | Description |
|---|---|
| **WithEvents** | Optional. Keyword specifying that *varname* is an object variable used to respond to events triggered by an ActiveX object. **WithEvents** is valid only in class modules. You can declare as many individual variables as you like using **WithEvents**, but you can't create arrays with **WithEvents**. You can't use **New** with **WithEvents**. |
| *varname* | Required. Name of the variable; follows standard variable naming conventions. |
| *subscripts* | Optional. Dimensions of an array variable; up to 60 multiple dimensions may be declared. The *subscripts* argument uses the following syntax: |
| | [*lower* **To**] *upper* [**,**[*lower* **To**] *upper*] **. . .** |
| | When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| **New** | Optional. Keyword that enables implicit creation of an object. If you use **New** when declaring the object variable, a new instance of the object is created on first reference to it, so you don't have to use the **Set** statement to assign the object reference. The **New** keyword can't be used to declare variables of any intrinsic data type, can't be used to declare instances of dependent objects, and can't be used with **WithEvents**. |
| *type* | Optional. Data type of the variable; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String, (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, a user-defined type, or an object type. Use a separate **As** *type* clause for each variable being defined. |

**Remarks**

Variables declared using the **Public** statement are available to all procedures in all modules in all applications unless **Option Private Module** is in effect; in which case, the variables are public only within the project in which they reside.

   **Caution**   The **Public** statement can't be used in a class module to declare a fixed-length string variable.

Use the **Public** statement to declare the data type of a variable. For example, the following

statement declares a variable as an **Integer**:

```
Public NumberOfEmployees As Integer
```

Also use a **Public** statement to declare the object type of a variable. The following statement declares a variable for a new instance of a worksheet.

```
Public X As New Worksheet
```

If the **New** keyword is not used when declaring an object variable, the variable that refers to the object must be assigned an existing object using the **Set** statement before it can be used. Until it is assigned an object, the declared object variable has the special value **Nothing**, which indicates that it doesn't refer to any particular instance of an object.

You can also use the **Public** statement with empty parentheses to declare a dynamic array. After declaring a dynamic array, use the **ReDim** statement within a procedure to define the number of dimensions and elements in the array. If you try to redeclare a dimension for an array variable whose size was explicitly specified in a **Private**, **Public**, or **Dim** statement, an error occurs.

If you don't specify a data type or object type and there is no **Def**_type_ statement in the module, the variable is **Variant** by default.

When variables are initialized, a numeric variable is initialized to 0, a variable-length string is initialized to a zero-length string (""), and a fixed-length string is filled with zeros. **Variant** variables are initialized to Empty. Each element of a user-defined type variable is initialized as if it were a separate variable.

# ReDim Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmReDimC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmReDimX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmReDimS"}

Used at procedure level to reallocate storage space for dynamic array variables.

**Syntax**

**ReDim** [**Preserve**] *varname*(*subscripts*) [**As** *type*] [**,** *varname*(*subscripts*) [**As** *type*]] **. . .**

The **ReDim** statement syntax has these parts:

| Part | Description |
|------|-------------|
| **Preserve** | Optional. Keyword used to preserve the data in an existing array when you change the size of the last dimension. |
| *varname* | Required. Name of the variable; follows standard variable naming conventions. |
| *subscripts* | Required. Dimensions of an array variable; up to 60 multiple dimensions may be declared. The *subscripts* argument uses the following syntax:<br><br>[*lower* **To**] *upper* [**,**[*lower* **To**] *upper*] **. . .**<br><br>When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| *type* | Optional. Data type of the variable; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, a user-defined type, or an object type. Use a separate **As** *type* clause for each variable being defined. For a **Variant** containing an array, *type* describes the type of each element of the array, but doesn't change the **Variant** to some other type. |

**Remarks**

The **ReDim** statement is used to size or resize a dynamic array that has already been formally declared using a **Private**, **Public**, or **Dim** statement with empty parentheses (without dimension subscripts).

You can use the **ReDim** statement repeatedly to change the number of elements and dimensions in an array. However, you can't declare an array of one data type and later use **ReDim** to change the array to another data type, unless the array is contained in a **Variant**. If the array is contained in a **Variant**, the type of the elements can be changed using an **As** *type* clause, unless you're using the **Preserve** keyword, in which case, no changes of data type are permitted.

If you use the **Preserve** keyword, you can resize only the last array dimension and you can't change the number of dimensions at all. For example, if your array has only one dimension, you can resize that dimension because it is the last and only dimension. However, if your array has two or more dimensions, you can change the size of only the last dimension and still preserve the contents of the array. The following example shows how you can increase the size of the last dimension of a dynamic array without erasing any existing data contained in the array.

```
ReDim X(10, 10, 10)
. . .
ReDim Preserve X(10, 10, 15)
```

Similarly, when you use **Preserve**, you can change the size of the array only by changing the upper bound; changing the lower bound causes an error.

If you make an array smaller than it was, data in the eliminated elements will be lost. If you pass an array to a procedure by reference, you can't redimension the array within the procedure.

When variables are initialized, a numeric variable is initialized to 0, a variable-length string is initialized to a zero-length string (""), and a fixed-length string is filled with zeros. **Variant** variables are initialized to Empty. Each element of a user-defined type variable is initialized as if it were a separate variable. A variable that refers to an object must be assigned an existing object using the **Set** statement before it can be used. Until it is assigned an object, the declared object variable has the special value **Nothing**, which indicates that it doesn't refer to any particular instance of an object.

> **Caution**   The **ReDim** statement acts as a declarative statement if the variable it declares doesn't exist at module level or procedure level. If another variable with the same name is created later, even in a wider scope, **ReDim** will refer to the later variable and won't necessarily cause a compilation error, even if **Option Explicit** is in effect. To avoid such conflicts, **ReDim** should not be used as a declarative statement, but simply for redimensioning arrays.

> **Note**   To resize an array contained in a **Variant**, you must explicitly declare the **Variant** variable before attempting to resize its array.

# Rem Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmRemC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmRemX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmRemS"}

Used to include explanatory remarks in a program.

**Syntax**

**Rem** *comment*

You can also use the following syntax:

**'** *comment*

The optional *comment* <u>argument</u> is the text of any <u>comment</u> you want to include. A space is required between the **Rem** <u>keyword</u> and *comment*.

**Remarks**

If you use <u>line numbers</u> or <u>line labels</u>, you can branch from a **GoTo** or **GoSub** <u>statement</u> to a line containing a **Rem** statement. Execution continues with the first executable statement following the **Rem** statement. If the **Rem** keyword follows other statements on a line, it must be separated from the statements by a colon (**:**).

You can use an apostrophe (**'**) instead of the **Rem** keyword. When you use an apostrophe, the colon is not required after other statements.

# Set Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSetC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmSetX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmSetS"}

Assigns an object reference to a <u>variable</u> or <u>property</u>.

**Syntax**

**Set** *objectvar* **=** {[**New**] *objectexpression* | **Nothing**}

The **Set** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *objectvar* | Required. Name of the variable or property; follows standard variable naming conventions. |
| **New** | Optional. **New** is usually used during declaration to enable implicit object creation. When **New** is used with **Set**, it creates a new instance of the <u>class</u>. If *objectvar* contained a reference to an object, that reference is released when the new one is assigned. The **New** <u>keyword</u> can't be used to create new instances of any intrinsic <u>data type</u> and can't be used to create dependent objects. |
| *objectexpression* | Required. <u>Expression</u> consisting of the name of an object, another declared variable of the same <u>object type</u>, or a function or <u>method</u> that returns an object of the same object type. |
| **Nothing** | Optional. Discontinues association of *objectvar* with any specific object. Assigning **Nothing** to *objectvar* releases all the system and memory resources associated with the previously referenced object when no other variable refers to it. |

**Remarks**

To be valid, *objectvar* must be an object type consistent with the object being assigned to it.

The **Dim**, **Private**, **Public**, **ReDim**, and **Static** statements only declare a variable that refers to an object. No actual object is referred to until you use the **Set** statement to assign a specific object.

The following example illustrates how **Dim** is used to declare an <u>array</u> with the type `Form1`. No instance of `Form1` actually exists. **Set** then assigns references to new instances of `Form1` to the `myChildForms` variable. Such code might be used to create child forms in an MDI application.

```
Dim myChildForms(1 to 4) As Form1
Set myChildForms(1) = New Form1
Set myChildForms(2) = New Form1
Set myChildForms(3) = New Form1
Set myChildForms(4) = New Form1
```

Generally, when you use **Set** to assign an object reference to a variable, no copy of the object is created for that variable. Instead, a reference to the object is created. More than

one <u>object variable</u> can refer to the same object. Because such variables are references to the object rather than copies of the object, any change in the object is reflected in all variables that refer to it. However, when you use the **New** keyword in the **Set** statement, you are actually creating an instance of the object.

# Static Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmStaticC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmStaticX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmStaticS"}

Used at procedure level to declare variables and allocate storage space. Variables declared with the **Static** statement retain their values as long as the code is running.

**Syntax**

**Static** *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*] [**,** *varname*[**(**[*subscripts*]**)**] [**As** [**New**] *type*]] **. . .**

The **Static** statement syntax has these parts:

| Part | Description |
|---|---|
| *varname* | Required. Name of the variable; follows standard variable naming conventions. |
| *subscripts* | Optional. Dimensions of an array variable; up to 60 multiple dimensions may be declared. The *subscripts* argument uses the following syntax: |
| | [*lower* **To**] *upper* [**,**[*lower* **To**] *upper*] **. . .** |
| | When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| **New** | Optional. Keyword that enables implicit creation of an object. If you use **New** when declaring the object variable, a new instance of the object is created on first reference to it, so you don't have to use the **Set** statement to assign the object reference. The **New** keyword can't be used to declare variables of any intrinsic data type and can't be used to declare instances of dependent objects. |
| *type* | Optional. Data type of the variable; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String, (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, a user-defined type, or an object type. Use a separate **As** *type* clause for each variable being defined. |

**Remarks**

Once module code is running, variables declared with the **Static** statement retain their value until the module is reset or restarted. In class modules, variables declared with the **Static** statement retain their value in each class instance until that instance is destroyed. In form modules, static variables retain their value until the form is closed. Use the **Static** statement in nonstatic procedures to explicitly declare variables that are visible only within the procedure, but whose lifetime is the same as the module in which the procedure is defined.

Use a **Static** statement within a procedure to declare the data type of a variable that retains its value between procedure calls. For example, the following statement declares a fixed-size array of integers:

```
Static EmployeeNumber(200) As Integer
```

The following statement declares a variable for a new instance of a worksheet:

```
Static X As New Worksheet
```

If the **New** keyword isn't used when declaring an object variable, the variable that refers to the object must be assigned an existing object using the **Set** statement before it can be used. Until it is assigned an object, the declared object variable has the special value **Nothing**, which indicates that it doesn't refer to any particular instance of an object. When you use the **New** keyword in the <u>declaration</u>, an instance of the object is created on the first reference to the object.

If you don't specify a data type or object type, and there is no **Def**_type_ statement in the module, the variable is **Variant** by default.

> **Note**  The **Static** statement and the **Static** keyword are similar, but used for different effects. If you declare a procedure using the **Static** keyword (as in `Static Sub CountSales ()`), the storage space for all local variables within the procedure is allocated once, and the value of the variables is preserved for the entire time the program is running. For nonstatic procedures, storage space for variables is allocated each time the procedure is called and released when the procedure is exited. The **Static** statement is used to declare specific variables within nonstatic procedures to preserve their value for as long as the program is running.

When variables are initialized, a numeric variable is initialized to 0, a variable-length string is initialized to a zero-length string (""), and a fixed-length string is filled with zeros. **Variant** variables are initialized to <u>Empty</u>. Each element of a user-defined type variable is initialized as if it were a separate variable.

> **Note**  When you use **Static** statements within a procedure, put them at the beginning of the procedure with other declarative statements such as **Dim**.

# Sub Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSubC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmSubX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmSubS"}

Declares the name, <u>arguments</u>, and code that form the body of a **Sub** <u>procedure</u>.

**Syntax**

[**Private** | **Public** | **Friend**] [**Static**] **Sub** *name* [**(***arglist***)**]
    [*statements*]
    [**Exit Sub**]
    [*statements*]

**End Sub**

The **Sub** statement syntax has these parts:

| Part | Description |
|---|---|
| **Public** | Optional. Indicates that the **Sub** procedure is accessible to all other procedures in all <u>modules</u>. If used in a module that contains an **Option Private** statement, the procedure is not available outside the <u>project</u>. |
| **Private** | Optional. Indicates that the **Sub** procedure is accessible only to other procedures in the module where it is declared. |
| **Friend** | Optional. Used only in a <u>class module</u>. Indicates that the **Sub** procedure is visible throughout the <u>project</u>, but not visible to a controller of an instance of an object. |
| **Static** | Optional. Indicates that the **Sub** procedure's local <u>variables</u> are preserved between calls. The **Static** attribute doesn't affect variables that are declared outside the **Sub**, even if they are used in the procedure. |
| *name* | Required. Name of the **Sub**; follows standard <u>variable</u> naming conventions. |
| *arglist* | Optional. List of variables representing arguments that are passed to the **Sub** procedure when it is called. Multiple variables are separated by commas. |
| *statements* | Optional. Any group of <u>statements</u> to be executed within the **Sub** procedure. |

The *arglist* argument has the following syntax and parts:

[**Optional**] [**ByVal** | **ByRef**] [**ParamArray**] *varname*[**( )**] [**As** *type*] [**=** *defaultvalue*]

| Part | Description |
|---|---|
| **Optional** | Optional. <u>Keyword</u> indicating that an argument is not required. If used, all subsequent arguments in *arglist* must also be optional and declared using the **Optional** keyword. **Optional** can't be used for any argument if **ParamArray** is used. |
| **ByVal** | Optional. Indicates that the argument is passed <u>by value</u>. |
| **ByRef** | Optional. Indicates that the argument is passed <u>by reference</u>. **ByRef** is the default in Visual Basic. |

| | |
|---|---|
| **ParamArray** | Optional. Used only as the last argument in *arglist* to indicate that the final argument is an **Optional** <u>array</u> of **Variant** elements. The **ParamArray** keyword allows you to provide an arbitrary number of arguments. **ParamArray** can't be used with **ByVal**, **ByRef**, or **Optional**. |
| *varname* | Required. Name of the variable representing the argument; follows standard variable naming conventions. |
| *type* | Optional. <u>Data type</u> of the argument passed to the procedure; may be <u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Currency</u>, <u>Single</u>, <u>Double</u>, <u>Decimal</u> (not currently supported), <u>Date</u>, <u>String</u> (variable-length only), <u>Object</u>, <u>Variant</u>, or a specific <u>object type</u>. If the parameter is not **Optional**, a <u>user-defined type</u> may also be specified. |
| *defaultvalue* | Optional. Any <u>constant</u> or constant <u>expression</u>. Valid for **Optional** parameters only. If the type is an **Object**, an explicit default value can only be **Nothing**. |

**Remarks**

If not explicitly specified using **Public**, **Private**, or **Friend**, **Sub** procedures are public by default. If **Static** isn't used, the value of local variables is not preserved between calls. The **Friend** keyword can only be used in class modules. However, **Friend** procedures can be accessed by procedures in any module of a project. A **Friend** procedure doesn't appear in the <u>type library</u> of its parent class, nor can a **Friend** procedure be late bound.

> **Caution**   **Sub** procedures can be recursive; that is, they can call themselves to perform a given task. However, recursion can lead to stack overflow. The **Static** keyword usually is not used with recursive **Sub** procedures.

All executable code must be in <u>procedures</u>. You can't define a **Sub** procedure inside another **Sub**, **Function**, or **Property** procedure.

The **Exit Sub** keywords cause an immediate exit from a **Sub** procedure. Program execution continues with the statement following the statement that called the **Sub** procedure. Any number of **Exit Sub** statements can appear anywhere in a **Sub** procedure.

Like a **Function** procedure, a **Sub** procedure is a separate procedure that can take arguments, perform a series of statements, and change the value of its arguments. However, unlike a **Function** procedure, which returns a value, a **Sub** procedure can't be used in an expression.

You call a **Sub** procedure using the procedure name followed by the argument list. See the **Call** statement for specific information on how to call **Sub** procedures.

Variables used in **Sub** procedures fall into two categories: those that are explicitly declared within the procedure and those that are not. Variables that are explicitly declared in a procedure (using **Dim** or the equivalent) are always local to the procedure. Variables that are used but not explicitly declared in a procedure are also local unless they are explicitly declared at some higher level outside the procedure.

> **Caution**   A procedure can use a variable that is not explicitly declared in the procedure, but a naming conflict can occur if anything you defined at the <u>module level</u> has the same name. If your procedure refers to an undeclared variable that has the same name as another procedure, constant or variable, it is assumed that your procedure is referring to that module-level name. To avoid this kind of conflict, explicitly declare variables. You can use an **Option Explicit** statement to force explicit declaration of variables.

> **Note**   You can't use **GoSub**, **GoTo**, or **Return** to enter or exit a **Sub** procedure.

# Type Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmTypeC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmTypeX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmTypeS"}

Used at module level to define a user-defined data type containing one or more elements.

**Syntax**

[**Private** | **Public**] **Type** *varname*
    *elementname* [**(**[*subscripts*]**)**] **As** *type*
    [*elementname* [**(**[*subscripts*]**)**] **As** *type*]
    **. . .**

**End Type**

The **Type** statement syntax has these parts:

| Part | Description |
|---|---|
| **Public** | Optional. Used to declare user-defined types that are available to all procedures in all modules in all projects. |
| **Private** | Optional. Used to declare user-defined types that are available only within the module where the declaration is made. |
| *varname* | Required. Name of the user-defined type; follows standard variable naming conventions. |
| *elementname* | Required. Name of an element of the user-defined type. Element names also follow standard variable naming conventions, except that keywords can be used. |
| *subscripts* | When not explicitly stated in *lower*, the lower bound of an array is controlled by the **Option Base** statement. The lower bound is zero if no **Option Base** statement is present. |
| *type* | Required. Data type of the element; may be Byte, Boolean, Integer, Long, Currency, Single, Double, Decimal (not currently supported), Date, String (for variable-length strings), **String** * *length* (for fixed-length strings), Object, Variant, another user-defined type, or an object type. |

**Remarks**

The **Type** statement can be used only at module level. Once you have declared a user-defined type using the **Type** statement, you can declare a variable of that type anywhere within the scope of the declaration. Use **Dim**, **Private**, **Public**, **ReDim**, or **Static** to declare a variable of a user-defined type.

In standard modules and class modules, user-defined types are public by default. This visibility can be changed using the **Private** keyword.

Line numbers and line labels aren't allowed in **Type...End Type** blocks.

User-defined types are often used with data records, which frequently consist of a number of related elements of different data types.

The following example shows the use of fixed-size arrays in a user-defined type:

```
Type StateData
    CityCode (1 To 100) As Integer   ' Declare a static array.
```

```
    County As String * 30
End Type


Dim Washington(1 To 100) As StateData
```

In the preceding example, `StateData` includes the `CityCode` static array, and the record `Washington` has the same structure as `StateData`.

When you declare a fixed-size array within a user-defined type, its dimensions must be declared with numeric literals or <u>constants</u> rather than variables.

# UBound Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctUBoundC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctUBoundX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctUBoundS"}

Returns a <u>Long</u> containing the largest available subscript for the indicated dimension of an <u>array</u>.

**Syntax**

**UBound(***arrayname*[**,** *dimension*]**)**

The **UBound** function syntax has these parts:

| Part | Description |
|------|-------------|
| *arrayname* | Required. Name of the array <u>variable</u>; follows standard variable naming conventions. |
| *dimension* | Optional; **Variant** (**Long**). Whole number indicating which dimension's upper bound is returned. Use 1 for the first dimension, 2 for the second, and so on. If *dimension* is omitted, 1 is assumed. |

**Remarks**

The **UBound** function is used with the **LBound** function to determine the size of an array. Use the **LBound** function to find the lower limit of an array dimension.

**UBound** returns the following values for an array with these dimensions:

```
Dim A(1 To 100, 0 To 3, -3 To 4)
```

| Statement | Return Value |
|-----------|--------------|
| UBound(A, 1) | 100 |
| UBound(A, 2) | 3 |
| UBound(A, 3) | 4 |

# Array Function Example

This example uses the **Array** function to return a **Variant** containing an array.

```
Dim MyWeek, MyDay
MyWeek = Array("Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun")
' Return values assume lower bound set to 1 (using Option Base
' statement).
MyDay = MyWeek(2) ' MyDay contains "Tue".
MyDay = MyWeek(4) ' MyDay contains "Thu".
```

# Const Statement Example

This example uses the **Const** statement to declare constants for use in place of literal values. **Public** constants are declared in the General section of a standard module, rather than a class module. **Private** constants are declared in the General section of any type of module.

```
' Constants are Private by default.
Const MyVar = 459

' Declare Public constant.
Public Const MyString = "HELP"

' Declare Private Integer constant.
Private Const MyInt As Integer = 5

' Declare multiple constants on same line.
Const MyStr = "Hello", MyDouble As Double = 3.4567
```

# CreateObject Function Example

This example uses the **CreateObject** function to set a reference (xlApp) to Microsoft Excel. It uses the reference to access the **Visible** property of Microsoft Excel, and then uses the Microsoft Excel **Quit** method to close it. Finally, the reference itself is released.

```
Dim xlApp As Object  ' Declare variable to hold the reference.


Set xlApp = CreateObject("excel.application")
   ' You may have to set Visible property to True
   ' if you want to see the application.
xlApp.Visible = True
   ' Use xlApp to access Microsoft Excel's
   ' other objects.
xlApp.Quit  ' When you finish, use the Quit method to close
Set xlApp = Nothing  ' the application, then release the reference.
```

# Declare Statement Example

This example shows how the **Declare** statement is used at the module level of a standard module to declare a reference to an external procedure in a dynamic-link library (DLL). You can place the **Declare** statements in class modules if the **Declare** statements are **Private**.

```
' In Microsoft Windows (16-bit):

Declare Sub MessageBeep Lib "User" (ByVal N As Integer)

' Assume SomeBeep is an alias for the procedure name.

Declare Sub MessageBeep Lib "User" Alias "SomeBeep"(ByVal N As Integer)

' Use an ordinal in the Alias clause to call GetWinFlags.

Declare Function GetWinFlags Lib "Kernel" Alias "#132"() As Long


' In 32-bit Microsoft Windows systems, specify the library USER32.DLL,

' rather than USER.DLL. You can use conditional compilation to write

' code that can run on either Win32 or Win16.

#If Win32 Then

    Declare Sub MessageBeep Lib "User32" (ByVal N As Long)

#Else

    Declare Sub MessageBeep Lib "User" (ByVal N As Integer)

#End If
```

# Deftype Statements Example

This example shows various uses of the **Def***type* statements to set default data types of variables and function procedures whose names start with specified characters. The default data type can be overridden only by explicit assignment using the **Dim** statement. **Def***type* statements can only be used at the module level (that is, not within procedures).

```
' Variable names beginning with A through K default to Integer.
DefInt A-K
' Variable names beginning with L through Z default to String.
DefStr L-Z
CalcVar = 4 ' Initialize Integer.
StringVar = "Hello there"  ' Initialize String.
AnyVar = "Hello"  ' Causes "Type mismatch" error.
Dim Calc As Double   ' Explicitly set the type to Double.
Calc = 2.3455  ' Assign a Double.


' Deftype statements also apply to function procedures.
CalcNum = ATestFunction(4) ' Call user-defined function.
' ATestFunction function procedure definition.
Function ATestFunction(INumber)
    ATestFunction = INumber * 2' Return value is an integer.
End Function
```

# Dim Statement Example

This example shows the **Dim** statement used to declare variables. It also shows the **Dim** statement used to declare arrays. The default lower bound for array subscripts is 0 and can be overridden at the module level using the **Option Base** statement.

```
' AnyValue and MyValue are declared as Variant by default with values
' set to Empty.
Dim AnyValue, MyValue

' Explicitly declare a variable of type Integer.
Dim Number As Integer

' Multiple declarations on a single line. AnotherVar is of type Variant
' because its type is omitted.
Dim AnotherVar, Choice As Boolean, BirthDate As Date

' DayArray is an array of Variants with 51 elements indexed, from
' 0 thru 50, assuming Option Base is set to 0 (default) for
' the current module.
Dim DayArray(50)

' Matrix is a two-dimensional array of integers.
Dim Matrix(3, 4) As Integer

' MyMatrix is a three-dimensional array of doubles with explicit
' bounds.
Dim MyMatrix(1 To 5,  4 To 9,  3 To 5) As Double

' BirthDay is an array of dates with indexes from 1 to 10.
Dim BirthDay(1 To 10) As Date

' MyArray is a dynamic array of variants.
Dim MyArray()
```

# Enum Statement Example

The following example shows the **Enum** statement used to define a collection of named constants. In this case, the constants are colors you might choose to design data entry forms for a database.

```
Public Enum InterfaceColors
    icMistyRose = &HE1E4FF&
    icSlateGray = &H908070&
    icDodgerBlue = &HFF901E&
    icDeepSkyBlue = &HFFBF00&
    icSpringGreen = &H7FFF00&
    icForestGreen = &H228B22&
    icGoldenrod = &H20A5DA&
    icFirebrick = &H2222B2&
End Enum
```

# Erase Statement Example

This example uses the **Erase** statement to reinitialize the elements of fixed-size arrays and deallocate dynamic-array storage space.

```
' Declare array variables.
Dim NumArray(10) As Integer    ' Integer array.
Dim StrVarArray(10) As String ' Variable-string array.
Dim StrFixArray(10) As String * 10  ' Fixed-string array.
Dim VarArray(10) As Variant    ' Variant array.
Dim DynamicArray() As Integer ' Dynamic array.
ReDim DynamicArray(10)  ' Allocate storage space.
Erase NumArray ' Each element set to 0.
Erase StrVarArray ' Each element set to zero-length
   ' string ("").
Erase StrFixArray ' Each element set to 0.
Erase VarArray ' Each element set to Empty.
Erase DynamicArray   ' Free memory used by array.
```

# Event Statement Example

The following example uses events to count off seconds during a demonstration of the fastest 100 meter race. The code illustrates all of the event-related methods, properties, and statements, including the **Event** statement.

The class that raises an event is the event source, and the classes that implement the event are the sinks. An event source can have multiple sinks for the events it generates. When the class raises the event, that event is fired on every class that has elected to sink events for that instance of the object.

The example also uses a form (Form1) with a button (Command1), a label (Label1), and two text boxes (Text1 and Text2). When you click the button, the first text box displays "From Now" and the second starts to count seconds. When the full time (9.84 seconds) has elapsed, the first text box displays "Until Now" and the second displays "9.84"

The code for Form1 specifies the initial and terminal states of the form. It also contains the code executed when events are raised.

```
Option Explicit


Private WithEvents mText As TimerState


Private Sub Command1_Click()
Text1.Text = "From Now"
    Text1.Refresh
    Text2.Text = "0"
    Text2.Refresh
Call mText.TimerTask(9.84)
End Sub


Private Sub Form_Load()
    Command1.Caption = "Click to Start Timer"
    Text1.Text = ""
    Text2.Text = ""
    Label1.Caption = "The fastest 100 meter run took this long:"
    Set mText = New TimerState
    End Sub


Private Sub mText_ChangeText()
    Text1.Text = "Until Now"
    Text2.Text = "9.84"
End Sub


Private Sub mText_UpdateTime(ByVal dblJump As Double)
    Text2.Text = Str(Format(dblJump, "0"))
    DoEvents
End Sub
```

The remaining code is in a class module named TimerState. The **Event** statements declare the procedures initiated when events are raised.

```vba
Option Explicit
Public Event UpdateTime(ByVal dblJump As Double)
Public Event ChangeText()

Public Sub TimerTask(ByVal Duration As Double)
    Dim dblStart As Double
    Dim dblSecond As Double
    Dim dblSoFar As Double
    dblStart = Timer
    dblSoFar = dblStart

    Do While Timer < dblStart + Duration
        If Timer - dblSoFar >= 1 Then
            dblSoFar = dblSoFar + 1
            RaiseEvent UpdateTime(Timer - dblStart)
        End If
    Loop

    RaiseEvent ChangeText

End Sub
```

# Function Statement Example

This example uses the **Function** statement to declare the name, arguments, and code that form the body of a **Function** procedure. The last example uses hard-typed, initialized **Optional** arguments.

```
' The following user-defined function returns the square root of the
' argument passed to it.
Function CalculateSquareRoot(NumberArg As Double) As Double
    If NumberArg < 0 Then    ' Evaluate argument.
        Exit Function  ' Exit to calling procedure.
    Else
        CalculateSquareRoot = Sqr(NumberArg)' Return square root.
    End If
End Function
```

Using the **ParamArray** keyword enables a function to accept a variable number of arguments. In the following definition, `FirstArg` is passed by value.

```
Function CalcSum(ByVal FirstArg As Integer, ParamArray OtherArgs())
Dim ReturnValue
' If the function is invoked as follows:
ReturnValue = CalcSum(4, 3 ,2 ,1)
' Local variables are assigned the following values: FirstArg = 4,
' OtherArgs(1) = 3, OtherArgs(2) = 2, and so on, assuming default
' lower bound for arrays = 1.
```

**Optional** arguments can have default values and types other than **Variant**.

```
' If a function's arguments are defined as follows:
Function MyFunc(MyStr As String, Optional MyArg1 As _ Integer = 5, Optional
MyArg2 = "Dolly")
Dim RetVal
' The function can be invoked as follows:
RetVal = MyFunc("Hello", 2, "World")       ' All 3 arguments supplied.
RetVal = MyFunc("Test", , 5)   ' Second argument omitted.
' Arguments one and three using named-arguments.
RetVal = MyFunc(MyStr:="Hello ", MyArg1:=7)
```

# GetObject Function Example

This example uses the **GetObject** function to get a reference to a specific Microsoft Excel worksheet (`MyXL`). It uses the worksheet's **Application** property to make Microsoft Excel visible, to close it, and so on. Using two API calls, the DetectExcel **Sub** procedure looks for Microsoft Excel, and if it is running, enters it in the Running Object Table. The first call to **GetObject** causes an error if Microsoft Excel isn't already running. In the example, the error causes the ExcelWasNotRunning flag to be set to True. The second call to **GetObject** specifies a file to open. If Microsoft Excel isn't already running, the second call starts it and returns a reference to the worksheet represented by the specified file, mytest.xls. The file must exist in the specified location; otherwise, the Visual Basic error Automation error is generated. Next the example code makes both Microsoft Excel and the window containing the specified worksheet visible. Finally, if there was no previous version of Microsoft Excel running, the code uses the **Application** object's **Quit** method to close Microsoft Excel. If the application was already running, no attempt is made to close it. The reference itself is released by setting it to **Nothing**.

```
' Declare necessary API routines:
Declare Function FindWindow Lib "user32" Alias _
"FindWindowA" (ByVal lpClassName as String, _
              ByVal lpWindowName As Long) As Long


Declare Function SendMessage Lib "user32" Alias _
"SendMessageA" (ByVal hWnd as Long,ByVal wMsg as Long, _
              ByVal wParam as Long, _
              ByVal lParam As Long) As Long


Sub GetExcel()
   Dim MyXL As Object   ' Variable to hold reference
                        ' to Microsoft Excel.
   Dim ExcelWasNotRunning As Boolean' Flag for final release.

' Test to see if there is a copy of Microsoft Excel already running.
   On Error Resume Next ' Defer error trapping.
' Getobject function called without the first argument returns a
' reference to an instance of the application. If the application isn't
' running, an error occurs.
   Set MyXL = Getobject(, "Excel.Application")
   If Err.Number <> 0 Then ExcelWasNotRunning = True
   Err.Clear   ' Clear Err object in case error occurred.

' Check for Microsoft Excel. If Microsoft Excel is running,
' enter it into the Running Object table.
   DetectExcel

' Set the object variable to reference the file you want to see.
   Set MyXL = Getobject("c:\vb4\MYTEST.XLS")
```

```
' Show Microsoft Excel through its Application property. Then
' show the actual window containing the file using the Windows
' collection of the MyXL object reference.
    MyXL.Application.Visible = True
    MyXL.Parent.Windows(1).Visible = True
     Do manipulations of your  file here.
     ' ...
' If this copy of Microsoft Excel was not running when you
' started, close it using the Application property's Quit method.
' Note that when you try to quit Microsoft Excel, the
' title bar blinks and a message is displayed asking if you
' want to save any loaded files.
    If ExcelWasNotRunning = True Then
       MyXL.Application.Quit
    End IF

    Set MyXL = Nothing    ' Release reference to the
                          ' application and spreadsheet.
End Sub

Sub DetectExcel()
' Procedure dectects a running Excel and registers it.
    Const WM_USER = 1024
    Dim hWnd As Long
' If Excel is running this API call returns its handle.
    hWnd = FindWindow("XLMAIN", 0)
    If hWnd = 0 Then  ' 0 means Excel not running.
       Exit Sub
    Else
    ' Excel is running so use the SendMessage API
    ' function to enter it in the Running Object Table.
       SendMessage hWnd, WM_USER + 18, 0, 0
    End If
End Sub
```

# Implements Statement Example

The following example shows how to use the **Implements** statement to make a set of declarations available to multiple classes. By sharing the declarations through the **Implements** statement, neither class has to make any declarations itself.

Assume there are two forms. The Selector form has two buttons, Customer Data and Supplier Data. To enter name and address information for a customer or a supplier, the user clicks the Customer button or the Supplier button on the Selector form, and then enters the name and address using the Data Entry form. The Data Entry form has two text fields, Name and Address.

The following code for the shared declarations is in a class called PersonalData:

```
Public Name As String
Public Address As String
```

The code supporting the customer data is in a class module called Customer:

```
Implements PersonalData
Private Property Get PersonalData_Address() As String
PersonalData_Address = "CustomerAddress"
End Property


Private Property Let PersonalData_Address(ByVal RHS As String)
'
End Property


Private Property Let PersonalData_Name(ByVal RHS As String)
'
End Property


Private Property Get PersonalData_Name() As String
PersonalData_Name = "CustomerName"
End Property
```

The code supporting the supplier data is in a class module called Supplier:

```
Implements PersonalData

Private Property Get PersonalData_Address() As String
PersonalData_Address = "SupplierAddress"
End Property


Private Property Let PersonalData_Address(ByVal RHS As String)
'
End Property


Private Property Let PersonalData_Name(ByVal RHS As String)
```

```
'
End Property

Private Property Get PersonalData_Name() As String
PersonalData_Name = "SupplierName"
End Property
```

The following code supports the Selector form:

```
Private cust As New Customer
Private sup As New Supplier

Private Sub Command1_Click()
Dim frm2 As New Form2
    Set frm2.PD = cust
    frm2.Show 1
End Sub

Private Sub Command2_Click()
Dim frm2 As New Form2
    Set frm2.PD = sup
    frm2.Show 1
End Sub
```

The following code supports the Data Entry form:

```
Private m_pd As PersonalData
Private Sub Form_Load()
    With m_pd
        Text1 = .Name
        Text2 = .Address
    End With
End Sub
Public Property Set PD(Data As PersonalData)
    Set m_pd = Data
End Property
```

# LBound Function Example

This example uses the **LBound** function to determine the smallest available subscript for the indicated dimension of an array. Use the **Option Base** statement to override the default base array subscript value of 0.

```
Dim Lower
Dim MyArray(1 To 10, 5 To 15, 10 To 20)    ' Declare array variables.
Dim AnyArray(10)
Lower = Lbound(MyArray, 1)      ' Returns 1.
Lower = Lbound(MyArray, 3) ' Returns 10.
Lower = Lbound(AnyArray)    ' Returns 0 or 1, depending on
    ' setting of Option Base.
```

# Let Statement Example

This example assigns the values of expressions to variables using the explicit **Let** statement.

```
Dim MyStr, MyInt
' The following variable assignments use the Let statement.
Let MyStr = "Hello World"
Let MyInt = 5
```

The following are the same assignments without the **Let** statement.

```
Dim MyStr, MyInt
MyStr = "Hello World"
MyInt = 5
```

# Option Base Statement Example

This example uses the **Option Base** statement to override the default base array subscript value of 0. The **LBound** function returns the smallest available subscript for the indicated dimension of an array. The **Option Base** statement is used at the module level only.

```
Option base 1  ' Set default array subscripts to 1.


Dim Lower
Dim MyArray(20), TwoDArray(3, 4)    ' Declare array variables.
Dim ZeroArray(0 To 5)   ' Override default base subscript.
' Use LBound function to test lower bounds of arrays.
Lower = LBound(MyArray) ' Returns 1.
Lower = LBound(TwoDArray, 2)  ' Returns 1.
Lower = LBound(ZeroArray)  ' Returns 0.
```

# Option Compare Statement Example

This example uses the **Option Compare** statement to set the default string comparison method. The **Option Compare** statement is used at the module level only.

```
' Set the string comparison method to Binary.
Option compare Binary   ' That is, "AAA" is less than "aaa".
' Set the string comparison method to Text.
Option compare Text  ' That is, "AAA" is equal to "aaa".
```

# Option Explicit Statement Example

This example uses the **Option Explicit** statement to force explicit declaration of all variables. Attempting to use an undeclared variable causes an error at compile time. The **Option Explicit** statement is used at the module level only.

```
Option explicit    ' Force explicit variable declaration.

Dim MyVar    ' Declare variable.

MyInt = 10  ' Undeclared variable generates error.

MyVar = 10  ' Declared variable does not generate error.
```

# Option Private Statement Example

This example demonstrates the **Option Private** statement, which is used at module level to indicate that the entire module is private. With **Option Private Module**, module-level parts not declared **Private** are available to other modules in the project, but not to other projects or applications.

```
Option private Module   ' Indicates that module is private.
```

# Private Statement Example

This example shows the **Private** statement being used at the module level to declare variables as private; that is, they are available only to the module in which they are declared.

```
Private Number As Integer  ' Private Integer variable.
Private NameArray(1 To 5) As String ' Private array variable.
' Multiple declarations, two Variants and one Integer, all Private.
Private MyVar, YourVar, ThisVar As Integer
```

# Property Get Statement Example

This example uses the **Property Get** statement to define a property procedure that gets the value of a property. The property identifies the current color of a pen as a string.

```
Dim CurrentColor As Integer
Const BLACK = 0, RED = 1, GREEN = 2, BLUE = 3

' Returns the current color of the pen as a string.
Property Get PenColor() As String
   Select Case CurrentColor
      Case RED
         PenColor = "Red"
      Case GREEN
         PenColor = "Green"
      Case BLUE
         PenColor = "Blue"
   End Select
End Property

' The following code gets the color of the pen
' calling the Property Get procedure.
ColorName = PenColor
```

# Property Let Statement Example

This example uses the **Property Let** statement to define a procedure that assigns a value to a property. The property identifies the pen color for a drawing package.

```
Dim CurrentColor As Integer
Const BLACK = 0, RED = 1, GREEN = 2, BLUE = 3

' Set the pen color property for a Drawing package.
' The module-level variable CurrentColor is set to
' a numeric value that identifies the color used for drawing.
Property Let PenColor(ColorName As String)
   Select Case ColorName   ' Check color name string.
      Case "Red"
         CurrentColor = RED   ' Assign value for Red.
      Case "Green"
         CurrentColor = GREEN ' Assign value for Green.
      Case "Blue"
         CurrentColor = BLUE  ' Assign value for Blue.
      Case Else
         CurrentColor = BLACK ' Assign default value.
   End Select
End Property

' The following code sets the PenColor property for a drawing package
' by calling the Property let procedure.

PenColor = "Red"
```

# Property Set Statement Example

This example uses the **Property Set** statement to define a property procedure that sets a reference to an object.

```
' The Pen property may be set to different Pen implementations.
Property Set Pen(P As Object)
    Set CurrentPen = P   ' Assign Pen to object.
End Property
```

# Public Statement Example

This example uses the **Public** statement at the module level (General section) of a standard module to explicitly declare variables as public; that is, they are available to all procedures in all modules in all applications unless **Option Private Module** is in effect.

```
Public Number As Integer    ' Public Integer variable.
Public NameArray(1 To 5) As String  ' Public array variable.
' Multiple declarations, two Variants and one Integer, all Public.
Public MyVar, YourVar, ThisVar As Integer
```

# ReDim Statement Example

This example uses the **ReDim** statement to allocate and reallocate storage space for dynamic-array variables. It assumes the **Option Base** is **1**.

```
Dim MyArray() As Integer   ' Declare dynamic array.
Redim MyArray(5)  ' Allocate 5 elements.
For I = 1 To 5 ' Loop 5 times.
   MyArray(I) = I ' Initialize array.
Next I
```

The next statement resizes the array and erases the elements.

```
Redim MyArray(10) ' Resize to 10 elements.
For I = 1 To 10   ' Loop 10 times.
   MyArray(I) = I ' Initialize array.
Next I
```

The following statement resizes the array but does not erase elements.

```
Redim Preserve MyArray(15) ' Resize to 15 elements.
```

# Rem Statement Example

This example illustrates the various forms of the **Rem** statement, which is used to include explanatory remarks in a program.

```
Dim MyStr1, MyStr2
MyStr1 = "Hello": Rem Comment after a statement separated by a colon.
MyStr2 = "Goodbye"   ' This is also a comment; no colon is needed.
```

# Set Statement Example

This example uses the **Set** statement to assign object references to variables. `YourObject` is assumed to be a valid object with a Text property.

```
Dim YourObject, MyObject, MyStr
Set MyObject = YourObject  ' Assign object reference.
' MyObject and YourObject refer to the same object.
YourObject.Text = "Hello World"     ' Initialize property.
MyStr = MyObject.Text   ' Returns "Hello World".

' Discontinue association. MyObject no longer refers to YourObject.
Set MyObject = Nothing  ' Release the object.
```

# Static Statement Example

This example uses the **Static** statement to retain the value of a variable for as long as module code is running.

```
' Function definition.
Function KeepTotal(Number)
   ' Only the variable Accumulate preserves its value between calls.
   Static Accumulate
   Accumulate = Accumulate + Number
   KeepTotal = Accumulate
End Function

' Static function definition.
Static Function MyFunction(Arg1, Arg2, Arg3)
   ' All local variables preserve value between function calls.
   Accumulate = Arg1 + Arg2 + Arg3
   Half = Accumulate / 2
   MyFunction = Half
End Function
```

# Sub Statement Example

This example uses the **Sub** statement to define the name, arguments, and code that form the body of a **Sub** procedure.

```
' Sub procedure definition.
' Sub procedure with two arguments.
Sub SubComputeArea(Length, TheWidth)
    Dim Area As Double   ' Declare local variable.
    If Length = 0 Or TheWidth = 0 Then
    ' If either argument = 0.
        Exit Sub ' Exit Sub immediately.
    End If
    Area = Length * TheWidth   ' Calculate area of rectangle.
    Debug.Print Area  ' Print Area to Debug window.
End Sub
```

# Type Statement Example

This example uses the **Type** statement to define a user-defined data type. The **Type** statement is used at the module level only. If it appears in a class module, a **Type** statement must be preceded by the keyword **Private**.

```
Type EmployeeRecord  ' Create user-defined type.
    ID As Integer  ' Define elements of data type.
    Name As String * 20
    Address As String * 30
    Phone As Long
    HireDate As Date
End Type
Sub CreateRecord()
    Dim MyRecord As EmployeeRecord   ' Declare variable.

    ' Assignment to EmployeeRecord variable must occur in a procedure.
    MyRecord.ID = 12003  ' Assign a value to an element.
End Sub
```

# UBound Function Example

This example uses the **UBound** function to determine the largest available subscript for the indicated dimension of an array.

```
Dim Upper
Dim MyArray(1 To 10, 5 To 15, 10 To 20)   ' Declare array variables.
Dim AnyArray(10)
Upper = UBound(MyArray, 1) ' Returns 10.
Upper = UBound(MyArray, 3) ' Returns 20.
Upper = UBound(AnyArray)   ' Returns 10.
```

# CallByName Function Example

This example uses the **CallByName** function to invoke the **Move** method of a Command button.

The example also uses a form (`Form1`) with a button (`Command1`), and a label (`Label1`). When the form is loaded, the **Caption** property of the label is set to "Move", the name of the method to invoke. When you click the button, the **CallByName** function invokes the method to change the location of the button.

```
Option Explicit

Private Sub Form_Load()
    Label1.Caption = "Move"    ' Name of Move method.
End Sub

Private Sub Command1_Click()
    If Command1.Left <> 0 Then
        CallByName Command1, Label1.Caption, vbMethod, 0, 0
    Else
        CallByName Command1, Label1.Caption, vbMethod, 500, 500
    End If
```

# As

The **As** keyword is used in these contexts:

[Const Statement](Const Statement)

[Declare Statement](Declare Statement)

[Dim Statement](Dim Statement)

[Function Statement](Function Statement)

[Name Statement](Name Statement)

[Open Statement](Open Statement)

[Private Statement](Private Statement)

[Property Get Statement](Property Get Statement)

[Property Let Statement](Property Let Statement)

[Property Set Statement](Property Set Statement)

[Public Statement](Public Statement)

[ReDim Statement](ReDim Statement)

[Static Statement](Static Statement)

[Sub Statement](Sub Statement)

[Type Statement](Type Statement)

# Binary

The **Binary** keyword is used in these contexts:

Open Statement

Option Compare Statement

# ByRef

The **ByRef** keyword is used in these contexts:

Call Statement

Declare Statement

Function Statement

Property Get Statement

Property Let Statement

Property Set Statement

Sub Statement

# ByVal

The **ByVal** keyword is used in these contexts:

Call Statement

Declare Statement

Function Statement

Property Get Statement

Property Let Statement

Property Set Statement

Sub Statement

# Date

The **Date** keyword is used in these contexts:

[Date Data Type](Date Data Type)

[Date Function](Date Function)

[Date Statement](Date Statement)

# Else

The **Else** keyword is used in these contexts:

If...Then...Else Statement

Select Case Statement

# Error

The **Error** keyword is used in these contexts:

[Error Function](#)

[Error Statement](#)

[On Error Statement](#)

# For

The **For** keyword is used in these contexts:

For...Next Statement

For Each...Next Statement

Open Statement

# Get

The **Get** keyword is used in these contexts:

Get Statement

Property Get Statement

# Input

The **Input** keyword is used in these contexts:

Input Function

Input # Statement

Line Input # Statement

Open Statement

# Is

The **Is** keyword is used in these contexts:

If...Then...Else Statement

Is Operator

Select Case Statement

# Len

The **Len** keyword is used in these contexts:

Len Function

Open Statement

# Let

The **Let** keyword is used in these contexts:

Let Statement

Property Let Statement

# Lock

The **Lock** keyword is used in these contexts:

Lock, Unlock Statements

Open Statement

# Mid

The **Mid** keyword is used in these contexts:

Mid Function

Mid Statement

# New

The **New** keyword is used in these contexts:

Dim Statement

Private Statement

Public Statement

Set Statement

Static Statement

# Next

The **Next** keyword is used in these contexts:

For...Next Statement

For Each...Next Statement

On Error Statement

Resume Statement

# On

The **On** keyword is used in these contexts:

On Error Statement

On...GoSub Statement

On...GoTo Statement

# Option

The **Option** keyword is used in these contexts:

[Option Base Statement](#)

[Option Compare Statement](#)

[Option Explicit Statement](#)

[Option Private Statement](#)

# Optional

The **Optional** keyword is used in these contexts:

Declare Statement

Function Statement

Property Get Statement

Property Let Statement

Property Set Statement

Sub Statement

# ParamArray

The **ParamArray** keyword is used in these contexts:

Declare Statement

Function Statement

Property Get Statement

Property Let Statement

Property Set Statement

Sub Statement

# Print

The **Print** keyword is used in these contexts:

Print Method

Print # Statement

# Private

The **Private** keyword is used in these contexts:

Const Statement

Declare Statement

Enum Statement

Function Statement

Option Private Statement

Private Statement

Property Get Statement

Property Let Statement

Property Set Statement

Sub Statement

Type Statement

# Property

The **Property** keyword is used in these contexts:

[Property Get Statement](#)

[Property Let Statement](#)

[Property Set Statement](#)

# Public

The **Public** keyword is used in these contexts:

[Const Statement](#)

[Declare Statement](#)

[Enum Statement](#)

[Event Statement](#)

[Function Statement](#)

[Property Get Statement](#)

[Property Let Statement](#)

[Property Set Statement](#)

[Public Statement](#)

[Sub Statement](#)

[Type Statement](#)

# Resume

The **Resume** keyword is used in these contexts:

On Error Statement

Resume Statement

# Seek

The **Seek** keyword is used in these contexts:

[Seek Function](#)

[Seek Statement](#)

# Set

The **Set** keyword is used in these contexts:

[Set Statement](#)

[Property Set Statement](#)

# Static

The **Static** keyword is used in these contexts:

Function Statement

Property Get Statement

Property Let Statement

Property Set Statement

Static Statement

Sub Statement

# Step

The **Step** keyword is used in these contexts:

[For...Next Statement](#)

[For Each...Next Statement](#)

# String

The **String** keyword is used in these contexts:

String Data Type

String Function

# Then

The **Then** keyword is used in these contexts:

#If...Then...#Else Directive

If...Then...Else Statement

# Time

The **Time** keyword is used in these contexts:

Time Function

Time Statement

# To

The **To** keyword is used in these contexts:

[Dim Statement](#)

[For...Next Statement](#)

[Lock, Unlock Statements](#)

[Private Statement](#)

[Public Statement](#)

[ReDim Statement](#)

[Select Case Statement](#)

[Static Statement](#)

[Type Statement](#)

# WithEvents

The **WithEvents** keyword is used in these contexts:

[Dim Statement](Dim Statement)

[Private Statement](Private Statement)

[Public Statement](Public Statement)

# Document Conventions

Visual Basic documentation uses the following typographic conventions.

| Convention | Description |
|---|---|
| **Sub**, **If**, **ChDir**, **Print**, **True**, **Debug** | Words in bold with initial letter capitalized indicate language-specific keywords. |
| **Setup** | Words you are instructed to type appear in bold. |
| *object*, *varname*, *arglist* | Italic, lowercase letters indicate placeholders for information you supply. |
| ***pathname***, ***filenumber*** | Bold, italic, and lowercase letters indicate placeholders for arguments where you can use either positional or <u>named-argument</u> syntax. |
| [*expressionlist*] | In syntax, items inside brackets are optional. |
| {**While** \| **Until**} | In syntax, braces and a vertical bar indicate a mandatory choice between two or more items.  You must choose one of the items unless all of the items are also enclosed in brackets. For example: |
| [{**This** \| **OrThat**}] | |
| ESC, ENTER | Words in capital letters indicate key names and key sequences. |
| ALT+F1, CTRL+R | A plus sign (+) between key names indicates a combination of keys. For example, ALT+F1 means hold down the ALT key while pressing the F1 key. |

**Code Conventions**

The following code conventions are used:

| Sample Code | Description |
|---|---|
| `MyString = "Hello, world!"` | This font is used for code, variables, and error message text. |
| `' This is a comment.` | An apostrophe (') introduces code comments. |
| `MyVar = "This is an " _`<br>`& "example" _`<br>`& " of how to continue code."` | A space and an underscore ( _) continue a line of code. |

# Error Function Example

This example uses the **Error** function to print error messages that correspond to the specified error numbers.

```
Dim ErrorNumber
For ErrorNumber = 61 To 64 ' Loop through values 61 - 64.
    Debug.Print Error(ErrorNumber)   ' Print error to Immediate window.
Next ErrorNumber
```

# Error Statement Example

This example uses the **Error** statement to simulate error number 11.

```
On Error Resume Next ' Defer error handling.
Error 11 ' Simulate the "Division by zero" error.
```

# On Error Statement Example

This example first uses the **On Error GoTo** statement to specify the location of an error-handling routine within a procedure. In the example, an attempt to delete an open file generates error number 55. The error is handled in the error-handling routine, and control is then returned to the statement that caused the error. The **On Error GoTo 0** statement turns off error trapping. Then the **On Error Resume Next** statement is used to defer error trapping so that the context for the error generated by the next statement can be known for certain. Note that **Err.Clear** is used to clear the **Err** object's properties after the error is handled.

```
Sub OnErrorStatementDemo()
   On Error GoTo ErrorHandler ' Enable error-handling routine.
   Open "TESTFILE" For Output As #1 ' Open file for output.
   Kill "TESTFILE"   ' Attempt to delete open
            ' file.
   On Error Goto 0   ' Turn off error trapping.
   On Error Resume Next ' Defer error trapping.
   ObjectRef = GetObject("MyWord.Basic")  ' Try to start nonexistent
            ' object, then test for
'Check for likely Automation errors.
   If Err.Number = 440 Or Err.Number = 432 Then
      ' Tell user what happened. Then clear the Err object.
      Msg = "There was an error attempting to open the Automation object!"
      MsgBox Msg, , "Deferred Error Test"
      Err.Clear   ' Clear Err object fields
   End If
Exit Sub    ' Exit to avoid handler.
ErrorHandler:  ' Error-handling routine.
   Select Case Err.Number  ' Evaluate error number.
      Case 55  ' "File already open" error.
         Close #1 ' Close open file.
      Case Else
         ' Handle other situations here...
   End Select
   Resume    ' Resume execution at same line
            ' that caused the error.
End Sub
```

# Resume Statement Example

This example uses the **Resume** statement to end error handling in a procedure, and then resume execution with the statement that caused the error. Error number 55 is generated to illustrate using the **Resume** statement.

```
Sub ResumeStatementDemo()
    On Error GoTo ErrorHandler ' Enable error-handling routine.
    Open "TESTFILE" For Output As #1 ' Open file for output.
    Kill "TESTFILE"   ' Attempt to delete open file.
    Exit Sub ' Exit Sub to avoid error handler.
ErrorHandler:  ' Error-handling routine.
    Select Case Err.Number  ' Evaluate error number.
       Case 55  ' "File already open" error.
          Close #1 ' Close open file.
       Case Else
          ' Handle other situations here....
    End Select
    Resume    ' Resume execution at same line
    ' that caused the error.
End Sub
```

# Error Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctErrorX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctErrorS"}

Returns the error message that corresponds to a given <u>error number</u>.

**Syntax**

**Error**[**(***errornumber***)**]

The optional *errornumber* <u>argument</u> can be any valid error number. If *errornumber* is a valid error number, but is not defined, **Error** returns the string "Application-defined or object-defined error." If *errornumber* is not valid, an error occurs. If *errornumber* is omitted, the message corresponding to the most recent <u>run-time error</u> is returned. If no run-time error has occurred, or *errornumber* is 0, **Error** returns a zero-length string ("").

**Remarks**

Examine the <u>property</u> settings of the **Err** object to identify the most recent run-time error. The return value of the **Error** function corresponds to the **Description** property of the **Err** object.

# Error Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmErrorC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmErrorX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmErrorS"}

Simulates the occurrence of an error.

**Syntax**

**Error** *errornumber*

The required *errornumber* can be any valid <u>error number</u>.

**Remarks**

The **Error** statement is supported for backward compatibility. In new code, especially when creating objects, use the **Err** object's **Raise** method to generate <u>run-time errors</u>.

If *errornumber* is defined, the **Error** statement calls the error handler after the <u>properties</u> of **Err** object are assigned the following default values:

| Property | Value |
|---|---|
| **Number** | Value specified as <u>argument</u> to **Error** statement. Can be any valid error number. |
| **Source** | Name of the current Visual Basic <u>project</u>. |
| **Description** | <u>String expression</u> corresponding to the return value of the **Error** function for the specified **Number**, if this string exists. If the string doesn't exist, **Description** contains a zero-length string (""). |
| **HelpFile** | The fully qualified drive, path, and file name of the appropriate Visual Basic Help file. |
| **HelpContext** | The appropriate Visual Basic Help file context ID for the error corresponding to the **Number** property. |
| **LastDLLError** | Zero. |

If no error handler exists or if none is enabled, an error message is created and displayed from the **Err** object properties.

> **Note**   Not all Visual Basic <u>host applications</u> can create objects. See your host application's documentation to determine whether it can create <u>classes</u> and objects.

# On Error Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOnErrorC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOnErrorX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOnErrorS"}

Enables an error-handling routine and specifies the location of the routine within a procedure; can also be used to disable an error-handling routine.

**Syntax**

**On Error GoTo** *line*

**On Error Resume Next**

**On Error GoTo 0**

The **On Error** statement syntax can have any of the following forms:

| Statement | Description |
| --- | --- |
| **On Error GoTo** *line* | Enables the error-handling routine that starts at *line* specified in the required *line* argument. The *line* argument is any line label or line number. If a run-time error occurs, control branches to *line*, making the error handler active. The specified *line* must be in the same procedure as the **On Error** statement; otherwise, a compile-time error occurs. |
| **On Error Resume Next** | Specifies that when a run-time error occurs, control goes to the statement immediately following the statement where the error occurred where execution continues. Use this form rather than **On Error GoTo** when accessing objects. |
| **On Error GoTo 0** | Disables any enabled error handler in the current procedure. |

**Remarks**

If you don't use an **On Error** statement, any run-time error that occurs is fatal; that is, an error message is displayed and execution stops.

An "enabled" error handler is one that is turned on by an **On Error** statement; an "active" error handler is an enabled handler that is in the process of handling an error. If an error occurs while an error handler is active (between the occurrence of the error and a **Resume**, **Exit Sub**, **Exit Function**, or **Exit Property** statement), the current procedure's error handler can't handle the error. Control returns to the calling procedure. If the calling procedure has an enabled error handler, it is activated to handle the error. If the calling procedure's error handler is also active, control passes back through previous calling procedures until an enabled, but inactive, error handler is found. If no inactive, enabled error handler is found, the error is fatal at the point at which it actually occurred. Each time the error handler passes control back to a calling procedure, that procedure becomes the current procedure. Once an error is handled by an error handler in any procedure, execution resumes in the current procedure at the point designated by the **Resume** statement.

> **Note**  An error-handling routine is not a **Sub** procedure or **Function** procedure. It is a section of code marked by a line label or line number.

Error-handling routines rely on the value in the **Number** property of the **Err** object to determine the cause of the error. The error-handling routine should test or save relevant property values in the **Err** object before any other error can occur or before a procedure that might cause an error is called. The property values in the **Err** object reflect only the

most recent error. The error message associated with **Err.Number** is contained in **Err.Description**.

**On Error Resume Next** causes execution to continue with the statement immediately following the statement that caused the run-time error, or with the statement immediately following the most recent call out of the procedure containing the **On Error Resume Next** statement. This statement allows execution to continue despite a run-time error. You can place the error-handling routine where the error would occur, rather than transferring control to another location within the procedure. An **On Error Resume Next** statement becomes inactive when another procedure is called, so you should execute an **On Error Resume Next** statement in each called routine if you want inline error handling within that routine.

> **Note**   The **On Error Resume Next** construct may be preferable to **On Error GoTo** when handling errors generated during access to other objects. Checking **Err** after each interaction with an object removes ambiguity about which object was accessed by the code. You can be sure which object placed the error code in **Err.Number**, as well as which object originally generated the error (the object specified in **Err.Source**).

**On Error GoTo 0** disables error handling in the current procedure. It doesn't specify line 0 as the start of the error-handling code, even if the procedure contains a line numbered 0. Without an **On Error GoTo 0** statement, an error handler is automatically disabled when a procedure is exited.

To prevent error-handling code from running when no error has occurred, place an **Exit Sub**, **Exit Function**, or **Exit Property** statement immediately before the error-handling routine, as in the following fragment:

```
Sub InitializeMatrix(Var1, Var2, Var3, Var4)
    On Error GoTo ErrorHandler
    . . .
    Exit Sub
ErrorHandler:
    . . .
    Resume Next
End Sub
```

Here, the error-handling code follows the **Exit Sub** statement and precedes the **End Sub** statement to separate it from the procedure flow. Error-handling code can be placed anywhere in a procedure.

Untrapped errors in objects are returned to the controlling application when the object is running as an executable file. Within the development environment, untrapped errors are only returned to the controlling application if the proper options are set. See your host application's documentation for a description of which options should be set during debugging, how to set them, and whether the host can create classes.

If you create an object that accesses other objects, you should try to handle errors passed back from them unhandled. If you cannot handle such errors, map the error code in **Err.Number** to one of your own errors, and then pass them back to the caller of your object. You should specify your error by adding your error code to the **vbObjectError** constant. For example, if your error code is 1052, assign it as follows:

```
Err.Number = vbObjectError + 1052
```

> **Note**   System errors during calls to Windows dynamic-link libraries (DLL) or Macintosh

code resources do not raise exceptions and cannot be trapped with Visual Basic error trapping. When calling DLL functions, you should check each return value for success or failure (according to the API specifications), and in the event of a failure, check the value in the **Err** object's **LastDLLError** property. **LastDLLError** always returns zero on the Macintosh.

# Resume Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmResumeC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmResumeX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmResumeS"}

Resumes execution after an error-handling routine is finished.

**Syntax**

**Resume** [**0**]

**Resume Next**

**Resume** *line*

The **Resume** statement syntax can have any of the following forms:

| Statement | Description |
| --- | --- |
| **Resume** | If the error occurred in the same <u>procedure</u> as the error handler, execution resumes with the statement that caused the error. If the error occurred in a called procedure, execution resumes at the <u>statement</u> that last called out of the procedure containing the error-handling routine. |
| **Resume Next** | If the error occurred in the same procedure as the error handler, execution resumes with the statement immediately following the statement that caused the error. If the error occurred in a called procedure, execution resumes with the statement immediately following the statement that last called out of the procedure containing the error-handling routine (or **On Error Resume Next** statement). |
| **Resume** *line* | Execution resumes at *line* specified in the required *line* <u>argument</u>. The *line* argument is a <u>line label</u> or <u>line number</u> and must be in the same procedure as the error handler. |

**Remarks**

If you use a **Resume** statement anywhere except in an error-handling routine, an error occurs.

# #Else clause must be preceded by a matching #If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLbElseNoMatchingIfC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLbElseNoMatchingIfS"}

#**Else** is a conditional compilation directive. This error has the following cause and solution:

- An #**Else** clause was detected that isn't preceded by a matching #**If** or #**ElseIf**.

  Check to see if a preceding #**If** has been separated from this #**Else** by an #**End If**. Note that only one #**Else** is permitted in each #**If** block, so two successive #**Else** clauses cause this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# #Else If, #Else, or #End If must be preceded by a matching #If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLbNoMatchingIfC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLbNoMatchingIfS"}

#**Else If**, #**Else**, and #**End If** are conditional compilation directives. This error has the following cause and solution:

- An #**Else If**, #**Else**, or #**End If** was detected that isn't preceded by a matching #**If** clause.

  Check to see if the intended #**If** has been separated from the clause in question by an intervening block or if the intended #**If** is preceded by a number sign (**#**) sign. If everything else is in order, place an #**If** clause in the appropriate position.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# #ElseIf must be preceded by a matching #If or #ElseIf and followed by an #ElseIf, #Else, or #End If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLbBadElseIfC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLbBadElseIfS"}

#**ElseIf** is a conditional compilation directive. This error has the following causes and solutions:

- An #**ElseIf** has been detected that isn't preceded by an #**If** or #**ElseIf**.

  Place an #**If** statement before the #**ElseIf** or remove an incorrectly placed preceding #**End If**.

- An #**ElseIf** has been detected that is preceded by an #**Else** or #**End If**.

  Appropriately terminate the preceding #**If** block, or change the preceding #**Else** to an #**ElseIf**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# A compatible ActiveX component must be a Visual Basic executable or a DLL

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidCompatibleServerS"}

A compatible ActiveX component is one that you specify as a compatible ActiveX component. This error has the following cause and solution:

- Visual Basic tried to access an object you specified as a compatible ActiveX component, but the file specified wasn't an <u>executable file</u> or <u>dynamic-link library (DLL)</u> created by Visual Basic.

    Only .exe files and DLLs created by Visual Basic are valid entries in the Compatible ActiveX Component field of the **Project Properties** dialog box accessed through the **Project** menu. If possible, load the <u>project</u> into Visual Basic and choose the **Make Project.exe File** command from the **File** menu to create a Visual Basic executable file. If the file is already an executable file that wasn't created by Visual Basic, or if the file can't be loaded into Visual Basic, consult the documentation of the file to find out if it can be converted to a Visual Basic executable file or if the vendor can supply an executable file created by Visual Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Add-in can't reference project

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantRefProjectS"}

Projects are dynamic, but add-ins are static. This error has the following cause and solution:

- You tried to create an add-in from a project that references another project.

  The semantics of projects can change in a way that affects referencing projects and add-ins. Therefore, you can't create an add-in from a project that references projects.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# A module is not a valid type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgModuleAsTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModuleAsTypeS"}

A standard module doesn't represent a class and can't be instantiated in the form of a variable. This error has the following cause and solution:

- You used the name of a standard module in a **Dim** or **Set** declaration.

  Check the spelling of the module name and make sure it corresponds to a form, MDI form, or class module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# A procedure with a ParamArray argument can't be called with named arguments

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgParamArrayNamedC"}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgParamArrayNamedS"}

All <u>arguments</u> in a call to a <u>procedure</u> defined with a **ParamArray** must be positional. This error has the following cause and solution:

- <u>Named-argument</u> syntax appears in a procedure call.

  The named-argument calling syntax can't be used to call a procedure that includes a **ParamArray** parameter. To supply only some elements of the **ParamArray**, use commas as placeholders for those elements you want to omit. For example, in the following call, if the **ParamArray** arguments begin after `Arg2`, values are being passed only for the first, third, and sixth values in the **ParamArray**:

  ```
  MySub Arg1, Arg2, 7,, 44,,,3
  ```

  **Note**   The **ParamArray** always represents the last items in the argument list.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Ambiguous name detected

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAmbiguousNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAmbiguousNameS"}

The identifier conflicts with another identifier or requires qualification. This error has the following causes and solutions:

- More than one object in the same scope may have elements with the same name.

  Qualify the element name by including the object name and a period. For example:

  *object.property*

  Module-level identifiers and project-level identifiers (module names and referenced project names) may be reused in a procedure, although it makes programs harder to maintain and debug. However, if you want to refer to both items in the same procedure, the item having wider scope must be qualified. For example, if `MyID` is declared at the module level of `MyModule`, and then a procedure-level variable is declared with the same name in the module, references to the module-level variable must be appropriately qualified:

```
Dim MyID As String
Sub MySub
   MyModule.MyID = "This is module-level variable"
   Dim MyID As String
   MyID = "This is the procedure-level variable"
   Debug.Print MyID
   Debug.Print MyModule.MyID
End Sub
```

- An identifier declared at module-level conflicts with a procedure name. For example, this error occurs if the variable `MyID` is declared at module level, and then a procedure is defined with the same name:

```
Public MyID
Sub MyID
   . . .
End Sub
```

  In this case, you must change one of the names because qualification with a common module name would not resolve the ambiguity. Procedure names are **Public** by default, but variable names are **Private** unless specified as **Public**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# AppleScript error

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAppleScriptErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAppleScriptErrorS"}

An error occurred during processing of your script. This error has the following causes and solutions:

- The error could be related to the target <u>application</u>.

  Check whether <u>identifiers</u> in the script match those in the application.

- The error could be related to AppleScript.

  Make sure the syntax used in your script is valid AppleScript syntax.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Application-defined or object-defined error

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsguserdefinedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUserDefinedS"}

This message is displayed when an error generated with the **Raise** method or **Error** statement doesn't correspond to an error defined by Visual Basic for Applications. It is also returned by the **Error** function for <u>arguments</u> that don't correspond to errors defined by Visual Basic for Applications. Thus it may be an error you defined, or one that is defined by an object, including <u>host applications</u> like Microsoft Excel, Visual Basic, and so on. For example, Visual Basic forms generate form-related errors that can't be generated from code simply by specifying a number as an argument to the **Raise** method or **Error** statement. This message has the following causes and solutions:

*   Your application executed an **Err.Raise** *n* or **Error** *n* statement, but the number *n* isn't defined by Visual Basic for Applications.

    If this was what was intended, you must use **Err.Raise** and specify additional arguments so that an end user can understand the nature of the error. For example, you can include a description string, source, and help information. To regenerate an error that you trapped, this approach will work if you don't execute **Err.Clear** before regenerating the error. If you execute **Err.Clear** first, you must fill in the additional arguments to the **Raise** method. Look at the context in which the error occurred, and make sure you are regenerating the same error.

*   It may be that in accessing objects from other applications, an error was propagated back to your program that can't be mapped to a Visual Basic error.

    Check the documentation for any objects you have accessed. The **Err** object's **Source** property should contain the programmatic ID of the application or object that generated the error. To understand the context of an error returned by an object, you may want to use the **On Error Resume Next** construct in code that accesses objects, rather than the **On Error GoTo** *line* syntax.

    **Note**   In the past, programmers often used a loop to print out a list of all trappable error message strings. Typically this was done with code such as the following:

```
For index = 1 to 500
    Debug.Print Error$(index)
Next index
```

    Such code still lists all the Visual Basic for Applications error messages, but displays "Application-defined or object-defined error" for host-defined errors, for example those in Visual Basic that relate to forms, controls, and so on. Many of these are trappable <u>run-time errors</u>. You can use the Help **Search** dialog box to find the list of trappable errors specific to your host application. Click **Search**, type **Trappable** in the first text box, and then click **Show Topics**. Select **Trappable Errors** in the lower list box and click **Go To**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Argument required for Property Let or Property Set

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPropByValC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPropByvalS"}

The purpose of **Property Let** and **Property Set** procedures is to give a new value to a property. This error has the following causes and solutions:

- In setting the property, the value doesn't appear in the right place.

  Place the value to which you want to set the property on the right side of the expression setting the property value.

- In the procedure definition, the parameter defined to receive the value passed on the right side of the expression is missing or misplaced.

  Specify a parameter for the value argument list in the procedure definition. If the procedure takes more than one argument, the property-value parameter must appear last in the list.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Array already dimensioned

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgArrayAlreadyDimC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgArrayAlreadyDimS"}

A static <u>array</u> can only be dimensioned once. This error has the following causes and solutions:

- You attempted to change the dimensions of a static array with a **ReDim** statement; only dynamic arrays can be redimensioned.

  Either remove the redimensioning or use a dynamic array. To define a dynamic array, use a **Dim**, **Public**, **Private**, or **Static** statement with empty parentheses. For example:

  ```
  Dim MyArray()
  ```

  In a <u>procedure</u>, you can define a dynamic array with the **ReDim** or **Static** statement using a <u>variable</u> for the number of elements:

  ```
  ReDim MyArray(n)
  ```

- An **Option Base** statement occurs after array dimensions are set.

  Make sure any **Option Base** statement precedes all array declarations.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Array argument must be ByRef

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgArrayMustBeByRefC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgArrayMustBeByrefS"}

Arrays declared with **Dim**, **ReDim**, or **Static** can't be passed **ByVal**. This error has the following cause and solution:

- You tried to pass a whole array **ByVal**.

  An individual element of an array can be passed **ByVal** (by value), but a whole array must be passed **ByRef** (by reference). Note that **ByRef** is the default. If you must pass an array **ByVal** to prevent changes to the array's elements from being propagated back to the caller, you can pass the array argument in its own set of parentheses, or you can place it into a **Variant**, and then pass the **Variant** to the **ByVal** parameter, as follows:

  ```
  Dim MyVar As Variant
  MyVar = OldArray()
  ```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Beginning of search scope has been reached; do you want to continue from the end?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSearchLowerBoundS"}

Your search was unsuccessful. This condition has the following cause and solution:

- Your upward search has reached the beginning of the specified scope.

  You can continue searching from the end of the search scope, or cancel and change the scope of the search.

# Block If without End If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedEndifC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedEndIfS"}

An error occurred due to an incomplete statement. This error has the following cause and solution:

- An **If** statement is used without a corresponding **End If** statement.

  A multiline **If** statement must terminate with a matching **End If** statement. For nested **If...End If** statements, make sure there is a correctly matched **If...End If** structure inside each enclosing **If...End If** structure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Breakpoint not allowed on this line

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNOBpCaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoBpCaseS"}

Breakpoints can only be placed on certain parts of statements. This error has the following causes:

- You tried to place a breakpoint on a line that can't accept a breakpoint, for example:

  - A line that contains only comments.

  - A line that contains only line labels.

  - A line that contains only declarations (**Const**, **Dim**, **Static**, **Type**, and so on).

  - Any line in a hidden module.

  - Any line in the **Immediate** window.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# ByRef argument type mismatch

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgArgTypeMismatchC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgArgTypeMismatchS"}

An argument passed **ByRef** (by reference), the default, must have the precise data type expected in the procedure. This error has the following cause and solution:

• You passed an argument of one type that could not be coerced to the type expected.

  For example, this error occurs if you try to pass an **Integer** variable when a **Long** is expected. If you want coercion to occur, even if it causes information to be lost, you can pass the argument in its own set of parentheses. For example, to pass the **Variant** argument `MyVar` to a procedure that expects an **Integer** argument, you can write the call as follows:

```
Dim MyVar
MyVar = 3.1415
Call SomeSub((MyVar))


Sub SomeSub (MyNum As Integer)
    MyNum = MyNum + MyNum
End Sub
```

  Placing the argument in its own set of parentheses forces evaluation of it as an expression. During this evaluation, the fractional portion of the number is rounded (not truncated) to make it conform to the expected argument type. The result of the evaluation is placed in a temporary location, and a reference to the temporary location is received by the procedure. Thus, the original `MyVar` retains its value.

  **Note**  If you don't specify a type for a variable, the variable receives the default type, **Variant**. This isn't always obvious. For example, the following code declares two variables, the first, `MyVar`, is a **Variant**; the second, `AnotherVar`, is an **Integer**.

```
Dim MyVar, AnotherVar As Integer
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Calling convention not supported by Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidVtableCcS"}

Visual Basic doesn't support all <u>procedure</u> calling conventions, which specify the order in which <u>arguments</u> must be passed and the way that argument types must be specified. This error has the following cause and solution:

- The procedure was called using a calling convention that Visual Basic doesn't support. For example, Visual Basic doesn't support the Pascal calling convention in a 16-bit version of the Microsoft Windows environment.

  If the calling convention isn't supported by Visual Basic, the procedure can't be called from Visual Basic. Check the object's documentation to see if an alternative is provided.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't add a reference to the specified file

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotAddReferenceS"}

Not all <u>object libraries</u> or <u>type libraries</u> can be accessed by Visual Basic. This error has the following cause and solution:

- You tried to use the **Add References** dialog box to add a reference to a type library or object library that can't be used by Visual Basic.

  Check the documentation for the object represented by the library to see if it's available in some other form that Visual Basic can use.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't assign or coerce array of fixed-length string or user-defined type to Variant

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAssignArrayVariantC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAssignArrayVariantS"}

A **Variant** can only accept assignment of data having a valid **VarType**. This error has the following causes and solutions:

- You tried to pass an <u>array</u> of fixed-length strings. When a single fixed-length string is assigned to a **Variant**, it's coerced to a variable-length string, but this can't be done for an array of fixed-length strings.

    If you must pass the array, use a loop to assign the individual elements of the array to the elements of a temporary array of variable-length strings. You can then assign the array to a variant and use **Erase** to deallocate the temporary array. However, you can't deallocate a fixed-size array with **Erase**.

- You tried to pass a fixed-length string or <u>user-defined type</u> to the **VarType** function or **TypeName** function.

    An <u>argument</u> to the **VarType** or **TypeName** function must be a valid **Variant** type.

- You tried to assign a user-defined type to a **Variant** variable.

    Although you can't directly assign a whole <u>variable</u> of user-defined type to a **Variant**, you can use the **Array** function to assign the individual elements of a variable of user-defined type to a **Variant**. This produces a **Variant** containing an array of variants. The **VarType** of each element in this array of variants corresponds to the original type of each element of the user-defined type.

- You tried to pass an <u>array</u> of fixed-length strings or user-defined types as an argument in a procedure call that requires a **Variant** argument. Note that any time a procedure is late bound, that is, when the call must be constructed at <u>run time</u>, all arguments must be passed as **Variant** types. For example, the following code causes this error:

```
Dim MyForm As Object ' Because MyForm is Object, binding is late.
Set MyForm = New Form1
Dim StringArray(10) As String * 12
' The next line generates the error.
MyForm.MyProc StringArray
```

    For the string array, use a loop to assign each individual member of the array to a temporary array of variable-length strings. You can then assign that array to a **Variant** to pass to the procedure. For an array of user-defined types, you can use the **Array** function to assign the individual elements of a variable of user-defined type to a **Variant**. This produces a **Variant** containing an array of variants. The **VarType** of each element in this array of variants corresponds to the original type of each element of the user-defined type.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't assign to an array

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAssignArrayC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAssignArrayS"}

Each element of an <u>array</u> must have its value assigned individually. This error has the following causes and solutions:

• You inadvertently tried to assign a single value to an array <u>variable</u> without specifying the element to which the value should be assigned.

  To assign a single value to an array element, you must specify the element in a subscript. For example, if `MyArray` is an integer array, the <u>expression</u> `MyArray = 5` is invalid, but the following expression is valid:

  ```
  MyArray(UBound(MyArray)) = 5
  ```

• You tried to assign a whole array to another array. For example, if `Arr1` is an array and `Arr2` is another array, the following two assignments are both invalid:

  ```
  Arr1 = Arr2 ' Invalid assignment.
  Arr1() = Arr2()    ' Invalid assignment.
  ```

  To assign one array to another, make sure the array on the left-hand side of the assignment is resizable and the types of the array match.

  > **Note**    You can place a whole array in a **Variant**, resulting in a single variant variable containing the whole array:

  ```
  Dim MyArr As Variant
  MyVar = Arr2()
  ```

  You then reference the elements of the array in the variant with the same subscript notation as for a normal array, for example:

  ```
  MyVar(3) = MyVar(1) + MyVar(5)
  ```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't change data types of array elements

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgRedimTypeMismatchC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRedimTypeMismatchS"}

**ReDim** can only be used to change the number of elements in an <u>array</u>. This error has the following cause and solution:

- You tried to redeclare the <u>data type</u> of an array using **ReDim**.

  Declare a new array of the type you want, and then use the conversion functions to assign each element of the old array to the corresponding element of the new array.

  You can also place the array in a **Variant** variable. This can be done with a simple assignment:

  ```
  Dim MyVar As Variant
  MyVar = MyIntegerArray()
  ```

  This creates a **Variant** containing an array tagged as the type of the original array. You can then assign <u>variables</u> of any valid **VarType** to the elements of the array within a variant.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Cannot define a KWID_tkPUBLIC user-defined type within a private object module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgRecordDefInClassC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRecordDefInClassS"}

A user-defined type that appears within an object module can't be **Public**. This error has the following cause and solution:

- You tried to define a **Public** user-defined type in an object module.

  Move the user-defined type definition to a standard module, and then declare variables of the type in the object module or other modules, as appropriate. If you only want the type to be available in the module in which it appears, you can place its **Type...End Type** definition in the object module and precede its definition with the **Private** keyword.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't display hidden procedure

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProcInHiddenModuleS"}

Everything in a hidden <u>module</u> is hidden. This error has the following cause and solution:

- You tried to view a <u>procedure</u> in a hidden module.

  Unhide the module to view the procedure. To view a line that generated an error in a hidden procedure, run the code after unhiding the module to view the error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't edit module

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotEditS"}

<u>Modules</u> marked as protected can be viewed, but not edited. This error has the following cause and solution:

- You tried to edit a protected module.

   Remove the protection from the module, and then try editing again. In most cases, this error occurs because the Visual SourceSafe addin is installed and the file isn't checked out.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't enter break mode at this time

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantDebugProjChangedAtRunC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantDebugProjChangedAtRunS"}

Break mode is the state in which a program is still running, but its activity is suspended. This error has the following cause and solution:

•   You tried to enter break mode, for example, by pressing CTRL+BREAK (Windows) or COMMAND+PERIOD (Macintosh), pressing the **Break** button on the **Standard** toolbar or the **Debug** toolbar, or by executing a breakpoint in the running code.

    A change was made programmatically to the project using the extensibility (add-in) object model. This prevents the program from having execution suspended. You can continue running, or end execution, but can't suspend execution.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't execute immediate statements in design mode

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantExecImmedInWaitModeS"}

<u>Design time</u> is any time that your code isn't being executed, or is suspended and waiting to be continued. This error has the following cause and solution:

• You tried to execute a statement in the **Immediate** window, but your code isn't in a running mode.

 Start your code running, and then suspend program execution. You can then execute code in the **Immediate** window.

For additional information, place the cursor in the **Immediate** window and press F1 (in Windows) or HELP (on the Macintosh).

# Can't find project or library

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBrokenLibRefS"}

You can't run your code until all missing references are resolved. This error has the following causes and solutions:

- A <u>referenced project</u> could not be found, or a referenced <u>object library</u> corresponding to the language of the <u>project</u> could not be found.

  Unresolved references are prefixed with MISSING in the **References** dialog box. Select the missing reference to display the path and language of the missing project or library. Follow these steps to resolve the reference or references:

**To resolve the references**

1. Display the **References** dialog box.

2. Select the missing reference.

3. Start the <u>Object Browser</u>.

4. Use the **Browse** dialog box to find the missing reference.

5. Click **OK**.

6. Repeat the preceding steps until all missing references are resolved.

Once you find a missing item, the MISSING prefix is removed to indicate that the link is reestablished. If the file name of a referenced project has changed, a new reference is added, and the old reference must be removed.

To remove a reference that is no longer required, simply clear the check box next to the unnecessary reference. Note that the references to the Visual Basic object library and <u>host-application</u> object library can't be removed.

Applications may support different language versions of their object libraries. To find out which language version is required, click the reference and check the language indicated at the bottom of the dialog box.

Object libraries may be standalone files with the extension .OLB or they can be integrated into a <u>dynamic-link library (DLL)</u> They can exist in different versions for each platform. Therefore, when projects are moved across platforms, for example, from Macintosh to Microsoft Windows, the correct language version of the referenced library for that platform must be available in the location specified in your host application documentation.

Object library file names are generally constructed as follows:

- Windows (version 3.1 and earlier): Application Code + Language Code + [Version].OLB. For example:

  The object library for French Visual Basic for Applications, Version 2 was vafr2.olb.

  The French Microsoft Excel 5.0 object library was xlfr50.olb.

- Macintosh: Application Name Language Code [Version] OLB. For example:

  The object library for French Visual Basic for Applications, Version 2 was VA FR 2 OLB.

  The French Microsoft Excel 5.0 object library was MS Excel FR 50 OLB.

If you can't find a missing project or library on your system, contact the <u>referencing project</u>'s author. If the missing library is a Microsoft application object library, you can obtain it as follows:

- If you have access to Microsoft electronic technical support services, refer to the

technical support section of this Help file. Under electronic services, you will find instructions on how to use the appropriate service option.

- If you don't have access to Microsoft electronic technical support services, Microsoft object libraries are available upon request as an application note from Microsoft. Information on how to contact your local Microsoft product support organization is also available in the technical support section of this Help file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't Get or Put an object reference variable or a variable of user-defined type containing an object reference

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgGetPutObjRecordc"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgGetPutObjRecordS"}

An object reference is temporary and can easily become invalid between closing and opening a file. This error has the following cause and solution:

- The variable in your **Get** or **Put** statement contains, or is declared to contain, a reference to an object.

  If the variable is an object reference you can't use it with **Get** and **Put** statements. To place the value of some or all of the object's properties in the file, each property must be individually specified.

- The user-defined type variable in your **Get** or **Put** statement contains an element that is an object reference.

  If the variable's **Type** statement contains an element representing an object (for example, it is defined in a class module, has Object data type, is a form or a control, and so on), remove it from the definition, or define a new type for use with the **Get** and **Put** statements that has no **Object** type element in its definition.

  If you have elements in the user-defined type with **Variant** type, make sure no object reference is assigned to that element. A **Variant** can accept such an assignment, but will cause this error if its user-defined type is used in a **Get** or **Put**.

  Note that you can use **Input #**, **Line Input #**, **Print #**, or **Write #** to write the default property of an object to disk.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't load module; invalid format

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantLoadModuleS"}

A <u>module</u> must be in text format. This error has the following cause and solution:

- You attempted to load a binary format file as a module.

  Some versions of Visual Basic permit you to save code in both binary and text formats. If possible, reload the file in the application in which it was last saved and save it as text.

For additional information, select the item in question and press F1(in Windows) or HELP (on the Macintosh).

# Can't make an assignment to a read-only property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgReadOnlyPropertyC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReadOnlyPropertyS"}

Some properties can't accept assignments. This error has the following cause and solution:

- You tried to assign a value to a property that can't accept assignment.

  In some cases, a property can accept assignment only at specific times. For example, a property might accept assignments at design time, but not at run time. Check the Help for the specific property to see when it can accept assignments, if ever.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't perform requested operation since the module is hidden

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantOperateOnHiddenModuleC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantOperateOnHiddenModuleS"}

This error pertains to the Visual Basic extensibility (add-in) object model. This error has the following cause and solution:

- The module is hidden. You can't modify a hidden module or obtain information from a hidden module.

  Unhide the module and try the operation again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't place conditional breakpoint on an array

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgConditionalWatchOnArrayC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgConditionalWatchOnArrayS"}

An array has no single value associated with it. This error has the following cause and solution:

- You tried to set a conditional breakpoint (sometimes called a watchpoint) that would suspend program execution when the value of a whole array changed.

    Set the conditional breakpoint on a specific element of the array.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't record into running module

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRecordModCantChangeS"}

You must end execution to begin recording. This error has the following cause and solution:

- You tried to record a macro while executing module code.

   Stop execution or press CTRL+BREAK (Windows) or COMMAND+PERIOD (Macintosh) and then turn on recording.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't remove default reference

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantRemoveReferenceC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantRemoveReferenceS"}

A default reference always exists. This error has the following cause and solution:

- You tried to remove a reference that must always be available, for example, a type-library or object-library reference.

    Don't attempt to remove the reference.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Case Else outside Select Case

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCaseElseNoSelectC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCaseElseNoSelectS"}

A **Case Else** statement can only occur between matching **Select Case** and **End Select** statements. This error has the following cause and solution:

• You placed a **Case Else** statement outside the **Select Case...End Select** block.

  Move the **Case Else** statement within a **Select Case...End Select** block.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Case without Select Case

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCaseNoSelectC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCaseNoSelectS"}

A **Case** statement must occur within a **Select Case...End Select Block**. This error has the following cause and solution:

- A **Case** statement can't be matched with a preceding **Select Case** statement.

  Check other control structures within the **Select Case...Case** structure and verify that they are correctly matched. For example, an **If** without a matching **End If** inside the **Select Case...End Select** structure generates this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Circular dependencies between modules

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgcirculartypeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCircularTypeS"}

Circular references between <u>modules</u>, <u>constants</u>, and <u>user-defined types</u> aren't allowed. This error has the following cause and solution:

*   A user-defined type or constant in one module references a user-defined type or constant in a second module, which in turn references another user-defined type or constant in the first module.

    Remove the dependent references.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object module must implement all procedures in interface

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInterfaceIncompleteC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInterfaceIncompleteS"}

An interface is a collection of unimplemented <u>procedure</u> prototypes. This error has the following cause and solution:

- You specified an interface in an **Implements** statement, but you didn't add code for all the procedures in the interface.

  You must write code for each of the procedures specified in the interface. An empty procedure is adequate; the procedure should implement the required behavior.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Code execution has been interrupted

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBreakModeInterruptS"}

Code execution can be suspended when necessary. This condition has the following cause and solution:

- A CTRL+BREAK (Microsoft Windows), ESC (Microsoft Excel) or COMMAND+PERIOD (Macintosh) key combination has been encountered.

  In the error dialog box, click **Debug** to enter break mode, **Continue** to resume, or **End** to stop execution.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Compile error in hidden module: <module name>

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCompErrInHiddenModuleS"}

A protected <u>module</u> can't be displayed. This error has the following cause and solution:

- There is a compilation error in the code of the specified module, but it can't be displayed because the <u>project</u> is protected.

  Unprotect the project, and then run the code again to view the error.

For additional information, select the item in question and press F1(in Windows) or HELP (on the Macintosh).

# Constant expression required

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgRequiredConstExprC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRequiredConstExprS"}

A <u>constant</u> must be initialized. This error has the following causes and solutions:

- You tried to initialize a constant with a <u>variable</u>, an instance of a <u>user-defined type</u>, an object, or the return value of a function call.

  Initialize constants with literals, previously declared constants, or literals and constants joined by operators (except the **Is** logical operator).

- You tried to declare an <u>array</u> using a variable to specify the number of elements.

  To declare a dynamic array within a <u>procedure</u>, declare the array with **ReDim** and specify the number of elements with a variable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Constants, fixed-length strings, arrays, user-defined types, and Declare statements not allowed as Public members of an object module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadClassMemberC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadClassMemberS"}

Not all variables in an object module can be declared as **Public**. However, procedures are **Public** by default, and **Property** procedures can be used to simulate variables syntactically. This error has the following causes and solutions:

• You declared a **Public** constant in an object module.

  Although you can't declare a **Public** constant in an object module, you can create a **Property Get** procedure with the same name. If you don't create a **Property Let** or **Property Set** procedure with that name, you are in effect creating a read-only property that can be used the same way you would use a constant.

• You declared a **Public** fixed-length string in an object module.

  You can simulate fixed-length strings with a set of **Property** procedures that either truncate the string data when it exceeds the permitted length, or notify the user that the length has been exceeded.

• You declared a **Public** array in an object module.

  Although a procedure can't return an array, it can return a Variant that contains an array. To simulate a **Public** array in a class module, use a set of **Property** procedures that accept and return a **Variant** containing an array.

• You placed a **Declare** statement in an object module.

  **Declare** statements are implicitly public. Precede the **Declare** statement with the **Private** keyword.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Current module doesn't support Print method

Not all <u>methods</u> and <u>properties</u> are appropriate in all <u>modules</u>. This error has the following causes and solutions:

- You tried to use the **Print** method on an object that can't display anything. For example, you can't use the **Print** method without qualification in a <u>standard module</u>.

  Remove the reference to the **Print** method, or qualify it with an appropriate object. For example, qualify it with the **Debug** object to display its arguments in the **Immediate** window during debugging.

- You tried to use the **Line**, **Circle**, **PSet**, or **Scale** method on an object that can't accept them. For example, they can't appear unqualified in a standard module or an Automation <u>class module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Cyclic reference of projects not allowed

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCycleDetectedS"}

Circular references to <u>projects</u> aren't allowed. For example, if `MyProj` references `YourProj`, then `YourProj` (or a project that references `YourProj`) can't reference `MyProj`. This error has the following cause and solution:

- You tried to add a reference to a project that is already part of the project.

   Remove the circular reference or references.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Definitions of property procedures for the same property are inconsistent or contain optional parameters or a ParamArray

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInconsistentPropFuncsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInconsistentPropFuncsS"}

The parameters for **Property Get**, **Property Let**, and **Property Set** procedures for the same property must match exactly, except that the **Property Let** has one extra parameter, whose type must match the return type of the corresponding **Property Get**, and the **Property Set** has one more parameter than the corresponding **Property Get**, whose type is either **Variant**, **Object**, a class name, or an object library type specified in an object library. This error has the following causes and solutions:

- The number of parameters for the **Property Get** procedure isn't one less than the number of parameters for the matching **Property Let** or **Property Set** procedure.

  Add a parameter to **Property Let** or **Property Set** or remove a parameter from **Property Get**, as appropriate.

- The parameter types of **Property Get** must exactly match the corresponding parameters of **Property Let** or **Property Set**, except for the extra **Property Set** parameter.

  Modify the parameter declarations in the corresponding procedure definitions so they are appropriately matched.

- The parameter type of the extra parameter of the **Property Let** must match the return type of the corresponding **Property Get** procedure.

  Modify either the extra parameter declaration in the **Property Let** or the return type of the corresponding **Property Get** so they are appropriately matched.

- The parameter type of the extra parameter of the **Property Set** can differ from the return type of the corresponding **Property Get**, but it must be either a **Variant**, **Object**, class name, or a valid object library type.

  Make sure the extra parameter of the **Property Set** procedure is either a **Variant**, **Object**, class name, or object library type.

- You defined a **Property** procedure with an **Optional** or a **ParamArray** parameter.

  **ParamArray** and **Optional** parameters aren't permitted in **Property** procedures. Redefine the procedures without using these keywords.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Def*type* statements must precede declarations

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDefTypeInvC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDefTypeInvS"}

**Def***type* statements include **DefInt**, **DefDbl**, **DefCur**, and so on. This error has the following causes and solutions:

- A <u>variable</u> <u>declaration</u> precedes a **Def***type* statement at <u>module level</u>.

  Move the **Def***type* statement to precede all variable declarations.

- A **Def***type* statement appears in a <u>procedure</u>.

  Move the **Def***type* statement to module level, preceding all variable declarations.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Destination label too far away; loop, Select Case, or block If too large

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBranchToOBigC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBranchTooBigS"}

Procedures can be as large as 64K from beginning to end, but because branching can occur either forward or backward within a procedure, such branching is limited to 32,767 bytes in either direction. This error has the following causes and solutions:

- You have a branching statement (**GoTo**, **GoSub**) whose destination label is farther away than 32,767 bytes from the source branching statement.

  Move the label closer, or make the procedure smaller.

- You have a very large loop structure that occupies more than 32K of memory from beginning to end.

  Make the loop smaller.

- You have a very large block **If** structure that contains a **Then** or **Else** clause that occupies more than 32K of memory from beginning to end.

  Reduce the size of the offending portion of the structure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Do without Loop

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedLoopC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedLoopS"}

Each **Do** must be matched with a terminating **Loop**. This error has the following cause and solution:

- A **Do** statement was used without a terminating **Loop** statement.

  Check that other control structures within the **Do...Loop** structure are correctly matched. For example, a block **If** without a matching **End If** inside the **Do...Loop** structure may generate this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Duplicate declaration in current scope

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgMultiplyDefinedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMultiplyDefinedS"}

The specified name is already used at this level of scope. For example, two variables can have the same name if they are defined in different procedures, but not if they are defined within the same procedure. This error has the following causes and solutions:

- A new variable or procedure has the same name as an existing variable or procedure. For example:

```
Sub MySub()
    Dim A As Integer
    Dim A As Variant
    . . .      ' Other declarations or procedure code here.
End Sub
```

Check the current procedure, module, or project and remove any duplicate declarations.

- A **Const** statement uses the same name as an existing variable or procedure.

    Remove or rename the constant in question.

- You declared a fixed array more than once.

    Remove or rename one of the arrays.

Search for the duplicate name. When specifying the name to search for, omit any type-declaration character because a conflict occurs if the names are the same and the type-declaration characters are different.

Note that a module-level variable can have the same name as a variable declared in a procedure, but when you want to refer to the module-level variable within the procedure, you must qualify it with the module name. Module names and the names of referenced projects can be reused as variable names within procedures and can also be qualified.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Duplicate definition

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDuplicateDefnS"}

You can only define a <u>conditional compiler constant</u> to have one value. This error has the following cause and solution:

- You specified two different values for the same conditional compiler constant, for example:

```
#Const Mac = 0
#Const Mac = 1
```

  Remove one of the definitions.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Duplicate Deftype statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDupDefTypeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDupDefTypeS"}

**Def**_type_ statements in the same <u>scope</u> must specify unique letter ranges. This error has the following cause and solution:

- Part or all of the letter range for this **Def**_type_ statement is already included in another **Def**_type_ statement.

  Rewrite the statement so there is no overlap in the letter ranges.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Duplicate Option statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDupOptionC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDupOptionS"}

Only one **Option** statement of each kind may occur in each <u>module</u>. This error has the following cause and solution:

- You defined more than one **Option Base**, **Option Compare**, **Option Explicit**, or **Option Private** statement in this module.

  Remove any duplicates in the module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Edit can't be undone — proceed anyway?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAskCantUndoS"}

You won't be able to choose the **Undo** command to restore the current state after you perform this edit. This error has the following cause and solution:

- This typically occurs when an edit is simply too large to be saved.

   Try performing the edit in smaller increments.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Else without If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgElseNoMatchingIfC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgElseNoMatchingIfS"}

An **Else** must be preceded by an **If**. This error has the following cause and solution:

- An **Else** statement was used without a corresponding **If** statement.

  Check other control structures within the **If...End If** structure and verify that they are correctly matched. Also check that the block **If** is correctly formatted.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Empty Enum type not allowed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEmptyEnumC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEmptyEnumS"}

An **Enum** type specifies the name and members for an enumeration. This error has the following cause and solution:

- You named an enumeration in an **Enum...End Enum** block, but failed to specify any members.

    Add at least one member to the **Enum...End Enum** block.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Empty watch expression

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEmptyWatchExprS"}

The **Add Watch** dialog box requires entry of an <u>expression</u>. This error has the following cause and solution:

- You didn't supply a <u>watch expression</u> in the **Add Watch** dialog box.

  Add an expression to the **Add Watch** dialog box or press the ESC key.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# End If without block If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndifnomatchingifC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndIfNoMatchingIfS"}

An **End If** statement must have a corresponding **If** statement. This error has the following cause and solution:

•   The **If** clause was omitted or is separated from the **End If**.

   Check other control structures within the **If...End If** structure and verify that they are correctly matched. Also check that the block **If** is correctly formatted.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# End of search scope has been reached; do you want to continue from the beginning?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSearchUpperBoundS"}

Your search was unsuccessful. This error has the following cause and solution:

- Your downward search has reached the end of the specified scope.

  You can continue searching from the beginning of the search scope, or cancel and change the scope of the search.

# End Select without Select Case

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndSelectNoSelectC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndSelectNoSelectS"}

**End Select** must be matched with a preceding **Select Case**. This error has the following cause and solution:

- You used an **End Select** statement without a corresponding **Select Case** statement.

   This is usually due to an extra **End Select** below a **Select Case** block, or leaving behind the **End Select** statement when copying a **Select Case** block from one procedure to another. Check each **End Select** statement to make sure it terminates a **Select Case** structure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# End With without With

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndWithWithoutWithC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndWithWithoutWithS"}

**End With** must be matched with a preceding **With**. This error has the following cause and solution:

• You used an **End With** statement without a corresponding **With** statement.

Check other control structures within the **With...End With** structure and verify that they are correctly matched. For example, an **If** without a matching **End If** inside the **With...End With** structure can cause this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Private Enum types and Enum types defined in standard modules or private classes cannot be used in public object modules as parameters or return types for public procedures, as procedures, as public data members, or as fields of public user defined types

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNonExpEnumInExpItemC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNonExpEnumInExpItemS"}

This error has the following cause and solution:

• A non-exposed enum was used as a parameter or return type of a public procedure or a public data member of an exposed class.

Exposed here means that the enum is exposed from the ActiveX server that is being defined, which is equivalent to saying that it is declared in a public class of an ActiveX Exe or Dll project.

# Error accessing the system registry

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRegistryAccessS"}

Some operations must access your system's registration database. This error has the following cause and solution:

- The registration database for your system has been corrupted.

  Run the **Setup** program for the <u>host application</u> again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Event handler is invalid

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantInsertEventHandlerC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantInsertEventHandlerS"}

The parameter list of an event-handling procedure must precisely match the declaration of the event. This error has the following cause and solution:

• Your event-handling procedure has the wrong number of parameters.

Eliminate extra parameters or add the missing ones.

• One or more of your event-handling procedure parameters has the wrong data type.

Make the parameter types match those of the event declaration.

• Your event-handling procedure is a **Function** rather than a **Sub**.

Make your procedure a **Sub**. An event handler can't return a value.

• Another type library uses the event name for a type of its own.

Qualify the name with the name of the proper type library to avoid the ambiguity.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Procedure declaration does not match description of event or procedure having same name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEventProcSigMismatchS"}

Your class module has a procedure name that conflicts with the name of an event. This error has the following cause and solution:

- A procedure has the same name as an event, but does not have the same signature (that is, the number and types of the parameters). This can occur if you do something such as add a new parameter to an event procedure. For example, if you modify the definition of a form's Form_Load event procedure as follows, this error will occur:

  ```
  Sub Form_Load (MyParam As Integer)

  . . .

  End Sub
  ```

  If the procedure isn't the event procedure corresponding to the event, change its name. If the procedure corresponds to the event, make the parameter list agree with that required by the event (if any).

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Exit Do not within Do...Loop

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExitDoNotWithinDoC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExitDoNotWithinDoS"}

**Exit Do** is only valid within a **Do...Loop** statement. This error has the following cause and solution:

- You used an **Exit Do** statement outside a **Do...Loop** statement.

  Make sure a valid **Do** statement precedes the **Exit Do**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Exit For not within For...Next

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExitForNotWithinForC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExitForNotWithinForS"}

**Exit For** is only valid within a **For...Next** loop. This error has the following cause and solution:

•   You used an **Exit For** statement outside a **For...Next** statement.

   Make sure a valid **For** statement precedes the **Exit For**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Exit Function not allowed in Sub or Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExitFuncofSubC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExitFuncOfSubS"}

An **Exit** statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

• You used **Exit Function** in a **Sub** or **Property** procedure.

   Use **Exit Sub** or **Exit Property** for these types of procedures.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Exit Property not allowed in Function or Sub

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExitPropNotC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExitPropNotS"}

An **Exit** statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

- You used **Exit Property** in a **Sub** or **Function** procedure.

    Use the proper **Exit** statement for this type of procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Exit Sub not allowed in Function or Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExitSubofFuncC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExitSubOfFuncS"}

An **Exit** statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

• You used **Exit Sub** in a **Function** or **Property** procedure.

   Use the proper **Exit** statement for this type of procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected array

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedArrayC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedArrayS"}

A <u>variable</u> name with a subscript indicates the variable is an <u>array</u>. This error has the following cause and solution:

- The syntax you specified is appropriate for an array, but no array with this name is in <u>scope</u>.

  Check to make sure the name of the variable is spelled correctly. Unless the <u>module</u> contains **Option Explicit**, a variable is created on first use. If you misspell the name of an array variable, the variable may be created, but not as an array.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected End Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndFuncNotEndSubC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndFuncNotEndSubS"}

An **End** *procedure* statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

• You used **End Property** or **End Sub** to end a **Function** procedure.

  Use **End Function** for this type of procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected End Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndPropC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndPropS"}

An **End** *procedure* statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

- You used **End Function** or **End Sub** to end a **Property** procedure.

  Use **End Property** for this type of procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected End Sub

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndSubNotEndFuncC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndSubNotEndFuncS"}

An **End** *procedure* statement must match the <u>procedure</u> in which it occurs. This error has the following cause and solution:

- You used **End Function** or **End Property** to end a **Sub** procedure.

   Use **End Sub** for this type of procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected End With

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedEndWithC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedEndWithS"}

A **With** block must be terminated. This error has the following cause and solution:

- You did not properly terminate a **With** block.

    Place an **End With** statement at the end of the block.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected Function or variable

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedFuncC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedFuncS"}

The syntax of your statement indicates a <u>variable</u> or function call. This error has the following cause and solution:

• The name isn't that of a known variable or **Function** procedure.

  Check the spelling of the name. Make sure that any variable or function with that name is visible in the portion of the program from which you are referencing it. For example, if a function is defined as **Private** or a variable isn't defined as **Public**, it's only visible within its own <u>module</u>.

• You are trying to inappropriately assign a value to a <u>procedure</u> name. For example if `MySub` is a **Sub** procedure, the following code generates this error:

```
MySub = 237 ' Causes Expected Function or variable error
```

  Although you can use assignment syntax with a **Property Let** procedure or with a **Function** that returns an object or a **Variant** containing an object, you can't use assignment syntax with a **Sub**, **Property Get**, or **Property Set** procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected procedure, not module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedFuncNotModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedFuncNotModuleS"}

There is no <u>procedure</u> by this name in the current <u>scope</u>, but there is a <u>module</u> by this name. You can call a procedure, but not a module. This error has the following cause and solution:

- The name of a module is used as a procedure call.

  Check the spelling of the procedure name, and make sure the procedure you are trying to call isn't private to another module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected procedure, not project or library

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedFuncnotprojectC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedFuncNotProjectS"}

There is no underline procedure by this name in the current scope, but there is a project by this name. You can call a procedure, but not a project. This error has the following cause and solution:

- The name of a project is used as a procedure call.

  Check the spelling of the procedure name, and make sure the procedure you are trying to call isn't private to another module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected procedure, not user-defined type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedFuncNotRecordC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedFuncNotRecordS"}

There is no <u>procedure</u> by this name in the current <u>scope</u>, but there is a <u>user-defined type</u> by this name. You can call a procedure, but not a user-defined type. This error has the following cause and solution:

- The name of a user-defined type is used as a procedure call.

  Check the spelling of the procedure name, and make sure the procedure you are trying to call isn't private to another <u>module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected procedure, not variable

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedFuncNotVarC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedFuncNotVarS"}

There is no <u>procedure</u> by this name in the current <u>scope</u>, but there is a <u>variable</u> by this name. You can call a procedure, but not a variable. This error has the following cause and solution:

• The name of a variable is used as a procedure call.

  The error may also be caused by misspelling the name of a valid procedure, because that can be misconstrued as an implicitly defined variable. Check the spelling of the procedure name, and make sure the procedure you are trying to call isn't private to another <u>module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected Sub, Function, or Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedSubC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedSubS"}

The syntax of your statement indicates a **Sub**, **Function**, or **Property** procedure invocation. This error has the following cause and solution:

* The specified name isn't that of a **Sub**, **Function**, or **Property** procedure in <u>scope</u> in this part of your program.

  Check the spelling of the name. Note that if the <u>procedure</u> is defined as **Private**, it can only be called from within its <u>module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected user-defined type, not project

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedTypeNotProjC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedTypeNotProjS"}

There is no <u>user-defined type</u> by this name in the current <u>scope</u>, but there is a <u>project</u> by this name. You can define a <u>variable</u> as having user-defined type, but not project type. This error has the following cause and solution:

- The name of a project is used as a user-defined type.

  Check the spelling of the name of the user-defined type, and make sure the user-defined type isn't private to another <u>module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected variable or procedure, not Enum type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEnumExpectedVarC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEnumExpectedVarS"}

The name of an **Enum** type only appears in a statement declaring an enumeration of the type or as a qualifier. This error has the following cause and solution:

•   An **Enum** type name is used instead of the name of an enumeration variable of the type.

Declare a <u>variable</u> of the **Enum** type or find a previous declaration in the current <u>scope</u> and use that variable.

•   An **Enum** type name is used instead of a variable or <u>procedure</u> name.

Check the spelling of the <u>identifier</u> that caused the error. Use the name of a variable or procedure where you specified an **Enum** type.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected variable or procedure, not module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgModuleExpectedVarC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModuleExpectedVarS"}

There is no <u>variable</u> or <u>procedure</u> by this name in the current <u>scope</u>, but there is a <u>module</u> by this name. This error has the following cause and solution:

- The name of a module is used as a variable or procedure.

    Check the spelling of the variable or procedure name, and make sure the name you want to refer to isn't private to another module. A module name can be a qualifier, but can't stand alone.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected variable or procedure, not project

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgProjectExpectedVarC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProjectExpectedVarS"}

There is no <u>variable</u> or <u>procedure</u> by this name in the current <u>scope</u>, but there is a <u>project</u> by this name. This error has the following cause and solution:

- The name of a project is used as a variable or procedure.

  Check the spelling of the variable or procedure name, and make sure the name you want to refer to isn't private to another <u>module</u>. A project name can be a qualifier, but can't stand alone.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expected: <various>

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedTokensS"}

An expected part of the syntax was not found. The error is usually located to the left of the selected item, but isn't always obvious. For example, you can invoke a **Sub** procedure with or without the **Call** keyword. However, if you use the **Call** keyword, you must enclose the argument list in parentheses. This error has the following causes and solutions:

- **Expected: End of Statement**. Improper use of parentheses in a <u>procedure</u> invocation:

```
X = Workbook.Add F:= 5    ' Error due to no parentheses.
Call MySub 5              ' Error due to no parentheses.
```

  Use parentheses in a function call that specifies <u>argument</u>s or with a **Sub** procedure invocation that uses the **Call** keyword.

- **Expected: )**. Incorrect syntax for a procedure call. For example, a function call can't stand by itself, and **Sub** procedure calls sometimes require the **Call** keyword, depending on how you specify their arguments.

```
Workbook.Add (X:=5, Y:=7)  ' Function call without expression.
YourSub(5, 7)              ' Sub invocation without Call.
```

  Always use function calls in <u>expressions</u>. If you have multiple arguments enclosed in parentheses in a **Sub** procedure call, you must use the **Call** keyword.

- **Expected: Expression**. For example, when pasting code from the <u>Object Browser</u>, you may have forgotten to specify a value for a <u>named argument</u>.

```
Workbook.Add (X:= )  ' Error because no value assigned to
                     ' named argument.
```

  Either add a value for the argument, or delete the argument if it's optional.

- **Expected: Variable**. For example, you may have used restricted <u>keywords</u> for variable names. In the following example, the **Input #** statement expects a variable as the second argument. Since **Type** is a restricted keyword, it can't be used as a variable name.

```
Input # 1, Type   ' Type keyword invalidly used as
                  ' variable name.
```

  Rename the variable so it doesn't conflict with restricted keywords.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# External name not defined

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExtNameUndefS"}

You can indicate external names by enclosing them in brackets (**[ ]**). This error has the following cause and solution:

- The <u>identifier</u> specified within brackets has no meaning to the <u>host application</u>.

  Check the spelling of the name to be sure it's consistent with that expected by the host.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File format no longer supported

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnsupFormatS"}

Not all file formats are readable under all circumstances. This error has the following cause and solution:

- You are trying to load a binary file created with an earlier version of Visual Basic.

  Load the file into the version of Visual Basic with which the file was created, save it in text format, then try to load it again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Fixed-length strings and use of the 'new' qualifier are not allowed for fields in a public user defined type defined in an object module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFixedStrNotInExpUDTC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFixedStrNotInExpUDTS"}

This error has the following cause and solution:

- Fixed-length strings and the use of the 'new' qualifier are not allowed for fields in a public user defined type defined in an object module.

# Fixed-length strings not allowed as the type of a public member of an object module; private object modules not allowed as the type of a public member of a public object module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFixed-lengthStringsNotAllowedAsTypeOfPublicMemberOfObjectModulePrivateObjectModulesNotAllowedAsTypeOfPublicMemberOfPublicOC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFixed-lengthStringsNotAllowedAsTypeOfPublicMemberOfObjectModulePrivateObjectModulesNotAllowedAsTypeOfPublicMemberOfPublicOS"}

This error has the following cause and solution:

- You cannot set the type of a public member of an object module to a fixed-length string. Use a different variable type.

- You cannot set the type of a public member of a public object module to a private object module. Use a different type.

# Fixed or static data can't be larger than 64K

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSizeTooBigS"}

Fixed and static data include nonautomatic <u>variables</u>, fixed-length strings, and fixed <u>arrays</u>. This error has the following causes and solutions:

- You attempted to allocate more than 64K of <u>module-level</u> data.

  Reduce the amount of declared data. Note that although the size limit for module-level data is 64K, module-level variable-length strings and arrays can exceed this limit.

- You attempted to allocate more than 64K of static <u>procedure-level</u> data in the <u>module</u>.

  Reduce the amount of this type of data declared. Static data from all <u>procedures</u> in a module is limited to a total of 64K (not 64K per procedure). Note that static variable-length strings and arrays can exceed this limit.

- The size of a <u>user-defined type</u> exceeds 64K.

  Reduce the size of the user-defined type. Generally the size of a user-defined type equals the sum of the sizes specified for its elements. On some platforms there may be padding between the elements to keep them aligned on word boundaries. If you nest one user-defined type in another, the size of the nested type must be included in the size of the new type.

- In a procedure, you tried to declare a variable of user-defined type that requires more than 32K.

  Although the size limit of a variable of user-defined type is 64K at module level, variables of user-defined type in procedures can't exceed 32K. Reduce the size required for the user-defined type, or use a module-level variable.

- The size of a fixed-length string declared within a procedure exceeds 65,464.

  Reduce the length of the fixed-length string. Note that variable-length strings can exceed this limit.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For control variable already in use

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForIndexInUseC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForIndexInUseS"}

When you nest **For...Next** loops, you must use different control <u>variables</u> in each one. This error has the following cause and solution:

- An inner **For** loop uses the same counter as an enclosing **For** loop.

    Check nested loops for repetition. For example, if the outer loop uses `For Count = 1 To 25`, the inner loops can't use `Count` as the control variables.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For Each control variable must be Variant or Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForEachVariantC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForEachVariantS"}

A control variable is the *element* part of the **For Each...Next** statement syntax. This error has the following causes and solutions:

- A collection has a control variable that isn't a **Variant** or **Object** type.

  Make sure the *element* part of the **For Each...Next** is a **Variant** or **Object**.

- An array has a control variable that isn't a **Variant**.

  Make sure the *element* part of the **For Each...Next** is a **Variant**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For Each control variable on arrays must be Variant

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForEachAryVariantC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForEachAryVariantS"}

A control <u>variable</u> is the *element* part of the **For Each...Next** statement syntax. This error has the following cause and solution:

- An <u>array</u> has a control variable that isn't a **Variant**.

  Make sure the *group* part of the **For Each...Next** is a **Variant** type variable.

- For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For Each may not be used on array of user-defined type or fixed-length strings

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForEachAryTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForEachAryTypeS"}

**For Each** constructs are only valid for collections and arrays of intrinsic types, including arrays of objects. Also, arrays of fixed-length strings can't be iterated using **For Each**. This error has the following causes and solutions:

- The elements of the array in your **For Each** construct have a user-defined type.

  Use an ordinary **For...Next** loop to iterate the elements of the array.

- The elements of the array in your **For Each** construct have a fixed-length string type.

  Use an ordinary **For...Next** loop to iterate the elements of the array.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For Each can only iterate over a collection object or an array

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForEachCollAryC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForEachCollAryS"}

The **For Each** construct can only be used with <u>collections</u> and <u>arrays</u>. This error has the following cause and solution:

- You specified an object that isn't a collection or array as the *group* part of the **For Each** syntax.

  Check the spelling of the item over which you want to iterate to make sure it corresponds to a collection or array in <u>scope</u> in this part of your code.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For without Next

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedNextC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedNextS"}

Every **For** statement must have a matching **Next** statement. This error has the following cause and solution:

- A **For** statement is used without a corresponding **Next** statement.

  Check for an incorrectly matched **For...Next** structure inside the outer **For...Next** structure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Forward reference to user-defined type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgForwardTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgForwardTypeS"}

A <u>user-defined type</u> must be defined before it can be referenced. This error has the following causes and solutions:

- You declared a <u>variable</u> with a user-defined type before the definition of the user-defined type appears. In the following example, the variable `OtherVar` is declared before its type (`OtherType`) is known:

```
Type MyType
    OtherVar As OtherType
End Type

Type OtherType
    WholeVar As Integer
    RealVar As Double
End Type
```

  Reposition the type definitions so that the forward reference doesn't occur.

- You nested a user-defined type within itself.

```
Type MyType
    MyVar As Integer
    OtherVar As MyType
End Type
```

  Remove the self-referencing nested type. This may occur indirectly if you nest a type within another type in which the first is already declared. Check the definition of each nested type to eliminate duplication.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Function call on left side of assignment must return Variant or Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFunctionLHSC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFunctionLHSS"}

A function call can appear on the left side of an assignment, but only if the return value of the function is an **Object** or **Variant**. This error has the following cause and solution:

- The return type of the function on the left side of the assignment isn't a **Variant** or **Object**.

  Change the return type. Note that if the return value is an object or a **Variant** that contains an object, the assignment is to the default property of the object. If the **Variant** returned isn't an object, the assignment has no effect.

- Everything in the call is correct, however, it can't be completed. For example, you may be trying to set a property that can only be set at design time.

  Enter design mode and set the property in the **Property** window. Remove the code that tried to set the property programmatically.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Function marked as restricted or uses a type not supported in Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidTypeLibFunctionS"}

Not every underline procedure that appears in a type library or object library can be accessed by every programming language. The creator of a type or object library can designate some functions as restricted to prevent their use by macro languages. This error has the following causes and solutions:

- You tried to use a function with a restricted specification.

  You can't use the function in your program. If you have documentation for the object represented by the library, check to see if a method is provided that gives equivalent functionality.

- You tried to use a function that requires a parameter type or has a return type that isn't available in Visual Basic.

  Sometimes you can simulate return types with Visual Basic equivalents. Check the subtypes of the Variant data type . This may also work for non-Basic parameter types that are expected as references. However, you can't pass a **Variant** data type by value in an effort to simulate a non-Basic type.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Identifier too long

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIdTooLongS"}

<u>Identifiers</u> can't be more than 255 characters long. This error has the following cause and solution:

- The identifier exceeds 255 characters.

  Reduce the length of the identifier.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Identifier under cursor isn't a procedure name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgViewProcNotProcNameS"}

You tried to view a <u>procedure</u>, but the <u>identifier</u> at the insertion point was not a procedure name. This error has the following cause and solution:

- Identifier isn't a procedure name.

  Check the spelling of the identifier.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Incorrect DLL version

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIncorrectVersionS"}

Each version of Visual Basic works only with its corresponding <u>dynamic-link library (DLL)</u> (Windows) or code resource (Macintosh). This error has the following cause and solution:

- Your version of the Visual Basic dynamic-link library or code resource doesn't match the version expected by this <u>host application</u>. The program is attempting to call routines in a DLL or code resource, but the version of the library or resource is inconsistent with either Visual Basic or the host application.

  Obtain the correct version of the library or resource, and make sure earlier versions don't precede the proper one on your path.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Incorrect OLE version

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIncorrectOleVersionS"}

Your versions of the OLE <u>dynamic-link libraries (DLL)</u> (Windows) or code resource (Macintosh) don't match those expected by the <u>host application</u>. In Microsoft Windows, the application searches for the DLLs first in the current directory, then along your path settings, and then in the WINDOWS\SYSTEM directory. This error has the following cause and solution:

- Earlier OLE DLLs were encountered in the search before the DLLs expected by the host application.

  You should not try to use both versions of the DLLs.

Note that on the Macintosh, OLE files are normally only found in the Extensions folder so it is unlikely that this error will occur.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Insufficient Immediate window memory to create variable

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgVarInNestedPaneS"}

Memory in the **Immediate** window is limited. This error has the following cause and solution:

• You specified a <u>variable</u> in the **Immediate** window that must be instantiated, since it wasn't created in the program's code context.

  Delete the reference to the variable in the **Immediate** window, or declare the variable in the program's code context so that it doesn't have to be created in the **Immediate** window.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Insufficient memory to save Undo information

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantSaveUndoInfoS"}

You won't be able to choose the **Undo** command to restore the current state after you perform this edit. This error has the following cause and solution:

- The edit is too large to save for **Undo**.

  Try performing the edit in smaller increments.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Insufficient project information to load project on platform or with version now being used

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantLoadFromCanonicalC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantLoadFromCanonicalS"}

When you save a project, extra information is saved to permit loading the project with a later version or on a different platform. This error has the following cause and solution:

- When you saved this project, you received an error indicating that insufficient memory was available to save all the information that might be necessary to load the project with a different version or to load it on a different platform.

  Load the file using the Visual Basic version in which it was previously saved, or on the platform in which it was previously saved, and then save it again. If you don't receive any error messages during that save, you should be able to load it in the current version or on the current platform.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Interface not valid for Implements

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalInterfForImplementsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalInterfForImplementsS"}

Not all interfaces can be implemented in Visual Basic. This error has the following cause and solution:

- The interface contains some element that can't be supported by Visual Basic. For example, Visual Basic has no equivalent to the unsigned long integer type, Visual Basic can't designate a procedure parameter as "out-only." Although Visual Basic supports the use of the underscore character (_) in Visual Basic identifiers, it can't implement an interface that uses underscore characters in the names of its members.

    You can't implement the interface in Visual Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid Access mode

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgWrongAccessC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWrongAccessS"}

In your **Open** statement, you specified a type of access that was invalid for the specified file type. This error has the following causes and solutions:

- You attempted to open a file for **Input**, but specified an illegal access mode.

  You can omit the access mode specification when opening a file for input, but if you specify it, the access mode must be **Read**. Both **Write** and **Read Write** are invalid access modes on a file opened for **Input**.

- You attempted to open a file for **Append**, but specified an invalid access mode.

  You can omit the access mode specification when opening a file for append, but if you specify it, the access mode must be **Write**. Both **Read** and **Read Write** are invalid access modes on a file opened for **Append**.

- You attempted to open a file for **Output**, but specified an invalid access mode.

  You can omit the access mode specification when opening a file for output, but if you specify it, the access mode must be **Write**. Both **Read** and **Read Write** are invalid access modes on a file opened for **Output**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid attribute in Sub, Function, or Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidAttrInSubC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidAttrInSubS"}

Some attributes are invalid within procedures. This error has the following cause and solution:

- A **Public** or **Private** attribute appears within the body of a procedure definition.

  Remove the attribute from the procedure. To give the variable wider scope, move the declaration to module level. Variables declared within procedures are always **Private**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid character

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalCharS"}

The character can't be used in the current context. This error has the following cause and solution:

- You probably used an invalid character, such as a bracket or hyphen, as part of a <u>variable</u> name.

   Compare the spelling of the name with its declaration.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid data format

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvDataReadS"}

The data read from a file wasn't in the expected format. This error has the following causes and solutions:

- A <u>project</u> file or <u>object library</u> file is either corrupted or in a format that can't be understood.

  Get a new version of the project file or object library file.

- You may have attempted to load an .exe file into a <u>module</u>.

  Load the source code instead.

- You may have used the **References** dialog box and <u>Object Browser</u> to add a reference to a file that isn't a valid object library or contains a Basic project in a format not supported by the <u>host application</u>. For example, on the Windows platform, Microsoft Excel can't understand .bas or .frm files, or Microsoft Project files containing Basic code.

  Load the questionable file into the application in which it was created, and then save it in a compatible format. For example, object library source code can be processed through MkTypLib; and QuickBasic, and Visual Basic code can be saved in text format, and so on.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid data type for constant

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgConstTypeErrorS"}

Not all types of data can be assigned to <u>constants</u>. This error has the following cause and solution:

- You tried to declare the type of a constant to be a <u>user-defined type</u>, an object, or an <u>array</u>.

  Remove the declaration or redeclare as a <u>variable</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid in Immediate window

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgILLImmedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllImmedS"}

Not all statements are permitted in the **Immediate** window. This error has the following causes and solutions:

- A declarative statement was used. For example, **Const**, **Declare**, **Def***type*, **Dim**, **Function**, **Option Base**, **Option Explicit**, **Option Compare**, **Option Private**, **Private**, **Public**, property procedure declaration statements (**Property Let**, **Property Set**, and **Property Get**), **ReDim**, **Static**, **Sub**, and **Type** are not allowed in the **Immediate** window.

  Remove the declarative statements from the **Immediate** window.

- A control flow statement was used, for example, **Sub**, **Function**, **Property**, **GoSub**, **GoTo**, **Return**, and **Resume**.

  Remove these statements from the **Immediate** window.

- There is no logical connection made between separated physical lines in the **Immediate** window, so statements formatted as multiple physical lines, such as a block **If** statement, can't be properly executed.

  Such blocks can be typed on a single physical line, with each statement separated from the next by a colon (**:**). Conversely, you can extend a single statement across physical lines in the **Immediate** window by using the line-continuation character, which is a space followed by an underscore ( **_**).

- You tried to execute some code in the **Immediate** window that invalidates the current state of your program and requires you to reinitialize the program.

  Remove the code in question from the **Immediate** window.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid inside procedure

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvInsideProcC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvInsideProcS"}

The statement can't occur in a **Sub** or **Function** procedure. This error has the following cause and solution:

- One of the following statements appears in a <u>procedure</u>: **Declare**, **Def**_type_, **Private**, **Public**, **Option Base**, **Option Compare**, **Option Explicit**, **Option Private**, **Enum** and **Type**.

    Remove the statement from the procedure. The statements can be placed at <u>module level</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid length for fixed-length string

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgIllegalFixedStringLenC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalFixedStringLenS"}

This error has the following causes and solutions:

- A fixed-length string is declared with zero length.

  A fixed-length string must have at least one character.

- A fixed-length string exceeds the limit of 65,526.

  Reduce the length specified for the fixed-length string.

  **Note**   Variable-length strings can exceed the upper limit and can have zero length.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid Next control variable reference

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNextForMatchC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNextForMatchS"}

The numeric <u>variable</u> in the **Next** part of a **For...Next** loop must match the variable in the **For** part. This error has the following cause and solution:

- The variable in the **Next** part of a **For...Next** loop differs from the variable in the **For** part. For example:

```
For Counter = 1 To 10
   MyVar = Counter
Next Count
```

  Check the spelling of the variable in the **Next** part to be sure it matches the **For** part. Also, be sure you haven't inadvertently deleted parts of the enclosing loop that used the variable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid or unqualified reference

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadWithRefC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadWithRefS"}

An <u>identifier</u> beginning with a period is valid only within a **With** block. This error has the following cause and solution:

- The identifier begins with a period.

  Complete the qualification of the identifier or remove the period.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid outside procedure

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvOutsideProcC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvOutsideProcS"}

The statement must occur within a **Sub** or **Function**, or a property procedure (**Property Get**, **Property Let**, **Property Set**). This error has the following cause and solution:

- An executable statement, **Static** or **ReDim**, appears at module level.

  **Static** is unnecessary at module level, since all module-level variables are static. Use **Dim** instead of **ReDim** at module level. To create a dynamic array at module level, declare it with **Dim** using empty parentheses.

  **Note**  At module level, you can use only comments and declarative statements, such as **Const**, **Declare**, **Def***type*, **Dim**, **Option Base**, **Option Compare**, **Option Explicit**, **Option Private**, **Private**, **Public**, and **Type**. The **Sub**, **Function**, and **Property** statements occur outside the body of their procedures, but within the procedure declaration.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid ParamArray use

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgillegalparamarrayuseC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalParamArrayUseS"}

The parameter defined as **ParamArray** is used incorrectly in the procedure. This error has the following causes and solutions:

- You attempted to pass **ParamArray** as an argument to another procedure that expects an array or a **ByRef Variant**.

  Assign the **ParamArray** parameter to a **Variant**, and then pass the variant.

- You attempted to use an **Erase** or **ReDim** statement with a **ParamArray** parameter within its procedure.

  Remove the **Erase** or **ReDim**. These operations can't be performed on the **ParamArray** parameter.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid procedure name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidProcNameS"}

There are restrictions in procedure-naming beyond the rules for naming <u>identifiers</u>. This error has the following cause and solution:

- You attempted to define a <u>procedure</u>, but the name used for the procedure is invalid because the host already uses that identifier for another purpose. For example, if the <u>host application</u> is Microsoft Excel, you can't define a procedure with the name `R1C1` because that identifier is already used by Microsoft Excel.

  Choose another name for the procedure.

- Your procedure name is that of a restricted keyword, exceeds 255 characters, or doesn't begin with a letter.

  Choose a different name for the procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid qualifier

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgQualNotObjectRecordC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgQualNotObjectRecordS"}

Qualifiers are used for disambiguation. This error has the following cause and solution:

- The qualifier does not identify a <u>project</u>, <u>module</u>, object, or a <u>variable</u> of <u>user-defined type</u> within the current <u>scope</u>.

  Check the spelling of the qualifier. Make sure that the qualifying <u>identifier</u> is within the current scope. For example, a variable of user-defined type in a **Private** module is visible only within that module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid ReDim

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidReDimC"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidRedimS"}

Not every <u>array</u> can be redimensioned. This error has the following causes and solutions:

- A <u>variable</u> was implicitly declared a **Variant**, and you attempted to use **ReDim** to change it to an array.

  A **Variant** can contain an array, but if it isn't explicitly declared, you can't use **ReDim** to make it into an array. Declare the **Variant** before using **ReDim** to specify the number of elements it can contain. For example, in the following code, `ReDim AVar(10)` causes an invalid **ReDim** error, but `ReDim BVar(10)` does not:

  ```
  AVar = 1 ' Implicit declaration of AVar.
  ReDim AVar(10) ' Causes invalid ReDim error.
  .
  .
  .
  Dim BVar ' Explicit declaration of BVar.
  ReDim BVar(10) ' No error.
  ```

- You tried to use **ReDim** to change more than one dimension of an array contained within a **Variant**.

  You can only use **ReDim** to change the size of the last dimension of an array in a **Variant**. To create an array with multiple dimensions that can be redimensioned, the array can't be contained within a **Variant**, and you have to declare it the normal way.

- You can use **ReDim** only to change the number of elements in a normal array, not the type of those elements.

  If you want an array in which you can change the types of the elements, use an array contained within a **Variant**. If you declare the array first, changing the types and the number of its elements can be accomplished as follows:

  ```
  Dim MyVar As Variant ' Declare the variable.
  ReDim MyVar(10) As String  ' ReDim it as array of String subtypes.
  ReDim MyVar(20) As Integer ' ReDim it as array of Integer subtypes.
  ReDim MyVar(5) As Variant  ' ReDim it as array of Variant subtypes.
  ```

- You attempted to use **ReDim** with an array that is a member of an Automation object.

  Remove the **ReDim**.

  > **Note**   If you don't specify a type for a variable, the variable receives the default type, **Variant**. This isn't always obvious. For example, the following code declares two variables, the first, `MyVar`, is a **Variant**; the second, `AnotherVar`, is an **Integer**.

  ```
  Dim MyVar, AnotherVar As Integer
  ```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid syntax for conditional compiler constant declarations

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidConstValSyntaxS"}

Entering <u>conditional compiler constants</u> in an **Options** dialog box differs from declaring <u>constants</u> in code. This error has the following cause and solution:

- You used improper syntax when entering a constant declaration in the in an **Options** dialog box.

  The only valid syntax is a simple assignment of an integer value to the <u>identifier</u>. Make sure the syntax for the entry is as follows, with each constant separated by a colon (**:**):

  *constantname* **=** [{+ | − }]*integervalue* : [{+ | − }]*constantname* **=** *integervalue* [...]


For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid type-declaration character

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgIncorrectTypeCharC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIncorrectTypeCharS"}

Type-declaration characters are valid, but don't exist for all data types; they aren't permitted in some situations. This error has the following causes and solutions:

- A type-declaration character is appended to a variable declared in a **Private**, **Public**, or **Static** statement with an **As** clause.

  Remove the type-declaration character.

- A type-declaration character is appended to an inconsistent literal. For example, since the ampersand (**&**) is the type-declaration character for a **Long** integer, appending it to a literal of a different type causes this error:

  ```
  10.253&
  ```

  Remove the type-declaration character or replace it with the correct one.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of AddressOf operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidAddressOfUseC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidAddressOfUseS"}

The **AddressOf** operator modifies an <u>argument</u> to pass the address of a function rather than passing the result of the function call. This error has the following cause and solution:

* You tried to use **AddressOf** with the name of a class method.

   Only the names of Visual Basic procedures in a .bas module can be modified with **AddressOf**. You can't specify a class method.

* The procedure name modified by **AddressOf** is defined in a <u>module</u> in a different <u>project</u>.

* You tried to modify the name a DLL function or a function defined in a <u>type library</u> with **AddressOf**.

* DLL and type library functions can't be modified with **AddressOf**.

   The procedure definition must be in a module in the current project. Move the definition to a module in this project or include its current module in the project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of Me keyword

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidMeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidMeS"}

The **Me** keyword can appear in class modules. This error has the following causes and solutions:

- The **Me** keyword appeared in a standard module.

  The **Me** keyword can't appear in a standard module because a standard module doesn't represent an object. If you copied the code in question from a class module, you have to replace the **Me** keyword with the specific object or form name to preserve the original reference.

- The **Me** keyword appeared on the left side of a **Set** assignment, for example:

  ```
  Set Me = MyObject ' Causes "Invalid use of Me keyword" message.
  ```

  Remove the **Set** assignment.

  **Note**   The **Me** keyword can appear on the left side of a **Let** assignment, in which case the default property of the object represented by **Me** is set. For example:

```
Let Me = MyObject ' Valid assignment with explicit Let.
Me = MyObject  ' Valid assignment with implicit Let.
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of New keyword

The **New** keyword can only be applied to a creatable object (an instance of a <u>class</u> or <u>Automation object</u>). This error has the following causes and solutions:

- You tried to instantiate something that can have only one instance. For example, you tried to create a new instance of a <u>module</u> by specifying `Module1` in a statement like the following:

```
Dim MyMod As New Module1
```

  You can't create the new instance, since a module can have only one instance.

- You tried to instantiate an Automation object, but it was not a creatable object. For example, you tried to create a new instance of a list box by specifying ListBox in a statement like the following:

```
' Valid syntax to create the variable.
Dim MyListBox As ListBox
Dim MyFormInst As Form
' Invalid syntax to instantiate the object.
Set MyFormInst = New Form
Set MyListBox = New ListBox
```

  ListBox and Form are class names, not specific object names. You can use them to specify that a <u>variable</u> will be a reference to a certain <u>object type</u>, as with the valid **Dim** statements above. But you can't use them to instantiate the objects themselves in a **Set** statement. You must specify a specific object, rather than the generic class name, in the **Set** statement:

```
' Valid syntax to create new instance of a form or list box.
Set MyFormInst = New Form1
Set MyListBox = New List1
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgConstQualC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgConstQualS"}

You tried to use an object in an incorrect way. This error has the following causes and solutions:

• You tried to discontinue an object reference by assigning **Nothing** to it but omitted the **Set** keyword:

```
MyObject = Nothing
```

Use the **Set** statement to set an object to **Nothing**. Assuming MyObject is an object, you must set it to **Nothing** with the **Set** statement:

```
Set MyObject = Nothing
```

Omitting the **Set** keyword is an implicit use of **Let**, which causes an attempt to perform a value assignment, rather than a reference assignment. **Nothing** can't be used in a value assignment.

• You attempted to use **Nothing** in an expression.

Rewrite the expression without the **Nothing**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgUnsuitablefuncpropmatchC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnsuitableFuncPropMatchS"}

You are using one kind of **Property** procedure where a different kind is expected. This error has the following causes and solutions:

- You are trying to write to a property that is read-only.

    If the only property procedure defined for the property is a **Property Get**, you can't assign a value to the property. Either write an appropriate **Property Let** procedure, or don't attempt to write to the property.

- You are trying to read a property that is write-only.

    If the only property procedure defined for the property is a **Property Let**, you can't read the value of the property. Either write an appropriate **Property Get** procedure, or don't attempt to write to the property.

- You are trying to set a reference but the property has only **Property Get** or **Property Let** procedures.

    Either write a **Property Set** procedure for the property, or don't try to set a reference to it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid watch expression

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadWatchExprS"}

The specified <u>watch expression</u> isn't a valid <u>expression</u>. This error has the following cause and solution:

- The watch expression is syntactically incorrect.

  Check the syntax of all components in the expression. Note that the syntax for a watch expression corresponds to the <u>locale</u> of the <u>project</u> in which the expression being watched is defined.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Label not defined

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLabelNotDefinedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLabelNotDefinedS"}

This error has the following cause and solution:

- A <u>line label</u> or <u>line number</u> is referred to (for example in a **GoTo** statement), but doesn't occur within the <u>scope</u> of the reference.

  The label must be within the <u>procedure</u> that contains the reference. Line labels are visible only in their own procedures.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Language/country setting has changed

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDefaultLCIDChangeS"}

This error has the following cause and solution:

- You changed the default language/country setting for the Visual Basic environment.

  Be aware that this may cause problems, although by itself it is legal.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Line isn't an executable statement

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoExecStmtS"}

Declarations and comments are not executable statements. This error has the following cause and solution:

- You chose the **Step To Cursor** command, but the cursor was not on a line containing an executable statement.

  Place the cursor on an executable statement near the current line.

For additional information, choose the **Step To Cursor** command on the **Run** menu and press F1 (in Windows) or HELP (on the Macintosh).

# Line too long

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLineTooLongS"}

A physical line of Visual Basic code can contain up to 1023 characters. This error has the following cause and solution:

- A line contains too many characters.

  You can create a longer logical line by joining physical lines with a <u>line-continuation character</u>, a space followed by an underscore ( _). Up to 25 physical lines can be joined with line-continuation characters to form a single logical line, or 24 consecutive line-continuation characters. Thus, a logical line could potentially contain a total of 10,230 characters. Beyond that, you must break the line into individual statements or assign some <u>expressions</u> to intermediate <u>variables</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Loop without Do

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLoopNoMatchingDoC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLoopNoMatchingDoS"}

A **Do** loop must begin with a **Do** statement. This error has the following cause and solution:

- You have an unterminated loop block nested within another loop.

  Check to verify that the correct **Do...Loop** syntax is used.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# LSet allowed only on strings and user-defined types

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLsetTypeErrorC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLsetTypeErrorS"}

**LSet** is used to left align data within strings and <u>variables</u> of <u>user-defined type</u>. This error has the following causes and solutions:

- The specified variable isn't a string or user-defined type.

  If you are trying to block assign one array to another, **LSet** does not work. You must use a loop to assign each element individually.

- You tried to use **LSet** with an object.

  **LSet** can also be used to assign the elements of a user-defined type variable to the elements of a different, but compatible, user-defined type. Although objects are similar to user-defined types, you can't use **LSet** on them. Similarly, you can't use **LSet** on variables of user-defined types that contain strings, objects, or variants.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# LSet not allowed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLsetOwnerRecordC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLsetOwnerRecordS"}

**LSet** is used to left-align data within strings and <u>variables</u> of <u>user-defined type</u>. This error has the following cause and solution:

- You tried to use **LSet** on a user-defined type containing strings, objects, or variants.

   You must assign the elements individually from this variable of user-defined type to another.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: interface is derived from another pure interface with non-restricted methods

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsInterfaceIsDerivedFromAnotherPureInterfaceWithNonrestrictedMethods_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsInterfaceIsDerivedFromAnotherPureInterfaceWithNonrestrictedMethods_S"}

This error has the following cause and solution:

- The interface is directly or indirectly derived from a pure interface that contains non-restricted methods.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: interface contains data fields

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsInterfaceContainsAnyVariable_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsInterfaceContainsAnyVariable_S"}

This error has the following cause and solution:

• The interface or class contains data fields.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: method has underscore in name

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsMethodHasUnderscoreInName_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsMethodHasUnderscoreInName_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

• The interface or class contains a method name that contains an underscore character.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: method does not return HRESULT

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsMethodReturnsNonHresult_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsMethodReturnsNonHresult_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

• The interface or class contains a method name that returns a value that isn't of type HRESULT.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: method has out-only or LCID parameter

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsMethodHasOutonlyOrLCIDParameter_C"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsMethodHasOutonlyOrLCIDParameter_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

- The interface or class contains a method that has a parameter that is of type out-only or LCID.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: method has a parameter with too many levels of indirection

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplmentsMethodHasParameterWithTooManyLevelOfIndirection_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplmentsMethodHasParameterWithTooManyLevelOfIndirection_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

•   The interface or class contains a method that has a parameter with too many levels of indirection. For example, usage of double indirections of integer or triple indirection of user-defined types.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: methods uses type that is not supported by Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsMethodsUsesTypesThatAreNotSupportedByBasic_C" } {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsMethodsUsesTypesThatAreNotSupportedByBasic_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

• The interface or class contains a method that aren't supported by Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad interface for Implements: interface is not derived from Iunknown

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInterfaceForImplementsInterfaceIsNotDerivedFromIunknown_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInterfaceForImplementsInterfaceIsNotDerivedFromIunknown_S"}

The **Implements** statement is used to specify an interface or class that will be implemented in the class module in which it appears. This error has the following cause and solution:

- The interface or class contains a method that uses data types that aren't supported by Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Maximum number of watch expressions added

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgListFullS"}

There is a limit to the number of watch expressions the **Watch** window can contain. This error has the following cause and solution:

- You added the maximum number of watch expressions to the **Watch** window.

  Remove one watch expression for each new one you want to add, or display the value you want to know about in the **Immediate** window.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Member identifier already exists in object module from which this object module derives

Identifiers used for object module members can't conflict with names already used in an object module from which they derive. This error has the following cause and solution:

- A procedure or data member identifier in your object module uses an identifier already used in the object module from which it derives. For example, a form has a **BackColor** property, so the following code would cause this error:

  ```
  ' Form already has a BackColor property.
  Dim BackColor As Integer   ' Generates the error.


  Function BackColor() ' Generates the error.
  End Function
  ```

  Change the identifier that conflicts with the member identifier in your object module.

  **Note**   The following names cannot be used as property or method names because they belong to the underlying IUnknown and IDispatch interfaces: QueryInterface, AddRef, Release, GetTypeInfoCount, GetTypeInfo, GetIDsOfNames, Invoke. Using these names causes a compilation error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Method not valid without suitable object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgIllegalMethodC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalMethodS"}

Not all <u>methods</u> can be performed by all objects. This error has the following cause and solution:

- You called a method without specifying an object, and the method isn't valid for the implicit object. For example, you can't use the **Line** method in a <u>standard module</u> without a valid object qualifier because a standard module can't display the output of the **Line** method.

  Explicitly qualify the method call with an object that can accept the method. For example, you can specify a form or picture box with the **Line** method.

  **Note**   Other methods that need an explicit object qualifier when used in a standard module include **Circle**, **Print**, and **PSet**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Missing end bracket

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMissingEndBrackS"}

Brackets in a statement must occur in matching pairs. This error has the following cause and solution:

- An opening bracket isn't matched by a closing bracket.

    Place a closing bracket at the end of the material to be bracketed.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Module not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModuleNotFoundS"}

Modules aren't loaded from a code reference — they must be part of the project. This error has the following cause and solution:

- The requested module doesn't exist in the specified project. For example, the statement `MyModule.SomeVar = 5` generates this error when `MyModule` isn't visible in the project `MyProject`.

  See your host application documentation for information on including the module in the project.

# Module too large

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgModTooLargeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModTooLargeS"}

A module contains code within the project. This error has the following cause and solution:

- There is too much code in the module.

   Create a new module and move some of the procedures from this module to the new one. If the current module contains module-level declarations of data that must be visible to the procedures in the new module, declare that data as **Public**.

   **Note**   Comments aren't counted as lines of code. Therefore, deleting comments doesn't prevent this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Must be first statement on the line

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgMustbe1stStatementC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustBe1stStatementS"}

Not all <u>keywords</u> can appear at the beginning of a line of code. This error has the following causes and solutions:

- You preceded a **Sub**, **Function**, or **Property** statement with another statement on the same line.

  A **Sub**, **Function**, or **Property** statement must always be the first statement on any line in which it appears (unless preceded by the keyword **Public**, **Private**, or **Static**).

- You preceded an **End If**, **Else**, or **ElseIf** statement with another statement on the same line.

  An **End If**, **Else**, or **ElseIf** (only when used in a block **If** structure) statement must always be the first statement on any line in which it appears.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Name conflicts with existing module, project, or object library

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModNameConflictS"}

Modules, object libraries, and referenced projects must be uniquely named within a project. This error has the following causes and solutions:

- There is already a module, project, or object library with this name referenced in this project. A file name extension isn't considered part of the name, so different extensions can't be used to distinguish one file from another.

  Use a different name for one of the duplicate module, project, or object library references.

- You attempted to add a reference to a project or object library whose file name (without an extension) is the same as the name of one of the current project's modules.

  Change either the module name or the name of the file that could not be added.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Named argument already specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNamedAlreadySpecifiedS"}

You can use a <u>named argument</u> only once in the <u>argument</u> list of each <u>procedure</u> invocation. This error has the following causes and solutions:

- You specified the same named argument more than once in a single call. For example, if the procedure `MySub` expects the named arguments `Arg1` and `Arg2`, the following call would generate this error:

```
Call MySub(Arg1 := 3, Arg1 := 5)
```

    Remove one of the duplicate specifications.

- You specified the same <u>argument</u> both by position and with a named argument, for example:

```
Call MySub(1, Arg1 := 3)
```

    Remove one of the duplicate specifications.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Named arguments not allowed

Named arguments aren't permitted in all situations. This error has the following causes and solutions:

- You tried to specify a named argument as an array index, for example:

  ```
  MyVar = MyArray(MyNamedArg := 1)
  ```

  Use an ordinary variable or constant expression as an array index.

- You tried to specify a named argument with an object, for example:

  ```
  MyVar = MyObject(MyNamedArg := 1)
  ```

  Use a variable or constant expression if the object requires an argument. For example, if the default for an object is a method, the object's name represents the default method. If it needs arguments, specify them positionally.

- You tried to specify a named argument with an external name:

  ```
  MyVar = [MyName](MyNamedArg := 1)
  ```

  Use an ordinary variable or constant expression if the external name needs an argument.

- You tried to specify a named argument with a data member of an object, for example:

  ```
  MyVar = [MyObject].MyProperty(MyNamedArg := 1)
  ```

  Use an ordinary variable or constant expression if the data member needs an argument.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Next without For

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNextnomatchingforC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNextNoMatchingForS"}

A **Next** statement must have a preceding **For** statement that matches. This error has the following cause and solution:

- A **Next** statement is used without a corresponding **For** statement.

  Check other control structures within the **For...Next** structure and verify that they are correctly matched. For example, an **If** without a matching **End If** inside the **For...Next** structure generates this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# No text selected

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoSelectionS"}

You must select some text to perform this operation. This error has the following cause and solution:

- You didn't select any text prior to initiating a Find or Replace operation.

  Some host applications permit you to specify selection scope when searching for and replacing text, even though no text is actually selected. To select text, place the pointer at the beginning of the desired selection, then hold down the SHIFT key and use either the arrow keys or click the end of the text to complete the selection. If you don't want to search selected text, undo the **Selection** option.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Not enough memory to completely save project

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOOmemForCanonicalSaveC"}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgOOmemForCanonicalSaveA"}

When a <u>project</u> is saved, extra information is usually saved to make it possible to load the project in a later version or on a different platform. This error has the following cause and solution:

• Memory available is insufficient to save information that will be necessary if you attempt to load the project in a later version of Visual Basic or on a different platform.

   If you plan to open the project in a later version of Visual Basic or on another platform, close some applications and try to save again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# No watch expression selected

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEmptyInstWatchExprS"}

You must have an <u>expression</u> selected when you choose the **Instant Watch** command. This error has the following cause and solution:

- You didn't select an expression to watch before choosing **Instant Watch**.

  Highlight the <u>watch expression</u> in the **Code** window before choosing **Instant Watch**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object library feature not supported

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnsupportedTypeLibFeatureS"}

It's possible to have features in an <u>object library</u> that have no equivalent in Visual Basic. This error has the following cause and solution:

- An attempt was made to access an object library <u>data type</u> or function that can't be supported by Visual Basic.

  Contact the creator of the object library for more information on when it is appropriate to use the object library, and the tools with which it should be used.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object library for Visual Basic for Applications not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMissingVbaTypeLibS"}

The Visual Basic for Applications object library is no longer a standalone file; it is integrated into the dynamic-link library (DLL).

Under unusual circumstances a previous version of the object library (vaxxx.olb or vaxxxx.olb) corresponding to the language of the project might be needed, but not found. This error has the following causes and solutions:

- The object library is missing completely, isn't in the expected directory, or is an incorrect version.

   Search your disk to make sure the object library is in the correct directory, as specified in the host-application documentation.

If the missing library is a language version that is installed by the host application, it may be easiest to simply rerun the setup program. If a project requires a different language object library than the one that accompanies your host application (for example, if someone sends you a project written on a machine set up for a different language), make sure the correct language version of the Visual Basic object library is included with the project and it is installed in the expected location.

Applications may support different language versions of their object libraries. To find out which language version is required, display the **References** dialog box, and see which language is indicated at the bottom of the dialog box.

Object libraries exist in different versions for each platform. Therefore, when projects are moved across platforms, for example, from Macintosh to Microsoft Windows, the correct language version of the referenced library for that platform must be available in the location specified in your host application documentation. Note that some language codes are two characters while others are three characters.

The Visual Basic object library file name is constructed as follows:

- Windows: Application Code + Language Code + [Version].OLB. For example:

   The French Visual Basic for Applications object library for version 2 was vafr2.olb.

- Macintosh: Application Name Language Code [Version] OLB. For example:

   The French Visual Basic for Applications object library for version 2 was VA FR 2 OLB.

If you can't find a missing project or object library on your system, contact the referencing project's author. If the missing library is a Microsoft application object library, you can obtain it as follows:

- If you have access to Microsoft electronic technical support services, refer to the technical support section of this Help file. Under electronic services, you will find instructions on how to use the appropriate service option.

- If you don't have access to Microsoft electronic technical support services, Microsoft object libraries are available upon request as an application note from Microsoft. Information on how to contact your local Microsoft product support organization is also available in the technical support section of this Help file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object library not registered

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLibNotRegisteredS"}

The Visual Basic for Applications object library is no longer a standalone file; it is integrated into the dynamic-link library (DLL).

In earlier versions, when you started an application that uses Visual Basic for Applications, certain object libraries were loaded. This error has the following cause and solution:

- An attempt was made to load a previous version of the Visual Basic for Applications object library (vaxxx.olb) or host-application object libraries. However, the correct language version of these object libraries could not be found in the system registry.

  Reregister your application. On the Macintosh, delete the vba.ini file from the Macintosh Preferences folder, and restart your application.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object library's language setting incompatible with current project

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLangMismatchS"}

The reference couldn't be added. This error has the following cause and solution:

- You attempted to add a reference to an <u>object library</u> whose <u>locale</u> isn't compatible with the locale of the current <u>project</u>. The reference was not added. To use that object library, a project whose locale is compatible with it must be created.

  Try registering both Visual Basic for Applications and the <u>host application</u> for the given language. The object library then becomes available in the **References** dialog box.

  **Note**   When Visual Basic is the host application, it isn't possible to change a project's language setting. Any object libraries used must be compatible with the English/U.S. setting.

# Type not supported in Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidTypeInfoKindC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidTypeInfoKindS"}

Not all types are supported in Visual Basic. This error has the following cause and solution:

- You tried to use a type in your program that has no equivalent in Visual Basic for Applications. For example, Visual Basic has no pointer or unsigned integer type, so if you try to create a <u>variable</u> of one of those types from an <u>object library</u>, this error occurs. In the following example that follows, even though `Rainbow` may be a valid structure, Visual Basic can't create a variable of that type if it contains a type Visual Basic doesn't recognize:

  ```
  Dim MyVar As Rainbow ' Causes error.
  ```

  If the type is a valid <u>parameter</u> type for a function in an object library, this error means only that you can't create a variable of that type in your own code. Although you can't always declare variables with a <u>data type</u> specified in an object's documentation, there is often a Visual Basic equivalent. For example, although Visual Basic has no pointer type, you can pass a pointer to a function to an API function by using the **AddressOf** operator. Also, check the **Variant** type's subtypes. You can often use them as equivalents of types not offered directly in Visual Basic. In some cases, however, Visual Basic simply has no equivalent. For example, data pointers aren't available.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Only comments may appear after End Sub, End Function, or End Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgStmtBetweenProcsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgStmtBetweenProcsS"}

Only comments, directives, and declarations are permitted outside procedures. This error has the following cause and solution:

• You placed executable code outside a procedure.

  Any nondeclarative lines outside a procedure must begin with a comment delimiter ('). Declarative statements must appear before the first procedure declaration. Comments are ignored when the code executes.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Optional argument must be Variant

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOptParamMustBeVariantC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOptParamMustBeVariantS"}

Optional <u>arguments</u> can have any intrinsic <u>data type</u>, but it must be a type with a single default value. This error has the following cause and solution:

• You tried to specify **Optional** with a <u>parameter</u> that has no default value, for example, an <u>array</u>.

  Make sure any argument specified as **Optional** has a default value.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Option Private Module not permitted in object module

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOptPrivModInClassC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOptPrivModInClassS"}

**Option Private Module** makes the contents of a <u>module</u> unavailable to other <u>projects</u>, while preserving their availability to your project. This error has the following cause and solution:

• The statement **Option Private Module** appears in an <u>object module</u>.

Remove the **Option Private Module** statement from the module. Object modules have the characteristic of **Option Private Module** by default. Changing the default can't be done from code. See your <u>host application's</u> documentation for information on giving object module members wider visibility.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Out of memory; some watches might have been deleted

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOOMemWatchesDeletedS"}

When your system runs out of memory, <u>watch expressions</u> are deleted to make enough memory available to permit recovery from the condition. This error has the following cause and solution:

- You have too many <u>applications</u>, <u>projects</u>, or <u>modules</u> loaded.

  To continue working, remove any dispensable elements from memory, including unnecessary applications, projects, or modules that may be loaded.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Out of resources

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfHandlesS"}

Certain types of resources called "handles" are used internally for many operations. This error has the following cause and solution:

- Your code has reached a resource limit.

  Try saving, closing, and reloading your code. If you still receive this error message, reduce the number of objects referenced in the code.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# ParamArray must be declared as an array of Variant

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgparamarraynotarrayC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgParamArrayNotArrayS"}

Each <u>argument</u> to a **ParamArray** <u>parameter</u> can be of a different <u>data type</u>. Therefore, the parameter itself must be declared as an <u>array</u> of **Variant** type. You can also supply any number of arguments to a **ParamArray**. When the call is made, each argument supplied in the call becomes a corresponding element of the **Variant** array. For example:

```
Sub MySub(ParamArray VarArg())

   . . .
End Sub
Call MySub ("First arg", 2, 3.54)
```

This error has the following causes and solutions:

- In the definition of the <u>procedure</u>, the **ParamArray** parameter is defined as an array of a type other than **Variant**.

   Redeclare the parameter type as an array of **Variant** elements.

- No data type was specified for the **ParamArray** parameter, but the procedure definition is within the scope of a **Def***type* statement, so the parameter is implicitly declared as having a type other than **Variant**.

   Use an explicit **As Variant** clause in the specification of the **ParamArray** parameter.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Please see the Readme file for more information on this error

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSeeReadmeS"}

Some topics were added to this product after Help was completed. Help explanations for these can be found in the <u>host application's</u> Readme file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Private Enum and user-defined types cannot be used as parameters or return types for public procedures, public data members, or fields of public user-defined types

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPrivEnumInPubFuncC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPrivEnumInPubFuncS"}

A **Public** procedure is visible to all <u>modules</u> in a <u>project</u>, while a **Private Enum** type is not visible outside its own module. This error has the following cause and solution:

- Your **Public** procedure is in a **Public** class, but it returns a value or has a <u>parameter</u> that is defined in a <u>standard module</u> or in a **Private** class.

  Declare the **Enum Public**. It must be in a <u>class module</u>.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Procedure too large

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProcedureTooLargeS"}

When compiled, the code for a <u>procedure</u> can't exceed 64K. This error has the following cause and solution:

- Code for this procedure exceeds 64K when compiled.

   Break this, and any other large procedures, into two or more smaller procedures.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Project contains too many procedure, variable, and constant names

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManySymbolsS"}

A project's <u>procedure</u>, <u>variable</u>, <u>constant</u>, and <u>parameter</u> names are stored in a name table. This error has the following cause and solution:

- The number of names in the project's name table exceeds 32,768.

  The name table may contain some temporary duplicates. You can compact the name table by saving the <u>project</u> to a disk, and then closing it. If the problem persists after you reopen the project, reduce the number of names by reusing local variable names in multiple procedures, and then recompact the table by saving the project, closing it, and reopening it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Project not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProjectNotFoundS"}

The project was not found. This error has the following cause and solution:

- You specified a project name that can't be found.

  Check the way you specified the project for any errors.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Qualified name disallowed in module scope

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgQualifiedNameDisallowedS"}

Under some circumstances, some host applications don't permit procedure calls that include qualified names. This error has the following cause and solution:

- You specified a module name in a procedure call using dot notation (*qualifier*.*item* ).

  If you are receiving this error it is probably because the host application already knows the specified qualifier and doesn't need that information in the procedure call. In such a case, you can simply omit the qualifier altogether and the host application will make the procedure call correctly. Check the host application's documentation to find the reason for any other restrictions on qualified names.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Qualifier must be collection

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgQualNotObjectS"}

The use of an exclamation point between two <u>identifiers</u> is specific to <u>collections</u>. This error has the following cause and solution:

- You used a name on the left side of the exclamation point (**!**) that isn't the name of a collection.

  If the name is supposed to represent a collection, check to make sure the name is spelled correctly. Note that the exclamation point is also the <u>type-declaration character</u> for the **Single** data type. If the name in question isn't supposed to be a collection, perhaps the **!** type-declaration character appended to a <u>variable</u> name has been concatenated with another name.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Range has no values

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalArrayBoundS"}

There are limitations on the way you can specify the number of elements in an <u>array</u>. This error has the following cause and solution:

- You specified your array boundaries incorrectly. For example, the following ranges are invalid:

```
Dim MyArray(10 To -5)    ' Descending order not permitted.
Dim MyArray(0 To 0)      ' No elements in the array.
```

  Check to be sure your syntax is correct. For example, the following range is valid:

```
Dim MyArray(-5 To 10)
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# RSet allowed only on strings

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgRsetTypeErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRsetTypeErrorS"}

**RSet** is used to right align string data within fixed-length or variable-length strings. This error has the following cause and solution:

- You tried to use the **RSet** statement on a <u>variable</u> that isn't a string.

  If appropriate, try converting the variable to a string. Otherwise, don't use **RSet**.

  **Note**   Although the **LSet** statement can be used to assign the elements of one <u>user-defined type</u> variable to the elements of a different, but compatible, user-defined type, such assignments are discouraged because they can't be guaranteed to be portable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Run-time error <number>:

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRunTimeErrorS"}

This error is user-defined, and has the following cause and solution:

• An error was generated that doesn't correspond to a Visual Basic error.

   Handle the error as indicated in the documentation for the object or <u>object library</u> that generated the error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Search string too long or complex

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSearchTooLongC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSearchTooLongS"}

Visual Basic pattern-matching capabilities aren't unlimited. This error has the following cause and solution:

- The search string specified is too long, or the combination of wildcard character specifications can't be understood.

    Reduce the length or complexity of the search string and retry the search.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Search string must be specified

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEmptySearchStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEmptySearchStringS"}

You have to specify a search string. This error has the following cause and solution:

- You tried to perform a search operation without a string for comparison.

  You must specify the search string. While you can specify a zero-length string ("") as a replacement string, a zero-length string has no meaning as a search string.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Search text isn't found

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSrchNotFoundC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSrchNotFoundS"}

No search text was found. This error has the following causes and solutions:

- There is no matching text between the start point and end point of the specified search scope.

  You can widen the scope of the search if you want to continue searching.

- You failed to provide a left bracket when using a pattern-matching expression.

  Provide the left bracket.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Seek failed: can't read/write from the disk

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgseekerrC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSeekErrS"}

**Seek** statements are carried out directly to disk. This error has the following causes and solutions:

- You attempted to read from a disk or file that is write-protected, read-only, or locked.

  Remove the write-protected attribute or change the read-only attribute or lock. Note that if the file is locked by another process, you can't remove the lock.

- The file has become unavailable, for example, if a removable disk has been physically changed.

  If the file has been moved to another disk, access it from there. Otherwise, you can't access the file.

- You attempted to read from a <u>project</u> file, an <u>object library</u>, or a <u>type library</u>, but the file has been corrupted.

  Obtain a new copy of the library or project file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Select Case without End Select

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedEndSelectC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedEndSelectS"}

Each **Select Case** construct must be terminated with an **End Select** statement. This error has the following cause and solution:

- You used a **Select Case** statement without a corresponding **End Select** statement.

    Check if there is an incorrectly matched **Select Case...End Select** structure inside an outer **Select Case...End Select** structure. If you have nested **Select Case** statements, each must have a matching **End Select**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Selected watch expression invalid

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadInstWatchExprC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadInstWatchExprS"}

It isn't always possible to select a valid <u>watch expression</u>. This error has the following causes and solutions:

- You chose the **Instant Watch** command, but the selected <u>expression</u> isn't a valid expression. For example, you can't watch a <u>comment</u> or a **Sub** procedure call.

  Select the expression in such a way that it is valid, or choose **Add Watch** and type in a valid expression.

- The watch expression must have code syntax corresponding to the <u>locale</u> of the <u>project</u> that defines the expression being watched.

  Rewrite the expression in a way that is valid for the locale.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Set Next Statement can only apply to executable lines within current procedure

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalLineForNextStmtS"}

You can choose the **Set Next Statement** command to indicate where a suspended program should begin when execution is continued. This error has the following causes and solutions:

- When you chose the command, the cursor was on a line that didn't contain an executable statement.

  Place the cursor on a line with an executable statement and try again. Declarations, line labels, and comments aren't executable, so lines with only declarations, labels, and comments can't be the targets of the **Set Next Statement** command.

- When you chose the command, the cursor was on a line outside the currently executing procedure.

  Place the cursor on a line within the currently executing procedure.

# SHARE.EXE required

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgShareRequiredS"}

The program share.exe must be running when you start Visual Basic. This error has the following cause and solution:

• You didn't start share.exe before starting Visual Basic.

    Close your application, start share.exe, then restart your application. To avoid this problem in the future, place an invocation of share.exe in your autoexec.bat file so share.exe automatically starts when you turn on your machine.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Specified library or project already referenced

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLibAlreadyAvailS"}

The **Add References** dialog box displays referenced libraries and <u>projects</u>. This error has the following cause and solution:

- You chose the **Browse** button in the **Add References** dialog box, then selected a <u>type library</u> or project that was already listed in the **Available References** section of the **Add References** dialog box.

  To make a project or type library part of your project, display the **References** dialog box and make sure the type library or project name is checked.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Statement invalid inside Type block

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvInsideTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvInsideTypeS"}

Only element names, their **As** *type* clauses, and comments are allowed within a **Type...End Type** statement block. This error has the following cause and solution:

- You placed an invalid statement in a user-defined type definition.

    Remove anything that isn't a comment, an element name, or an **As** *type* clause.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Statement invalid outside Type block

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsginvoutsidetypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvOutsideTypeS"}

The syntax for declaring <u>variables</u> outside a **Type...End Type** statement block is different from the syntax for declaring the elements of the <u>user-defined type</u>. This error has the following causes and solutions:

- You tried to declare a variable outside a **Type...End Type** block or outside a statement.

  When declaring a variable with an **As** clause outside a **Type...End Type** block, use one of the declaration statements, **Dim**, **ReDim**, **Static**, **Public**, or **Private**. For example, the first declaration of `MyVar` in the following code generates this error; the second and third declarations of `MyVar` are valid:

```
MyVar As Double   ' Invalid declaration syntax.


Dim MyVar As Double


Type AType
    MyVar As Double   ' This is valid declaration syntax
End Type ' because it's inside a Type block.
```

- You used an **End Type** statement without a corresponding **Type** statement.

  Check for an unmatched **End Type**, and either precede its block with a **Type** statement, or delete the **End Type** statement if it isn't needed.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Statement too complex

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgstatementtoocomplexC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgStatementTooComplexS"}

Visual Basic is unable to analyze this statement. This error has the following causes and solutions:

- Your statement can't be parsed due to its complexity.

  Try breaking the statement into several smaller components or replace complex conditional clauses with a combination of logical operators and **If...Then...Else** statements.

- Your statement or function uses too many nested function calls.

  Make function calls earlier and assign the results to specific variables; then use the variables in the statement that is causing the complexity error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Statements or labels invalid between Select Case and first Case

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgExpectedCaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedCaseS"}

You can place nothing but a <u>comment</u> between the **Select Case** statement and the first **Case** clause. This error has the following cause and solution:

- You placed a statement between **Select Case** and its first **Case** clause. For example:

```
Select Case SomeVar
   ' This is a comment and is valid.
   Stop  ' Even a Stop statement is invalid here.
   Case SomeValue
   . . .
End Select
```

  The **Select Case** statement must be immediately followed by its first **Case** statement. If the intervening <u>expression</u> is a comment, precede it with a comment delimiter (**'**). Otherwise, place the expression where it belongs or delete it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Syntax error

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgsyntaxC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSyntaxS"}

Visual Basic can't determine what action to take. This error has the following causes and solutions:

• A <u>keyword</u> or <u>argument</u> is misspelled.

   Keywords and the names of <u>named arguments</u> must exactly match those specified in their syntax specifications. Check online Help, and then correct the spelling.

• Punctuation is incorrect.

   For example, when you omit optional arguments positionally, you must substitute a comma (**,**) as a placeholder for the omitted argument.

• A <u>procedure</u> isn't defined.

   Check the spelling of the procedure name.

• You tried to specify both **Optional** and **ParamArray** in the same procedure declaration.

   A **ParamArray** argument can't be **Optional**. Choose one and delete the other.

• You tried to define an event procedure with an **Optional** or **ParamArray** parameter.

   Remove the **Optional** or **ParamArray** keyword from the parameter specification.

• You tried to use a named argument in a **RaiseEvent** statement.

   Events do not support named arguments.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The binary compatibility DLL or EXE contains an Implements type whose definition cannot be found

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproTheBinaryCompatibilityDLLOrEXEContainsImplementsTypeWhoseDefinitionCannotBeFound_C"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproTheBinaryCompatibilityDLLOrEXEContainsImplementsTypeWhoseDefinitionCannotBeFound_X":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproTheBinaryCompatibilityDLLOrEXEContainsImplementsTypeWhoseDefinitionCannotBeFound_A"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproTheBinaryCompatibilityDLLOrEXEContainsImplementsTypeWhoseDefinitionCannotBeFound_S"}

If you have a Binary Compatible server which implements an interface that is contained in another DLL, you must be careful when recompiling it. This warning has the following cause and solution:

- The other DLL was recompiled as Project Compatible which changes the interface GUID. Since this is not a visible change, this can be an unexpected error. This can also occur if someone gives you a Project Compatible DLL to reference.

    Basically, this error occurs when a project's binary compatible DLL or EXE has a typelib with a broken reference.   Broken references can occur when a referenced typelib is overwritten by another file (such as a re-compiled DLL/EXE), when you delete the typelib file, or when you move a referencing typelib over to a machine, but either don't move the referenced typelib or don't register the referenced typelib.

    One possible fix is to obtain a copy of the referenced typelib onto your machine and register it. You won't be able to use the old one because it was overwritten on recompile. Failing this, all that can be done is to stop using the DLL/EXE as your binary compatible version.

# The binary compatibility DLL or EXE contains a parameter type or return type whose definition cannot be found

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproTheBinaryCompatibilityDLLOrEXEContainsParameterTypeOrReturnTypeWhoseDefinitionCannotBeFound_C"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproTheBinaryCompatibilityDLLOrEXEContainsParameterTypeOrReturnTypeWhoseDefinitionCannotBeFound_X":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproTheBinaryCompatibilityDLLOrEXEContainsParameterTypeOrReturnTypeWhoseDefinitionCannotBeFound_A"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproTheBinaryCompatibilityDLLOrEXEContainsParameterTypeOrReturnTypeWhoseDefinitionCannotBeFound_S"}

If you have a Binary Compatible server which contains a parameter or return type that is contained in another DLL, you must be careful when recompiling it. This warning has the following cause and solution:

- When you set Binary Compatibility on a project and then recompile the project, Project Compatibility is set automatically, changing the interface's internal GUID. Since this is not a visible change, this can be an unexpected error.

  Basically, this error occurs when a project's binary compatible DLL or EXE has a typelib with a broken reference.   Broken references can occur when a referenced typelib is overwritten by another file (such as a re-compiled DLL/EXE), when you delete the typelib file, or when you move a referencing typelib over to a machine, but either don't move the referenced typelib or don't register the referenced typelib.

  One possible fix is to obtain a copy of the referenced typelib onto your machine and register it. You won't be able to use the old one because it was overwritten on recompile. Failing this, all that can be done is to stop using the DLL/EXE as your binary compatible version.

# The edit may make the object module incompatible with the previously specified compatible ActiveX component

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIncompatibleSrvrS"}

If a Compatible ActiveX component already exists as a previously distributed <u>executable file</u> or <u>dynamic-link library (DLL)</u>, you must be careful not to change its interface. This warning has the following cause and solution:

- You are trying to edit the code of a <u>object module</u> that already is represented by an executable file.

  If you make changes that affect the interface to the object, the class will not be upward compatible with the previous version and so it will not be possible to use the new version in place of the old version for compiled code.

  In Visual Basic, the name of the Compatible ActiveX component appears in the dialog box displayed when you choose **Project Options** from the **Tools** menu.

    **Important**   To accept the edit, click **OK** in the error message dialog box. If you want to undo the edit, click the **Cancel** button.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The specified region has been searched

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoMoreSrchTextFoundS"}

When you click the **Find Next** and **Replace** buttons in the **Replace** dialog box, the total number of replacements isn't specified. This condition has the following cause and effect:

- When doing a search and replace operation, you can specify the region to be covered — selection, procedure, module, or project.

  If a region is selected, it is the default search region. If no region is selected, the current module is the default search region. To change the scope of a search, select a different option in the **Replace** dialog box.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The specified region has been searched and 1 replacement was made

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReplacementDoneS"}

When you click the **Replace All** button in the **Replace** dialog box, this message specifies the total number of replacements. This condition has the following cause and effect:

- During the search and replace operation, only one instance of the specified text was found, and the replacement was made. You can specify the region to be covered — selection, <u>procedure</u>, <u>module</u>, or <u>project</u>.

  If a region is selected, it is the default search region. If no region is selected, the current module is the default search region. To change the <u>scope</u> of a search, select a different option in the **Replace** dialog box.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The specified region has been searched and the replacements were made

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReplaceDoneS"}

When you click the **Replace All** button in the **Replace** dialog box, this message specifies the total number of replacements. This condition has the following cause and effect:

- When doing a search and replace operation, you can specify the region to be covered — selection, <u>procedure</u>, <u>module</u>, or <u>project</u>.

  If a region is selected, it is the default search region. If no region is selected, the current module is the default search region. To change the <u>scope</u> of a search, select a different option in the **Replace** dialog box.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The .vbp file for this project contains an invalid or corrupted library reference ID

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadLibIDC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadLibIDS"}

When you save a <u>project</u> for which a reference has been selected from the **References** dialog box, an entry is made in the project's .vbp file (called the .mak file in earlier versions of Visual Basic). For example, the entry for a data access object is:

```
Reference=*\G{00025E01-0000-0000-C000-000000000046}#0.0#0#C:
\WINDOWS\SYSTEM\DAO2516.DLL#Microsoft
DAO 2.5 Object Library
```

This error occurs when such a reference has been edited or corrupted. This error has the following cause and solution:

- A reference in the .vbp file has become invalid.

  Delete the incorrect line from the .vbp file and check the appropriate <u>object library</u> in the **References** dialog box from the **Tools** menu. Then save the project, and the correct information will be entered in the .vbp file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This component doesn't raise any events

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgObjectDoesNotFireEventsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgObjectDoesNotFireEventsS"}

An event <u>procedure</u> must correspond to an event that can be raised by an object. This error has the following cause and solution:

- You wrote an event procedure for an object that doesn't raise events.

  You can't write an event procedure that doesn't correspond to an event.

- You tried to use **WithEvents** on a <u>class</u> that doesn't raise events.

  You can't use **WithEvents** on a class that doesn't raise events.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many arguments

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgTooManyArgsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManyArgsS"}

A procedure can have only 60 arguments. This error has the following cause and solution:

- You specified more than 60 arguments.

  If you must specify more arguments, define a user-defined type to collect multiple arguments of different types, or use a **ParamArray** as the final argument and pass multiple values to it. You can also pass multiple arguments by placing them in an array.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many dimensions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgTooManyDimsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManyDimsS"}

Arrays can have no more than 60 dimensions. This error has the following causes and solutions:

•   You tried to declare an array with more than 60 dimensions.

    Reduce the number of dimensions.

•   Your array declaration is within the specified limits, but there isn't enough memory to actually create the array.

    Either make more memory available or reduce the number of dimensions. If your array is an array of **Variant** type or an array contained within a **Variant**, you may be able to create the array with the same number of dimensions by redeclaring it with the data type of its elements. For example, if it contains only integers, declaring it as an array of **Integer** type uses less memory than if each element is a **Variant**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many line continuations

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManyLineContsS"}

There is a limit to the number of lines you can join with <u>line-continuation characters</u>. This error has the following cause and solution:

- Your code has more than 25 physical lines lines joined with line-continuation characters, or more than 24 consecutive line-continuation characters in a single line.

  Make some of the constituent lines physically longer to reduce the number of line-continuation characters needed, or break the construct into more than one statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many local, nonstatic variables

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInsufficientLocalSpaceC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInsufficientLocalSpaceS"}

Local, nonstatic underline variables are variables that are defined within a underline procedure and reinitialized each time the procedure is called. This error has the following cause and solution:

- The sum of the memory requirements for this procedure's local, nonstatic variables and compiler-generated temporary variables exceeds 32K.

  Declare some of your variables with the **Static** statement where appropriate. **Static** variables retain their value between procedure invocations because they are allocated from different memory resources than nonstatic variables.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many module-level variables

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInsufficientModSpaceC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInsufficientModSpaceS"}

Module-level variables are those declared in the Declarations section of a module, before the module's procedures. This error has the following cause and solution:

• The sum of the memory requirements for all module-level variables in this module exceeds 64K.

  This is the storage limit for this module. If appropriate, you can declare some of your variables as **Public** in another module, or if some module-level variables are used only in one procedure, you can declare them within that procedure. If you declared variables at module level because you want them to retain their value between procedure invocations, you can instead declare them as **Static** within the procedure in which they are referenced.

  **Note**   Available space can vary among operating systems.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Type-declaration character doesn't match declared data type

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTypecharNoMatchS"}

The data type of a variable can't be changed by appending the type-declaration character for another type. This error has the following cause and solution:

- You declared a variable of a specific type, referenced a variable of the same name in the same scope, and then appended an inconsistent type-declaration character.

  If you want to be able to change the type of data assigned to a variable, declare the variable as a **Variant**. If you simply appended an incorrect type-declaration character, delete or change it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Type-declaration character not allowed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgtypecharnotallowedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTypecharNotallowedS"}

While using <u>type-declaration characters</u> is valid in Visual Basic, some <u>data types</u> (including **Byte**, **Boolean**, **Date**, **Object**, and **Variant**) have no associated type-declaration characters. This error has the following causes and solutions:

- You tried to use a type-declaration character in the declaration of a <u>variable</u> that uses the **As** clause, for example, with **Dim**, **Static**, **Public**, and so on.

    Either remove the type-declaration character or remove the **As** clause.

- You tried to use a <u>type-declaration character</u> in reference to a variable that was implicitly declared without a type-declaration character:

```
MyVar = 20  ' Implicit declaration.
MyVar% = 25 ' Generates an error.
```

    Either remove the type-declaration character or redeclare the original variable.

    **Note**  If an explicit variable declaration contains a type-declaration character, inclusion of the character is optional in later references. For example:

```
Dim MyStr$
MyStr = "Because it was explicitly declared, the $ is optional."
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Type-declaration character required

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTypecharRequiredS"}

The necessity of using <u>type-declaration characters</u> depends on the form of the <u>identifier's</u> declaration. This error has the following cause and solution:

- A <u>variable</u> that was originally implicitly declared with a type-declaration characters was referenced without a type-declaration character. For example:

```
MyStr$ = "Implicit declaration"
MyStr = "Trying to refer to MyStr$, but error results" _
 & "from calling it MyStr."
```

   Either make the declaration explicit, or add the type-declaration character to later references.

   **Note**   If an explicit variable declaration contains a type-declaration character, inclusion of the character is optional in later references. For example:

```
Dim MyStr$
MyStr = "Because it was explicitly declared, the $ is optional."
```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Type mismatch: array or user-defined type expected

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgaggregateparamtypemismatchC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgaggregateParamTypeMismatchS"}

The type of an <u>argument</u> or <u>parameter</u> includes whether or not it is an <u>array</u> or a <u>user-defined type</u>. This error has the following cause and solution:

- Your argument specified a single element of an array or user-defined type, or a simple <u>variable</u>, literal, or <u>constant</u>. However, it is being passed to a parameter that expects a whole array or user-defined type.

  Either change the argument or change the definition of the parameter.

- Your argument specified an array or user-defined type, but it was not of the same type as the parameter.

  Either pass an array of the expected type or change the definition of the parameter declaration.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unable to read from the disk

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReadFaultS"}

There is a general problem reading from a disk. This error has the following causes and solutions:

- The disk drive door is improperly closed.

  If the disk is removable, check the drive door. Close it properly if necessary.

- The disk may be inserted upside down.

  Reinsert the disk right-side up.

- The disk may not be properly formatted.

  Reformat the disk if you are willing to lose the data it currently contains.

- You are experiencing network problems.

  Try restarting your network.

- You placed a disk of a certain density in a drive that can't read it.

  Use a different drive or copy the material you want to a disk that can be read on your drive.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unable to write to the disk

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWriteFaultS"}

There is a general problem writing to a disk. This error has the following causes and solutions:

- The disk drive door is improperly closed.

  If the disk is removable, check the drive door. Close it properly if necessary.

- The disk may be inserted upside down.

  Reinsert the disk right-side up.

- The disk may not be properly formatted.

  Reformat the disk if you are willing to lose the data it currently contains.

- You are experiencing network problems.

  Try restarting your network.

- You placed a disk of a certain density in a drive that can't write to it.

  Use a different drive or copy the material you want to a disk that can be read on your drive.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unexpected error; please contact Microsoft Technical Support

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgUnexpectedErrorC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnexpectedErrorS"}

This condition may or may not be serious. This error has the following cause and solution:

- An unanticipated error occurred in the host application or in Visual Basic.

  You don't have to assume that this error is serious. However, you should note the number of the error and report it to Microsoft Technical Support.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unmatched brackets in search string

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadSearchStringS"}

An opening bracket must be matched by a closing bracket. This error has the following cause and solution:

- You opened a bracket pair in a search string, but did not close it with a matching closing bracket.

  Place a closing bracket in the appropriate place.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unrecognized project language

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnknownLcidS"}

The specified code locale for the project to be loaded isn't currently supported by this application. This error has the following causes and solutions:

- The project was created on a system that supports the code locale, but was then moved to a system where that code locale isn't recognized. For example, the ole2nls.dll on the current machine may be a version that doesn't recognize the code locale.

  Install the proper dynamic-link library (DLL) on the current system.

- The correct object library for the project was not found.

  Make sure the correct object libraries are available, for example, make sure your path includes their directories.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# User-defined type can't be passed ByVal

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgrecordmustbebyrefC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRecordMustBeByrefS"}

User-defined types can only be passed by reference (the default), not by value. The error may not be reported until the call is made. This error has the following cause and solution:

• You placed a **ByVal** keyword in the definition of a parameter that represented a user-defined type.

  Remove the **ByVal** keyword. To keep changes from being propagated back to the caller, **Dim** a temporary variable of the type and pass the temporary variable into the procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# User-defined type not defined

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgundefinedtypeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUndefinedTypeS"}

You can create your own underline data types in Visual Basic, but they must be defined first in a **Type...End Type** statement or in a properly registered object library or type library. This error has the following causes and solutions:

- You tried to declare a variable or argument with an undefined data type or you specified an unknown class or object name.

  Use the **Type** statement in a module to define a new data type. If you are trying to create a reference to a class, the class must be visible to the project. If you are referring to a class in your program, you must have a class module of the specified name in your project. Check the spelling of the type name or name of the object.

- The type you want to declare is in another module but has been declared **Private**.

  Move the definition of the type to a standard module where it can be **Public**.

- The type is a valid type, but the object library or type library in which it is defined isn't registered in Visual Basic.

  Display the **References** dialog box, and then select the appropriate object library or type library. For example, if you don't check the **Data Access Object** in the **References** dialog box, types like Database, Recordset, and TableDef aren't recognized and references to them in code cause this error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# User-defined type without members not allowed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgzerolenrecordsdisallowedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgZeroLenRecordsDisallowedS"}

User-defined types must have at least one element. This error has the following cause and solution:

- You specified an empty user-defined type in a **Type...End Type** definition.

   Check the **Type** statement for unintended comment delimiters.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Variable not defined

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgimplicitvarnotallowedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgImplicitVarNotAllowedS"}

You use the **Option Explicit** statement to protect your <u>modules</u> from having undeclared <u>variables</u> and to eliminate the possibility of inadvertently creating new variables when typographical errors occur. This error has the following cause and solution:

- You used an **Option Explicit** statement to require the explicit declaration of variables, but you used a variable without declaring it.

  Explicitly declare the variable, or change the spelling of the variable to match that of the intended variable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Variable not yet created in this context

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgVariableNotInstantiatedS"}

A variable has to be created before it can be displayed in the **Watch** window or the **Immediate** window, and before it can have values assigned to it in the **Immediate** window. This error has the following causes and solutions:

- You tried to display the value of a local variable that you just entered in your code before executing at least a **Single Step** command in break mode.

  Step into the code to force compilation of the new statement.

- You tried to display the value of a local variable that you just added in a procedure farther down the call chain by moving to the procedure using the **Calls** dialog box.

  You have to actually return to the procedure before you can display the variable in its context.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Variable required. Can't assign to this expression

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsglvaluerequiredC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLvalueRequiredS"}

This error typically occurs when you attempt to assign a value to something that can't accept the assignment. This error has the following causes and solutions:

- You attempted to use a <u>numeric expression</u> as an <u>argument</u> to the **Len** function.

  The **Len** function doesn't accept a numeric expression, a numeric literal, or a binary numeric expression, but it does accept either a string or numeric variable, a <u>string expression</u>, or a <u>variable</u> of <u>user-defined type</u>.

- You used a function call or an <u>expression</u> as an argument to **Input #**, **Let**, **Get**, or **Put**. For example, you may have used an argument that appears to be a valid reference to an <u>array</u> variable, but instead is a call to a function of the same name.

  **Input #**, **Let**, **Get**, and **Put** don't accept function calls as arguments.

- You attempted to assign a value to an <u>identifier</u> previously declared as a <u>constant</u>.

  Choose another name for the identifier.

- You tried to use a nonvariable as a loop counter in a **For...Next** construction.

  Use a variable as the counter.

- You tried to assign a value to a read-only <u>property</u> or to an expression that consists of more than one variable (such as X + Y). An assignment places a value at a memory location. The specified expression must represent a single, writable location.

  Rewrite the assignment to a single variable name that can accept the data.

- You tried to use an undeclared variable that is defined as a constant in a <u>type library</u>.

  Either use a different name for the variable, or declare it explicitly.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Warning: custom language settings not portable

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCustomLCIDChangeS"}

Not all language settings are portable. This warning has the following cause and solution:

- You used a custom language setting in your code.

  When you choose a custom language/country setting for your code, the language conventions used in your code match those set in the **Control Panel** of your system. You can use custom code <u>locale</u> settings, but your code may not work in other locales or on other systems with different settings. The <u>host application</u> parses some strings based on the **Control Panel** settings of the machine on which it is running.

  If the **Control Panel** settings on the target machine aren't the same as those on the machine on which the code was written, strings parsed by a host application don't work, for example, code that depends on a locale-specific decimal separator. Therefore, you should not use a custom language setting unless you don't intend to send your code to other users. If you plan to send your code to other users, select a predefined locale.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Wend without While

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgwendwithoutwhileC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWendWithoutWhileS"}

Every **Wend** statement must be preceded by a matching **While** statement. This error has the following cause and solution:

- You used a **Wend** statement without a preceding **While** statement.

  Check for an unterminated loop nested within the **While...Wend** loop that's causing the error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# While without Wend

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgexpectedwendC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgExpectedWendS"}

A **While** statement is used without a corresponding **Wend** statement. This error has the following cause and solution:

- You opened a **While...Wend** construct, but did not close it.

  Check for an incorrectly matched **While...Wend** structure inside the outer **While...Wend** structure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# With object must be user-defined type, Object, or Variant

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgbadwithoperandC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadWithOperandS"}

The **With...End With** block can't be used with all <u>variable</u> types. This error has the following cause and solution:

- You tried to use a variable that was not of **Object** type, <u>user-defined type</u>, or <u>Variant</u> type containing an object within a **With** block.

  Check to see if you misspelled the name of the object, user-defined type, or **Variant** variable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Wrong number of dimensions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgarrayaritymismatchC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgArrayArityMismatchS"}

You must reference an <u>array</u> with indexes corresponding to the same number of dimensions as appear in the array's <u>declaration</u>. This error has the following cause and solution:

*   You referred to an array with a different number of dimensions than it actually contains. For example, referring to an array as `X(2,4)` (an array with two dimensions) when it has been defined as `Dim X(5)` (an array with one), generates this error.

    Check the declaration of the array and, in the reference, include one index for each dimension in the declaration.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This action will reset your project, proceed anyway?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotEditInBreakModeS"}

You can edit code in <u>break mode</u>, but some edits prevent continuing execution. This error has the following cause and solution:

- You attempted an edit that prevents continued execution, for example, you declared a static <u>variable</u>.

  If you choose **Yes**, execution will terminate and you can edit your code. If you choose **No**, you can continue running the code from the point at which it was suspended.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# You must terminate the #If block with an #End If

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLbExpectedEndIfC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLbExpectedEndIfS"}

#**If** is a conditional compilation directive. This error has the following cause and solution:

- An #**If** block was detected that isn't terminated by an #**End If**.

    Add an #**End If** in the appropriate position.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Private object modules cannot be used in public object modules as parameters or return types for public procedures, as public data members, or as fields of public user defined types

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPrivTypeInPubFunctionC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPrivTypeInPubFunctionS"}

This error has the following cause and solution:

- You attempted to use a private object module as a parameter in a public object module, or as a return type for a public procedure, data member, or as a field of a public user defined type, which is not allowed.

# Only public user defined types defined in public object modules can be used as parameters or return types for public procedures of class modules or as fields of public user defined types

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPrivTypeInPubFuncC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPrivTypeInPubFuncS"}

This error has the following cause and solution:

- You attempted to use a public user defined type as a parameter or return type for a public procedure of a class module, or as a field of a public user defined type. Only public user defined types that are defined in a public object module can be used in this manner.

# Object library invalid or contains references to object definitions that could not be found

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadTypeLibC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadTypeLibS"}

This error has the following cause and solution:

• An object library contains references to unfound object definitions or is otherwise invalid.

# Argument not optional (Error 449)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgParameterNotOptionalC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgParameterNotOptionalS"}

The number and types of <u>arguments</u> must match those expected. This error has the following causes and solutions:

- Incorrect number of arguments.

  Supply all necessary arguments. For example, the **Left** function requires two arguments; the first representing the character string being operated on, and the second representing the number of characters to return from the left side of the string. Because neither argument is optional, both must be supplied.

- Omitted argument isn't optional.

  An argument can only be omitted from a call to a user-defined <u>procedure</u> if it was declared **Optional** in the procedure declaration. Either supply the argument in the call or declare the <u>parameter</u> **Optional** in the definition.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad DLL calling convention (Error 49)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDLLBadCallingConvC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDLLBadCallingConvS"}

Arguments passed to a dynamic-link library (DLL) or Macintosh code resource routine must exactly match those expected by the routine. Calling conventions deal with number, type, and order of arguments. This error has the following causes and solutions:

- Your program is calling a routine in a DLL (in Windows) or a code resource (on the Macintosh) that's being passed the wrong type of arguments.

   Make sure all argument types agree with those specified in the declaration of the routine you are calling.

- Your program is calling a routine in a DLL (in Windows) or a code resource (on the Macintosh) that's being passed the wrong number of arguments.

   Make sure you are passing the same number of arguments indicated in the declaration of the routine you are calling.

- Your program is calling a routine in a DLL, but isn't using the StdCall calling convention.

   If the DLL routine expects arguments by value, then make sure **ByVal** is specified for those arguments in the declaration for the routine.

- Your **Declare** statement for a Windows DLL includes **CDecl**.

   The **CDecl** keyword applies only to the Macintosh.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad file mode (Error 54)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadFileModeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadFileModeS"}

Statements used in manipulating file contents must be appropriate to the mode in which the file was opened. This error has the following causes and solutions:

- A **Put** or **Get** statement is specifying a sequential file.

  **Put** and **Get** can only refer to files opened for **Random** or **Binary** access.

- A **Print #** statement specifies a file opened for an access mode other than **Output** or **Append**.

  Use a different statement to place data in the file or reopen the file in an appropriate mode.

- An **Input #** statement specifies a file opened for an access mode other than **Input**.

  Use a different statement to place data in the file or reopen the file in **Input** mode.

- You attempted to write to a read-only file.

  Change the read/write status of the file or don't try to write to it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad file name or number (Error 52)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadFileNameorNumberC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadFileNameOrNumberS"}

An error occurred trying to access the specified file. This error has the following causes and solutions:

- A statement refers to a file with a <u>file number</u> or file name that is:

  - Not specified in the **Open** statement or was specified in an **Open** statement, but has since been closed.

    Specify the file name in an **Open** statement. Note that if you invoked the **Close** statement without <u>arguments</u>, you may have inadvertently closed all currently open files, invalidating all file numbers.

  - Out of the range of file numbers (1 – 511).

    If your code is generating file numbers algorithmically, make sure the numbers are valid.

- There is an invalid name or number.

  File names must conform to operating system conventions as well as Basic file-naming conventions. In Microsoft Windows, use the following conventions for naming files and directories:

  - The name of a file or directory can have two parts: a name and an optional extension. The two parts are separated by a period, for example, myfile.new.

  - The name can contain up to 255 characters.

  - The name must start with either a letter or number. It can contain any uppercase or lowercase characters (file names aren't case-sensitive) except the following characters: quotation mark (**"**), apostrophe (**'**), slash (**/**), backslash (**\**), colon (**:**), and vertical bar (**|**).

  - The name can contain spaces.

  - The following names are reserved and can't be used for files or directories: CON, AUX, COM1, COM2, COM3, COM4, LPT1, LPT2, LPT3, PRN, and NUL. For example, if you try to name a file PRN in an **Open** statement, the default printer will simply become the destination for **Print #** and **Write #** statements directed to the file number specified in the **Open** statement.

  - The following are examples of valid Microsoft Windows file names:

    ```
    LETTER.DOC
    My Memo.Txt
    BUDGET.92
    12345678.901
    Second Try.Rpt
    ```

  - On the Macintosh, a file name can include any character except the colon (**:**), and can contain spaces. Null characters (**Chr(0)**) aren't allowed in any file names.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad record length (Error 59)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadRecordLengthC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadRecordLenS"}

The length of a record <u>variable</u> in a **Get** or **Put** statement must be the length specified in its corresponding **Open** statement. This error has the following causes and solutions:

• The record variable's length differs from the length specified in the corresponding **Open** statement.

  Make sure the sum of the sizes of fixed-length <u>variables</u> in the <u>user-defined type</u> defining the record variable's type is the same as the value stated in the **Open** statement's **Len** clause. In the following example, assume `RecVar` is a variable of the appropriate type. You can use the **Len** function to specify the length, as follows:

  ```
  Open MyFile As #1 Len = Len(RecVar)
  ```

• The variable in a **Put** statement is (or includes) a variable-length string.

  Because a 2-byte descriptor is always added to a variable-length string placed in a random access file with **Put**, the variable-length string must be at least 2 characters shorter than the record length specified in the **Len** clause of the **Open** statement.

• The variable in a **Put** statement is (or includes) a **Variant**.

  Like variable-length strings, <u>Variant data types</u> also require a 2-byte descriptor. Variants containing variable-length strings require a 4-byte descriptor. Therefore, for variable-length strings in a **Variant**, the string must be at least 4 bytes shorter than the record length specified in the **Len** clause.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Bad record number (Error 63)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadRecordNumberC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadRecordNumS"}

An error occurred during the attempted file access. This error has the following cause and solution:

- The record number in a **Put** or **Get** statement is less than or equal to zero.

  Check the calculations used in generating the record number. Make sure that the variables containing the record number or used in calculating record numbers are spelled correctly. A misspelled variable name is implicitly declared and initialized to zero, unless you have properly placed **Option Explicit** in the module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't create necessary temporary file (Error 322)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantCreateTempFileS"}

Creating an <u>executable file</u> requires creation of temporary files. This error has the following cause and solution:

- The drive that contains the directory specified by the TEMP environment variable is full.

  Delete files from the full drive or specify a different drive in the TEMP environment variable.

- The TEMP environment variable specifies an invalid or read-only drive or directory.

  Specify a valid drive for the TEMP environment variable or remove the read-only restriction from the currently specified drive or directory.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't perform requested operation (Error 17)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantContinueS"}

An operation can't be carried out if it would invalidate the current state of the <u>project</u>. This error has the following cause and solution:

- The requested operation would invalidate the current state of the project. For example, the error occurs if you use the **References** dialog box to add a reference to a new project or <u>object library</u> while a program is in <u>break mode</u>.

  Stop execution of the current code, and then retry the operation.

- An attempt was made to programmatically modify currently running code. For example, your code may have tried to read code from a disk file into a currently running <u>module</u>.

  Although you can modify modules in the project while they aren't actually running, you can't make modifications to a running module. To make such changes, you must stop the module from running, make the additions or changes, and then restart execution.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't rename with different drive (Error 74)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDifferentDriveC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDifferentDriveS"}

The **Name** statement must rename the file to the current drive. This error has the following cause and solution:

- You tried to move a file to a different drive using the **Name** statement.

  Use **FileCopy** to write the file to another drive, and then delete the old file with a **Kill** statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't save file to TEMP directory (Error 735)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantSaveFileToTEMPC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantSaveFileToTEMPS"}

Components often need to save temporary information to disk. This error has the following cause and solution:

- Component can't find a directory named TEMP.

  Create a directory named TEMP and set the TEMP environment variable equal to its path.

- The drive or partition containing the TEMP directory lacks sufficient space to save information.

  Make some space on the drive by erasing unnecessary files, or create a TEMP directory on another partition and set the TEMP environment variable equal to its path.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Class doesn't support Automation (Error 430)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOLENotSupportedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOLENotSupportedS"}

Not all objects expose an Automation interface. This error has the following cause and solution:

- The <u>class</u> you specified in the **GetObject** or **CreateObject** function call was found, but has not exposed a programmability interface.

  You can't write code to control an object's behavior unless it has been exposed for Automation. Check the documentation of the application that created the object for limitations on the use of Automation with this class of object.

- You changed a project from .dll to .exe, or vice versa. If, for example, you have a .dll server already compiled and registered, and then you change the project type to .exe and recompile it, the fact that the .dll and .exe are already registered on your system prevents you from creating either object. You must manually unregister the old .dll or .exe to avoid the problem.

  This is caused by the combination of project compatibility and changing a project from an .exe to a .dll. In project compatibility, the CLSID is preserved, but not the IID. Since the CLSID is preserved, the class ends up being registered with two servers—one an in-process server, the other a local server. When an instance is created, the in-process one is chosen. When the querying of the interface occurs, the .dll does not support the IID because it's new.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Code resource lock error (Error 455)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCodeResourceLockErrorS"}

This error can only occur on the Macintosh. When you access a code resource, you must lock it. This error has the following cause and solution:

- A call was made to a <u>procedure</u> in a code resource. The code resource was found, but an error occurred when an attempt was made to lock the resource.

  Check for an error returned by Hlock, for example, "`Illegal on empty handle`" or "`Illegal on free block`".

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Code resource not found (Error 454)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCodeResourceNotFoundS"}

This error can only occur on the Macintosh. This error has the following cause and solution:

- A call was made to a <u>procedure</u> in a code resource, but the code resource could not be found.

  Check to be sure the resource is available and properly referenced.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Connection to type library or object library for remote process has been lost (Error 442)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLostTLBC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLostTLBS"}

During remote access (that is, when accessing an object that is part of another process or is running on another machine), the connection to the library containing object information was broken. This error has the following cause and solution:

- You lost your connection to the remote process's <u>object library</u> or <u>type library</u>.

   To reconnect, follow these steps:

   1. Restart the **Application** object.

   2. In the error dialog box through which you entered this Help topic, click **OK** to display the **References** dialog box.

   3. The lost reference appears with the word MISSING to its left.

   4. Remove the lost reference.

   5. In the **References** dialog box, click the check box for the object you started in step 1.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Device I/O error (Error 57)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIOErrorS"}

External devices are sometimes subject to unanticipated errors. This error has the following cause and solution:

- An input or output error occurred while your program was using a device such as a printer or disk drive.

   Make sure the device is operating properly, and then retry the operation.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Device unavailable (Error 68)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDevUnavailableS"}

This error has the following causes and solutions:

- The device you are trying to access either is not online or doesn't exist.

  Check power to the device and any cables connecting your computer to the device. If you are trying to access a printer over a network, make sure there is a logical connection between your computer and the printer, for example, a connection associating LPT1 with the network printer ID.

- Your network connection may have been broken.

  Reconnect to the network and try the operation again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Disk full (Error 61)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDiskFullC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDiskFullS"}

This error has the following causes and solutions:

- There isn't enough room on the disk for the completion of a **Print #**, **Write #**, or **Close** operation.

  Move some files to another disk or delete some files.

- There isn't enough room on the disk to create required files.

  Move some files to another disk or delete some files.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Disk not ready (Error 71)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDiskNotReadyS"}

This error has the following causes and solutions:

- There is no disk in the specified drive.

  Put a disk in the drive and retry the operation.

- The drive door of the specified drive is open.

  Close the drive door and retry the operation.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Division by zero (Error 11)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDivByZeroS"}

Division by zero isn't possible. This error has the following cause and solution:

- The value of an <u>expression</u> being used as a divisor is zero.

  Check the spelling of <u>variables</u> in the expression. A misspelled variable name can implicitly create a numeric variable that is initialized to zero. Check previous operations on variables in the expression, especially those passed into the <u>procedure</u> as <u>arguments</u> from other procedures.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Error in loading DLL (Error 48)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDLLLoadErrC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDLLLoadErrS"}

A dynamic link library (DLL) is a library specified in the **Lib** clause of a **Declare** statement. This error has the following causes and solutions:

- The file isn't DLL-executable.

  If the file is a source-text file, it must be compiled and linked to DLL executable form.

- The file isn't a Microsoft Windows DLL.

  Obtain the Microsoft Windows DLL equivalent of the file.

- The file is an early Microsoft Windows DLL that is incompatible with Microsoft Windows protect mode.

  Obtain an updated version of the DLL.

- The DLL references another DLL that isn't present.

  Obtain the referenced DLL and make it available to the other DLL.

- The DLL or one of the referenced DLLs isn't in a directory specified by your path.

  Move the DLL to a referenced directory or place its current directory on the path.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File already exists (Error 58)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFileAlreadyExistsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileAlreadyExistsS"}

This error has the following causes and solutions:

- This error occurs at <u>run time</u> when the new file name, for example, one specified in a **Name** statement, is identical to a file name that already exists.

  Specify a new file name in the **Name** statement or delete the old file before specifying it in a **Name** statement.

- You used the **Save As** command to save a currently loaded <u>project</u>, but the project name already exists.

  Use a different project name if you don't want to replace the other project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File already open (Error 55)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFileAlreadyOpenC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileAlreadyOpenS"}

Sometimes a file must be closed before another **Open** or other operation can occur. This error has the following causes and solutions:

- A sequential-output mode **Open** statement was executed for a file that is already open.

  You must close a file opened for one type of sequential access before opening it for another. For example, you must close a file opened for **Input** before opening it for **Output**.

- A statement, for example, **Kill**, **SetAttr**, or **Name**, refers to an open file.

  Close the file before executing the statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File not found (Error 53)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileNotFoundS"}

The file was not found where specified. This error has the following causes and solutions:

- A statement, for example, **Kill**, **Name**, or **Open**, refers to a file that doesn't exist.

  Check the spelling of the file name and the path specification.

- An attempt has been made to call a procedure in a dynamic-link library (DLL) or Macintosh code resource, but the library or resource file name specified in the **Lib** clause of the **Declare** statement can't be found.

  Check the spelling of the file name and the path specification.

- In the development environment, this error occurs if you attempt to open a project or load a text file that doesn't exist.

  Check the spelling of the project name or file name and the path specification.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# For loop not initialized (Error 92)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgIllegalForC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalForS"}

**For** loop counters must be initialized. This error has the following cause and solution:

- You jumped into the middle of a **For...Next** loop.

  Remove the jump into the loop. Placing labels inside a **For...Next** loop isn't recommended.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Input past end of file (Error 62)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgEndofFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEndOfFileS"}

You can't read past the end-of-file position. This error has the following cause and solution:

- An **Input #** or **Line Input #** statement is reading from a file in which all data has been read or from an empty file.

  Use the **EOF** function immediately before the **Input #** statement to detect the end of file.

- You used the **EOF** function with a file opened for **Binary** access.

  **EOF** only works with files opened for sequential **Input** access. Use **Seek** and **Loc** with files opened for **Binary** access.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Internal error (Error 51)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInternalErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInternalErrorS"}

Make sure this error wasn't generated by the **Error** statement or **Raise** method. This error has the following cause and solution:

- An internal malfunction has occurred in Visual Basic.

  Unless this call was generated by the **Error** statement or **Raise** method, contact Microsoft Product Support Services to report the conditions under which the message appeared.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid Clipboard format (Error 460)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidClipboardFormatS"}

The Clipboard only accepts data in certain specified formats. This error has the following cause and solution:

- You tried to place data from a component on the Clipboard, but the data is in a format incompatible with the Clipboard.

    Consult the documentation for the component to determine whether you can use the Clipboard for transferring data from the component.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid file format (Error 321)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidFileFormatErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidFileFormatErrorS"}

Disk files often have data stored in proprietary formats. This error has the following cause and solution:

- You tried to load a file into a component, but the format of the data in the file was incompatible with the component.

  Consult the documentation for the component to determine the proper format for disk file data and whether the component provides support for converting from one format to another.

- You tried to save component data to a file, but the format of the data was incompatible with the format of the file.

  Consult the documentation for the component to determine whether it provides support for converting from one format to another.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid ordinal (Error 452)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidOrdinalS"}

Your call to a <u>dynamic-link library (DLL)</u> indicated to use a number instead of a procedure name, using the **#**_num_ syntax. This error has the following causes and solutions:

- An attempt to convert the _num_ expression to an ordinal failed.

  Make sure the <u>expression</u> represents a valid number or call the <u>procedure</u> by name.

- The _num_ specified doesn't specify any function in the DLL.

  Make sure _num_ identifies a valid function in the DLL.

- A <u>type library</u> has an invalid declaration resulting in internal use of an invalid ordinal number.

  <u>Comment</u> out code to isolate the procedure call causing the problem. Write a **Declare** statement for the procedure and report the problem to the type library vendor.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid pattern string (Error 93)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadPatStrC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadPatStrS"}

The pattern string specified in the **Like** operation of a search is invalid. This error has the following cause and solution:

- A common example of an invalid character list expression is `[a-b` , where the right bracket is missing.

  Review the valid characters for list expressions.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid procedure call or argument (Error 5)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgillegalfunccallC"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalFuncCallS"}

Some part of the call can't be completed. This error has the following causes and solutions:

- An <u>argument</u> probably exceeds the range of permitted values. For example, the **Sin**
  function can only accept values within a certain range. Positive arguments less than
  2,147,483,648 are accepted, while 2,147,483,648 generates this error.

  Check the ranges permitted for arguments.

- This error can also occur if an attempt is made to call a <u>procedure</u> that isn't valid on the
  current platform. For example, some procedures may only be valid for Microsoft
  Windows, or for the Macintosh, and so on.

  Check platform-specific information about the procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP
(on the Macintosh).

# Invalid property-array index (Error 381)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidPropertyArrayIndexC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPropertyArrayIndexS"}

A <u>property</u> value may consist of an <u>array</u> of values. This error has the following cause and solution:

- A component's property array could have a lower bound of zero and an upper bound equal to the number of elements in the array minus 1. Alternatively, the lower bound could be 1 and the upper bound could equal the number of elements in the array.

  Check the component's documentation to make sure your index is within the valid range for the specified property.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of Null (Error 94)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantUseNullC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantUseNullS"}

Null is a **Variant** subtype used to indicate that a data item contains no valid data. This error has the following cause and solution:

- You are trying to obtain the value of a **Variant** variable or an expression that is **Null**. For example:

```
MyVar = Null
For Count = 1 To MyVar
    . . .
Next Count
```

  Make sure the variable contains a valid value.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Named argument not found (Error 448)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNamedParamNotFoundS"}

A <u>named argument</u> may not be used in a procedure invocation unless it appears in the <u>procedure</u> definition. This error has the following cause and solution:

- You specified a named argument, but the procedure was not defined to accept an argument by that name.

  Check the spelling of the argument name.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Need property-array index (Error 385)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNeedPropertyarrayIndexC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNeedPropertyarrayIndexS"}

This <u>property</u> value consists of an <u>array</u> rather than a single value. This error has the following cause and solution:

- You didn't specify the index for the property array you tried to access.

   Check the component's documentation to find the range for the indexes appropriate to the array. Specify an appropriate index in your property access statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object doesn't support current locale setting (Error 447)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLocaleSettingNotSupportedS"}

Not all objects support all <u>locale</u> settings. This error has the following causes and solutions:

- You attempted to access an object that doesn't support the locale setting for the current <u>project</u>. For example, if your current project has the locale setting Canadian French, the object you are trying to access must support that locale setting.

    Check which locale settings the object supports.

- The object relies on national language support in a <u>dynamic-link library (DLL)</u> or Macintosh code resource, for example, OLE2NLS.DLL, that may be out of date.

    Obtain a more recent version of the DLL, one that supports the current project locale.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object doesn't support named arguments (Error 446)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNamedArgsNotSupportedS"}

Not all objects support named arguments. This error has the following cause and solution:

- You tried to access an object whose methods don't support named arguments.

  Specify arguments positionally when performing methods on this object. See the object's documentation for more information on argument positions and types.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object doesn't support this action (Error 445)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgActionNotSupportedS"}

Not all objects support all actions. This error has the following cause and solution:

- You referenced a <u>method</u> or <u>property</u> that isn't supported by this object.

  See the object's documentation for more information on the object and check the spellings of properties and methods.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property let procedure not defined and property get procedure did not return an object (Error 451)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNotEnumC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNotEnumS"}

Certain <u>properties</u>, <u>methods</u>, and operations can only apply to **Collection** objects. This error has the following cause and solution:

- You specified an operation or property that is exclusive to <u>collections</u>, but the object isn't a collection.

  Check the spelling of the object or property name, or verify that the object is a **Collection** object. Also look at the **Add** method used to add the object to the collection to be sure the syntax is correct and that any <u>identifiers</u> were spelled correctly.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object required (Error 424)

References to properties and methods often require an explicit object qualifier. This error has the following causes and solutions:

- You referred to an object property or method, but didn't provide a valid object qualifier.

  Specify an object qualifier if you didn't provide one. For example, although you can omit an object qualifier when referencing a form property from within the form's own module, you must explicitly specify the qualifier when referencing the property from a standard module.

- You supplied an object qualifier, but it isn't recognized as an object.

  Check the spelling of the object qualifier and make sure the object is visible in the part of the program in which you are referencing it. In the case of **Collection** objects, check any occurrences of the **Add** method to be sure the syntax and spelling of all the elements are correct.

- You supplied a valid object qualifier, but some other portion of the call contained an error.

  An incorrect path as an argument to a host application's **File Open** command could cause the error. Check arguments.

- You didn't use the **Set** statement in assigning an object reference.

  If you assign the return value of a **CreateObject** call to a **Variant** variable, an error doesn't necessarily occur if the **Set** statement is omitted. In the following code example, an implicit instance of Microsoft Excel is created, and its default property (the string "Microsoft Excel") is returned and assigned to the **Variant** RetVal. A subsequent attempt to use RetVal as an object reference causes this error:

```
Dim RetVal                        ' Implicitly a Variant.
' Default property is assigned to Type 8 Variant RetVal.
RetVal = CreateObject("Excel.Application")
RetVal.Visible = True             ' Error occurs here.
```

  Use the **Set** statement when assigning an object reference.

- In rare cases, this error occurs when you have a valid object but are attempting to perform an invalid action on the object. For example, you may receive this error if you try to assign a value to a read-only property.

  Check the object's documentation and make sure the action you are trying to perform is valid.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object variable or With block variable not set (Error 91)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgObjNotSetC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgObjNotSetS"}

There are two steps to creating an <u>object variable</u>. First you must declare the object variable. Then you must assign a valid reference to the object variable using the **Set** statement. Similarly, a **With...End With** block must be initialized by executing the **With** statement entry point. This error has the following causes and solutions:

- You attempted to use an object variable that isn't yet referencing a valid object.

  Specify or respecify a reference for the object variable. For example, if the **Set** statement is omitted in the following code, an error would be generated on the reference to `MyObject`:

  ```
  Dim MyObject As Object  ' Create object variable.
  Set MyObject = Sheets(1)   ' Create valid object reference.
  MyCount = MyObject.Count   ' Assign Count value to MyCount.
  ```

- You attempted to use an object variable that has been set to **Nothing**.

  ```
  Set MyObject = Nothing  ' Release the object.
  MyCount = MyObject.Count   ' Make a reference to a released object.
  ```

  Respecify a reference for the object variable. For example, use a new **Set** statement to set a new reference to the object.

- The object is a valid object, but it wasn't set because the <u>object library</u> in which it is described hasn't been selected in the **References** dialog box.

  Select the object library in the **Add References** dialog box.

- The target of a **GoTo** statement is inside a **With** block.

  Don't jump into a **With** block. Make sure the block is initialized by executing the **With** statement entry point.

- You specified a line inside a **With** block when you chose the **Set Next Statement** command.

  The **With** block must be initialized by executing the **With** statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Automation error (Error 440)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOLEAutomationErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOLEAutomationErrorS"}

When you access Automation objects, specific types of errors can occur. This error has the following cause and solution:

- An error occurred while executing a method or getting or setting a property of an object variable. The error was reported by the application that created the object.

  Check the properties of the **Err** object to determine the source and nature of the error. Also try using the **On Error Resume Next** statement immediately before the accessing statement, and then check for errors immediately following the accessing statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object doesn't support this property or method (Error 438)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOLENoPropOrMethodS"}

Not all objects support all <u>properties</u> and <u>methods</u>. This error has the following cause and solution:

- You specified a method or property that doesn't exist for this <u>Automation object</u>.

   See the object's documentation for more information on the object and check the spellings of properties and methods.

- You specified a **Friend** procedure to be called late bound.

   The name of a **Friend** procedure must be known at <u>compile time</u>. It can't appear in a late-bound call.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Out of memory (Error 7)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfMemoryS"}

More memory was required than is available, or a 64K segment boundary was encountered. This error has the following causes and solutions:

- You have too many applications, documents, or source files open.

  Close any unnecessary applications, documents, or source files that are open.

- You have a module or procedure that's too large.

  Break large modules or procedures into smaller ones. This doesn't save memory, but it can prevent hitting 64K segment boundaries.

- You are running Microsoft Windows in standard mode.

  Restart Microsoft Windows in enhanced mode.

- You are running Microsoft Windows in enhanced mode, but have run out of virtual memory.

  Increase virtual memory by freeing some disk space, or at least ensure that some space is available.

- You have terminate-and-stay-resident programs running.

  Eliminate terminate-and-stay-resident programs.

- You have many device drivers loaded.

  Eliminate unnecessary device drivers.

- You have run out of space for **Public** variables.

  Reduce the number of **Public** variables.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Out of stack space (Error 28)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOutofStackC"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfStackS"}

The stack is a working area of memory that grows and shrinks dynamically with the
demands of your executing program. This error has the following causes and solutions:

- You have too many active **Function**, **Sub**, or **Property** procedure calls.

  Check that <u>procedures</u> aren't nested too deeply. This is especially true with recursive
  procedures, that is, procedures that call themselves. Make sure recursive procedures
  terminate properly. Use the **Calls** dialog box to view which procedures are active (on the
  stack).

- Your local <u>variables</u> require more local variable space than is available.

  Try declaring some variables at the <u>module level</u> instead. You can also declare all
  variables in the procedure static by preceding the **Property**, **Sub**, or **Function** keyword
  with **Static**. Or you can use the **Static** statement to declare individual **Static** variables
  within procedures.

- You have too many fixed-length strings.

  Fixed-length strings in a procedure are more quickly accessed, but use more stack space
  than variable-length strings, because the string data itself is placed on the stack. Try
  redefining some of your fixed-length strings as variable-length strings. When you declare
  variable-length strings in a procedure, only the string descriptor (not the data itself) is
  placed on the stack. You can also define the string at module level where it requires no
  stack space. Variables declared at module level are **Public** by default, so the string is
  visible to all procedures in the module.

- You have too many nested **DoEvents** function calls.

  Use the **Calls** dialog box to view which procedures are active on the stack.

- Your code triggered an event cascade.

  An event cascade is caused by triggering an event that calls an event procedure that's
  already on the stack. An event cascade is similar to an unterminated recursive procedure
  call, but it's less obvious, since the call is made by Visual Basic rather than by an explicit
  call in your code. Use the **Calls** dialog box to view which procedures are active (on the
  stack).

To display the **Calls** dialog box, select the **Calls** button to the right of the <u>Procedure box</u> in
the **Debug** window or choose the **Calls** command. For additional information, select the
item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Out of string space (Error 14)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfStrSpaceS"}

Visual Basic permits you to use very large strings. However, the requirements of other programs and the way you manipulate your strings may cause this error. This error has the following causes and solutions:

- <u>Expressions</u> requiring that temporary strings be created for evaluation may cause this error. For example, the following code causes an `Out of string space` error on some operating systems:

```
MyString = "Hello"
For Count = 1 To 100
    MyString = MyString & MyString
Next Count
```

   Assign the string to a <u>variable</u> of another name.

- Your system may have run out of memory, which prevented a string from being allocated.

   Remove any unnecessary applications from memory to create more space.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Overflow (Error 6)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOverflowS"}

An overflow results when you try to make an assignment that exceeds the limitations of the target of the assignment. This error has the following causes and solutions:

- The result of an assignment, calculation, or <u>data type</u> conversion is too large to be represented within the range of values allowed for that type of <u>variable</u>.

  Assign the value to a variable of a type that can hold a larger range of values.

- An assignment to a <u>property</u> exceeds the maximum value the property can accept.

  Make sure your assignment fits the range for the property to which it is made.

- You attempt to use a number in a calculation, and that number is coerced into an integer, but the result is larger than an integer. For example:

  ```
  Dim x As Long
  x = 2000 * 365   ' Error: Overflow
  ```

  To work around this situation, type the number, like this:

  ```
  Dim x As Long
  x = CLng(2000) * 365
  ```

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Path not found (Error 76)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPathNotFoundC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPathNotFoundS"}

The path to a file includes the drive specification plus the directories and subdirectories that must be traversed to locate the file. A path can be relative or absolute. This error has the following cause and solution:

- During a file-access or disk-access operation, for example, **Open**, **MkDir**, **ChDir**, or **RmDir**, the operating system was unable to find the specified path.

  Respecify the path.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Path/File access error (Error 75)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPathFileAccessC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPathFileAccessS"}

During a file-access or disk-access operation, for example, **Open**, **MkDir**, **ChDir**, or **RmDir**, the operating system couldn't make a connection between the path and the file name. This error has the following causes and solutions:

- The file specification isn't correctly formatted.

  A file name can contain a fully qualified (absolute) or relative path. A fully qualified path starts with the drive name (if the path is on another drive) and lists the explicit path from the root to the file. Any path that isn't fully qualified is relative to the current drive and directory.

- You attempted to save a file that would replace an existing read-only file.

  Change the read-only attribute of the target file or save the file with a different file name.

- You attempted to open a read-only file in sequential **Output** or **Append** mode.

  Open the file in **Input** mode or change the read-only attribute of the file.

- You attempted to change a Visual Basic project within a database or document.

  You can't make design changes to the project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Permission denied (Error 70)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgpermissiondeniedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPermissionDeniedS"}

An attempt was made to write to a write-protected disk or to access a locked file. This error has the following causes and solutions:

- You tried to open a write-protected file for sequential **Output** or **Append**.

  Open the file for **Input** or change the write-protection attribute of the file.

- You tried to open a file on a disk that is write-protected for sequential **Output** or **Append**.

  Remove the write-protection device from the disk or open the file for **Input**.

- You tried to write to a file that another process locked.

  Wait to open the file until the other process releases it.

- You attempted to access the registry, but your user permissions don't include this type of registry access.

  On 32-bit Microsoft Windows systems, a user must have the correct permissions for access to the system registry. Change your permissions or have them changed by the system administrator.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Printer error (Error 482)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPrinterErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPrinterErrorS"}

This error has the following cause and solution:

- An error occurred at the printer, but no other information was returned to the computer that sent the file.

  You must physically examine the printer. Make sure all connections between computer and printer are solid. Most printers provide a display for error information such as "Out of paper," "Offline," and so on.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property Get can't be executed at run time (Error 393)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgGetNotSupportedAtRuntimeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgGetNotSupportedAtRuntimeS"}

Not all properties return run-time information. This error has the following cause and solution:

- The property you are trying to access is read-only at run time.

  Terminate execution and view the property in design time.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property Get can't be executed on write-only property (Error 394)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgGetNotSupportedC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgGetNotSupportedS"}

Not all properties return information. This error has the following cause and solution:

- The property you are trying to access doesn't return information.

  You can't determine the state of the property.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property or method not found (Error 423)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoSuchControlOrPropertyS"}

The spelling of an object name must exactly match the definition in its <u>object library</u>. This error has the following cause and solution:

- You referred to an *object*.*method* or *object*.*property*, but *method* or *property* isn't defined.

  You may have misspelled the name of the *object*. To see what <u>properties</u> and <u>methods</u> are defined for an *object*, display the <u>Object Browser</u>. Select the appropriate object library to view a list of available properties and methods.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property not found (Error 422)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPropertyNotFoundC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPropertyNotFoundS"}

Not all objects support the same set of <u>properties</u>. This error has the following cause and solution:

- This object doesn't support the specified property.

  Check the spelling of the property name. Also, you may be trying to access something like a "text" property when the object actually supports a "caption" or some similarly named property. Check the object's documentation.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property Set can't be executed at run time (Error 382)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSetNotSupportedAtRunTimeC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSetNotSupportedAtRunTimeS"}

It may not be possible to obtain a reference to a property at run time.This error has the following cause and solution:

- You tried to get a reference to a property that's either read-only or write-only at run time.

  Since you can use a reference for both reading and writing, the property must provide run-time support for both operations for a reference to be obtained at run time.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property Set can't be used with a read-only property (Error 383)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSetNotSupportedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSetNotSupportedS"}

It may not be possible to obtain a reference to a <u>property</u> at <u>run time</u>.This error has the following cause and solution:

- You tried to get a reference to a property that's read-only at run time.

  Since you can use a reference for both reading and writing, the property must provide run-time support for both operations for a reference to be obtained at run time. You can only use a **Property Get** with this property.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Property Set not permitted (Error 387)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSetNotPermittedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSetNotPermittedS"}

Not all <u>properties</u> support returning a reference. This error has the following cause and solution:

- You tried to get a reference to a property that doesn't return a reference.

  Restrict your access to this property to **Property Let** and **Property Get**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Replacements too long (Error 746)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgReplacementsTooLongC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReplacementsTooLongS"}

A replacement may not exceed a specified maximum length. This error has the following cause and solution:

- You specified a replacement that exceeded the length permitted.

  Consult the component documentation for maximum length restriction.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Resume without error (Error 20)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgResumewoerrC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgResumeWOErrS"}

A **Resume** statement can only appear within an error handler and can only be executed in an active error handler. This error has the following causes and solutions:

- You placed a **Resume** statement outside error-handling code.

  Move the statement into an error handler, or delete it.

- Your code jumped into an error handler even though there was no error.

  Perhaps you misspelled a <u>line label</u>. Jumps to labels can't occur across <u>procedures</u>, so search the procedure for the label that identifies the error handler. If you find a duplicate label specified as the target of a **GoTo** statement that isn't an **On Error GoTo** statement, change the line label to agree with its intended target.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Return without GoSub (Error 3)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgReturnwoGoSubC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgReturnWOGoSubS"}

A **Return** statement must have a corresponding **GoSub** statement. This error has the following cause and solution:

- You have a **Return** statement that can't be matched with a **GoSub** statement.

   Make sure your **GoSub** statement wasn't inadvertently deleted.

Unlike **For...Next**, **While...Wend**, and **Sub...End Sub**, which are matched at compile time, **GoSub** and **Return** are matched at run time.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Specified DLL function not found (Error 453)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidDllFunctionNameS"}

The <u>dynamic-link library (DLL)</u> in a user library reference was found, but the DLL function specified wasn't found within the DLL. This error has the following causes and solutions:

- You specified an invalid ordinal in the function declaration.

  Check for the proper ordinal or call the function by name.

- You gave the right DLL name, but it isn't the version that contains the specified function.

  You may have the correct version on your machine, but if the directory containing the wrong version precedes the directory containing the correct one in your path, the wrong DLL is accessed. Check your machine for different versions. If you have an early version, contact the supplier for a later version.

- If you are working on a 32-bit Microsoft Windows platform, both the DLL name and alias (if used) must be correct.

  Make sure the DLL name and alias are correct.

- Some 32-bit DLLs contain functions with slightly different versions to accommodate both <u>Unicode</u> and <u>ANSI</u> strings. An "A" at the end of the function name specifies the ANSI version. A "W" at the end of the function name specifies the Unicode version.

  If the function takes string-type arguments, try appending an "A" to the function name.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Expression too complex (Error 16)

{ewc HLP95EN.DLL,DYNALINK,"See Also":""}

The number of subexpressions allowed in a floating-point <u>expression</u> varies among platforms. For example, on 32-bit Microsoft Windows operating systems, the limit is 8 levels of nested floating-point expressions. This error has the following cause and solution:

- A floating-point expression contains too many nested subexpressions.

   Break the expression into as many separate expressions as necessary to prevent the error from occurring.

   **Note**   In earlier versions of Visual Basic, Error 16 was "String expression too complex." That error condition can no longer occur. However, if you have early code that traps and handles that error, you should remove it to prevent confusion with this new error.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Search text not found (Error 744)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSearchTextNotFoundC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSearchTextNotFoundS"}

This error has the following cause and solution:

- The text you specified wasn't found.

  The text doesn't exist.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Sub, Function, or Property not defined (Error 35)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgundefinedprocC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUndefinedProcS"}

A **Sub**, **Function**, or **Property** procedure must be defined to be called. This error has the following causes and solutions:

- You misspelled the name of your <u>procedure</u>.

  Check the spelling and correct it.

- You tried to call a procedure from another <u>project</u> without explicitly adding a reference to that project in the **References** dialog box.

  **To add a reference**

  1. Display the **References** dialog box.

  2. Find the name of the project containing the procedure you want to call. If the project name doesn't appear in the **References** dialog box, click the **Browse** button to search for it.

  3. Click the check box to the left of the project name.

  4. Click **OK**.

- The specified procedure isn't visible to the calling procedure.

  Procedures declared **Private** in one <u>module</u> can't be called from procedures outside the module. If **Option Private Module** is in effect, procedures in the module aren't available to other projects. Search to locate the procedure.

- You declared a Windows <u>dynamic-link library (DLL)</u> routine or Macintosh code-resource routine, but the routine isn't in the specified library or code resource.

- Check the ordinal (if you used one) or the name of the routine. Make sure your version of the DLL or Macintosh code-resource is the correct one. The routine may only exist in later versions of the DLL or Macintosh code-resource. If the directory containing the wrong version precedes the directory containing the correct one in your path, the wrong DLL or Macintosh code-resource is accessed. You gave the right DLL name or Macintosh code-resource, but it isn't the version that contains the specified function.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Subscript out of range (Error 9)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOutOfBoundsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfBoundsS"}

Elements of <u>arrays</u> and members of <u>collections</u> can only be accessed within their defined ranges. This error has the following causes and solutions:

- You referenced a nonexistent array element.

  The subscript may be larger or smaller than the range of possible subscripts, or the array may not have dimensions assigned at this point in the application. Check the <u>declaration</u> of the array to verify its upper and lower bounds. Use the **UBound** and **LBound** functions to condition array accesses if you're working with arrays that are redimensioned. If the index is specified as a <u>variable</u>, check the spelling of the variable name.

- You declared an array but didn't specify the number of elements. For example, the following code causes this error:

```
Dim MyArray() As Integer
MyArray(8) = 234  ' Causes Error 9.
```

  Visual Basic doesn't implicitly dimension unspecified array ranges as $0 - 10$. Instead, you must use **Dim** or **ReDim** to specify explicitly the number of elements in an array.

- You referenced a nonexistent collection member.

  Try using the **For Each...Next** construct instead of specifying index elements.

- You used a shorthand form of subscript that implicitly specified an invalid element.

  For example, when you use the **!** operator with a collection, the **!** implicitly specifies a key. For example, *object***!***keyname***.**value is equivalent to *object***.**item**(***keyname***).**value. In this case, an error is generated if *keyname* represents an invalid key in the collection. To fix the error, use a valid key name or index for the collection.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This component doesn't support this set of events (Error 459)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgObjDoesNotSupportEventsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgObjDoesNotSupportEventsS"}

Not every component supports client sinking of events. This error has the following cause and solution:

- You tried to use a **WithEvents** variable with a component that can't work as an event source for the specified set of events. For example, you may be sinking events of an object, then create another object that **Implements** the first object. Although you might think you could sink the events from the implemented object, that isn't automatically the case. **Implements** only implements an interface for methods and properties.

  You can't sink events for a component that doesn't source events.

- **WithEvents** isn't supported for Private UserControls, because the type-info needed to raise the ObjectEvent isn't available at runtime.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many DLL application clients (Error 47)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManyClientsS"}

The dynamic-link library (DLL) for Visual Basic can only accommodate access by 50 host applications at a time. This error has the following cause and solution:

- Your application and other applications that are Visual Basic hosts (some of which may be accessed by your application) are all attempting to access the Visual Basic DLL at the same time.

  Reduce the number of open applications accessing Visual Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Too many files (Error 67)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTooManyFilesS"}

There is a limit to the number of disk files that can be open at one time. This error has the following causes and solutions:

- MS-DOS operating system: More files have been created in the root directory than the operating system permits.

  The MS-DOS operating system limits the number of files that can be in the root directory, usually 512. If your program is opening, closing, or saving files in the root directory, change your program so that it uses a subdirectory.

- MS-DOS operating system: More files have been opened than the number specified in the **files=** setting in your CONFIG.SYS file.

  Increase the number specified in the **files=** setting in your CONFIG.SYS file and restart your computer.

- Macintosh: Your program tried to open more than 40 files.

  On the Macintosh, the standard limit is 40 files. This limit can be changed using a utility to modify the **MaxFiles** parameter of the boot block.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Type mismatch (Error 13)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgTypeMismatchC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTypeMismatchS"}

Visual Basic is able to convert and coerce many values to accomplish <u>data type</u> assignments that weren't possible in earlier versions. However, this error can still occur and has the following causes and solutions:

- The <u>variable</u> or <u>property</u> isn't of the correct type. For example, a variable that requires an integer value can't accept a string value unless the whole string can be recognized as an integer.

    Try to make assignments only between compatible <u>data types</u>. For example, an **Integer** can always be assigned to a **Long**, a **Single** can always be assigned to a **Double**, and any type (except a <u>user-defined type</u>) can be assigned to a **Variant**.

- An object was passed to a <u>procedure</u> that is expecting a single property or value.

    Pass the appropriate single property or call a <u>method</u> appropriate to the object.

- A <u>module</u> or <u>project</u> name was used where an <u>expression</u> was expected, for example:

    ```
    Debug.Print MyModule
    ```

    Specify an expression that can be displayed.

- You attempted to mix traditional Basic error handling with **Variant** values having the **Error** subtype (10, **vbError**), for example:

    ```
    Error CVErr(n)
    ```

    To regenerate an error, you must map it to an intrinsic Visual Basic or a user-defined error, and then generate that error.

- A **CVErr** value can't be converted to **Date**. For example:

    ```
    MyVar = CDate(CVErr(9))
    ```

    Use a **Select Case** statement or some similar construct to map the return of **CVErr** to such a value.

- At <u>run time</u>, this error typically indicates that a **Variant** used in an expression has an incorrect subtype, or a **Variant** containing an <u>array</u> appears in a **Print #** statement.

    To print arrays, create a loop that displays each element individually.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# User interrupt occurred (Error 18)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUserInterruptS"}

The process of breaking execution is useful, but if left unhandled, it results in termination of the application. This error has the following cause and solution:

- A user pressed CTRL+BREAK or another interrupt key.

  In the <u>development environment</u>, continue execution. To provide for the occurrence of this condition at <u>run time</u>, handle the error in an appropriate way.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Variable uses a type not supported in Visual Basic (Error 458)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidTypeLibVariableS"}

Not every <u>variable</u> that appears in a <u>type library</u> or <u>object library</u> can be used by every programming language. This error has the following cause and solution:

- You tried to use a variable defined in a type library or object library that has a <u>data type</u> that isn't supported by Visual Basic.

  You can't use a variable of a type not recognized by Visual Basic in a Visual Basic program.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Wrong number of arguments or invalid property assignment (Error 450)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgfuncaritymismatchC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFuncArityMismatchS"}

The number of <u>arguments</u> to a procedure must match the number of <u>parameters</u> in the <u>procedure's</u> definition. This error has the following causes and solutions:

- The number of arguments in the call to the procedure wasn't the same as the number of required arguments expected by the procedure.

  Check the argument list in the call against the procedure declaration or definition.

- You specified an index for a control that isn't part of a <u>control array</u>.

  The index specification is interpreted as an argument but neither an index nor an argument is expected, so the error occurs. Remove the index specification, or follow the procedure for creating a control array. Set the **Index** property to a nonzero value in the control's property sheet or property window at <u>design time</u>.

- You tried to assign a value to a read-only <u>property</u>, or you tried to assign a value to a property for which no **Property Let** procedure exists.

  Assigning a value to a property is the same as passing the value as an argument to the object's **Property Let** procedure. Properly define the **Property Let** procedure; it must have one more argument than the corresponding **Property Get** procedure. If the property is meant to be read-only, you can't assign a value to it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# ActiveX component can't create object or return reference to this object (Error 429)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantCreateObjectC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantCreateObjectS"}

Creating objects requires that the object's class be registered in the system registry and that any associated dynamic-link libraries (DLL) be available. This error has the following causes and solutions:

- The class isn't registered. For example, the system registry has no mention of the class, or the class is mentioned, but specifies either a file of the wrong type or a file that can't be found.

  If possible, try to start the object's application. If the registry information is out of date or wrong, the application should check the registry and correct the information. If starting the application doesn't fix the problem, rerun the application's setup program.

- A DLL required by the object can't be used, either because it can't be found, or it was found but was corrupted.

  Make sure all associated DLLs are available. For example, the Data Access Object (DAO) requires supporting DLLs that vary among platforms. You may have to rerun the setup program for such an object if that is what is causing this error.

- The object is available on the machine, but it is a licensed Automation object, and can't verify the availability of the license necessary to instantiate it.

  Some objects can be instantiated only after the component finds a license key, which verifies that the object is registered for instantiation on the current machine. When a reference is made to an object through a properly installed type library or object library, the correct key is supplied automatically.

  If the attempt to instantiate is the result of a **CreateObject** or **GetObject** call, the object must find the key. In this case, it may search the system registry or look for a special file that it creates when it is installed, for example, one with the extension .lic. If the key can't be found, the object can't be instantiated. If an end user has improperly set up the object's application, inadvertently deleted a necessary file, or changed the system registry, the object may not be able to find its key. If the key can't be found, the object can't be instantiated. In this case, the instantiation may work on the developer's system, but not on the user's system. It may be necessary for the user to reinstall the licensed object.

- You are trying to use the **GetObject** function to retrieve a reference to class created with Visual Basic.

  **GetObject** can't be used to obtain a reference to a class created with Visual Basic.

- Access to the object has explicitly been denied.

  For example, you may be trying to access a data object that's currently being used and is locked to prevent deadlock situations. If that's the case, you may be able to access the object at another time.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid property value (Error 380)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPropertyValueS"}

Most properties only accept values of a certain type, within a certain range. This error has the following cause and solution:

- An inappropriate value has been assigned to a property.

  See the property's Help topic to determine what types and range of values are appropriate for the property.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid picture (Error 481)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidPictureC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPictureS"}

Only a picture can be assigned to the **Picture** property or **Picture** object. This error has the following cause and solution:

- You attempted to assign something to a **Picture** property or a **Picture** object that isn't recognized as an icon, bitmap, or Microsoft Windows metafile.

  See the Help topics for the **Picture** object or **Picture** property of the object you're using to determine the acceptable picture types.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid format in resource file (Error 325)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidResourceFormatS"}

When accessing a resource file, the resource you are trying to retrieve must have a valid format. This error has the following cause and solution:

- The resource file you're trying to retrieve has an invalid format, or a specific resource in the file has an invalid format.

  If the file contents have been damaged, reinstall the file from its original disk. If the error continues, contact the provider of the resource for a new file or a version of the resource with the expected format.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This key is already associated with an element of this collection (Error 457)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDuplicateKeyC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDuplicateKeyS"}

A key is a string specified in the **Add** method that uniquely identifies a specific member of a collection. This error has the following cause and solution:

- You specified a key for a collection member that already identifies another member of the collection.

  Choose a different key for this member.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This array is fixed or temporarily locked (Error 10)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgArrayLockedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgArrayLockedS"}

Not all <u>arrays</u> can be redimensioned. Even arrays specifically declared to be dynamic and arrays within **Variant** <u>variables</u> are sometimes locked temporarily. This error has the following causes and solutions:

- You tried to use **ReDim** to change the number of elements of a fixed-size array . For example, in the following code, the fixed array `FixedArr` is received by `SomeArr` in the `NextOne` procedure, and then an attempt is made to resize `SomeArr`:

```
Sub FirstOne
    Dim FixedArr(25) As Integer   ' Create a fixed-size array and
    NextOne FixedArr()   ' pass it to another procedure.
End Sub


Sub NextOne(SomeArr() As Integer)
    ReDim SomeArr(35)     ' Error 10 occurs here.
    . . .
End Sub
```

  Make the original array dynamic rather than fixed by declaring it with **ReDim** (if the array is declared within a procedure), or by declaring it without specifying the number of elements (if the array is declared at <u>module level</u>).

- You tried to redimension a module-level dynamic array, in which one element has been passed as an <u>argument</u> to a procedure. For example, in the following code, `ModArray` is a dynamic, module-level array whose forty-fifth element is being passed <u>by reference</u> to the `Test` procedure:

```
Dim ModArray () As Integer ' Create a module-level dynamic array.
    . . .


Sub AliasError()
    ReDim ModArray (1 To 73) As Integer
    Test ModArray (45)    ' Pass an element of the module-level
                          ' array to the Test procedure.
End Sub


Sub Test(SomeInt As Integer)
    ReDim ModArray (1 To 40) As Integer  ' Error occurs here.
End Sub
```

  There is no need to pass an element of the module-level array in this case, since it's visible within all procedures in the module. However, if an element is passed, the array is locked to prevent a deallocation of memory for the reference <u>parameter</u> within the procedure, causing unpredictable behavior when the procedure returns.

- You attempted to assign a value to a **Variant** variable containing an array, but the **Variant** is currently locked. For example, if your code uses a **For Each...Next** loop to iterate over a variant containing an array, the array is locked on entry into the loop, and then released at the termination of the loop:

```
SomeArray = Array(9,8,7,6,5,4,3,2,1)


For Each X In SomeArray
    SomeArray = 301   ' Causes error since array is locked.
Next X
```

Use a **For...Next** rather than a **For Each...Next** loop to iterate. When an array is the object of a **For Each...Next** loop, you can read the array, but not write to it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File name or class name not found during Automation operation (Error 432)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOLEFileNotFoundC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOLEFileNotFoundS"}

The **GetObject** function requires either a valid file name with a path specification, or the name of a <u>class</u> that is registered with the system. This error has the following cause and solution:

- The name specified for file name or class in a call to the **GetObject** function could not be found.

  Check the names and try again. Make sure the name used for the *class* parameter matches that registered with the system.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Automation object doesn't have a default value (Error 443)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOLENoDefaultC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOLENoDefaultS"}

When you specify an object name without a <u>property</u> or <u>method</u>, Visual Basic assumes you are referencing the object's default <u>member</u> (property or method). However, not all objects expose a default member. This error has the following cause and solution:

- Visual Basic can't determine the default member for the specified object.

  Check the object's documentation and give an explicit specification for the property or method.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The remote server machine does not exist or is unavailable (Error 462)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgTheRemoteServerMachineDoesNotExistOrIsUnavailable_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTheRemoteServerMachineDoesNotExistOrIsUnavailable_S"}

The **CreateObject** function requires a valid server. This error has the following cause and solution:

•    A server parameter was specified, but the server could not be either reached or found.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Class not registered on local machine (Error 463)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgClassNotRegisteredOnLocalMachine_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgClassNotRegisteredOnLocalMachine_S"}

The **CreateObject** function requires a valid server. This error has the following cause and solution:

- A server parameter was specified, but the specified class progid (the first parameter of the **CreateObject** function) is not registered on the local system.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Method or data member not found (Error 461)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgIdentNotMemberC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIdentNotMemberS"}

The collection, object, or user-defined type doesn't contain the referenced member. This error has the following causes and solutions:

• You misspelled the object or member name.

  Check the spelling of the names and check the **Type** statement or the object documentation to determine what the members are and the proper spelling of the object or member names.

• You specified a collection index that's out of range.

  Check the **Count** property to determine whether a collection member exists. Note that collection indexes begin at 1 rather than zero, so the **Count** property returns the highest possible index number.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# <Item> is not a valid control type (Error 720)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDynCtlBadCont_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDynCtlBadCont_S"}

Only valid ActiveX components can be assigned as controls on forms. This error has the following cause and solution:

- You attempted to assign an ActiveX component as a control on a form that isn't recognized as a valid control component.

  See the Help topics for building ActiveX controls to determine what constitutes an acceptable control.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unexpected error; quitting

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantBootS"}

An unexpected error occurred, and Visual Basic was unable to continue. This may be a hardware problem or an effect of other software in your system.

# Valid values are whole numbers from 1 to 32

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPREFTabstopsErrorS"}

You attempted to set the **TabStop Width** beyond the permitted range. A number between 1 and 32 (inclusive) is acceptable for this field.

# Valid values are whole numbers from 2 to 60

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPrefGridErrorS"}

You attempted to set the **Grid Width** or **Grid Height** beyond the permitted range. A number between 2 and 60 (inclusive) is acceptable for this field.

# Specified item is a binary form and can't be loaded into Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCANTLOADVB1FRMS"}

Binary forms created with earlier versions of Visual Basic can't be loaded into this version of Visual Basic. Only Visual Basic versions 2.0 and 3.0 support converting binary forms to ASCII. If you have a copy of Visual Basic 2.0 or 3.0, you can load the form created with version 1.0 and those versions and save it as text. Then you can import the form in Visual Basic.

# Project file is read-only

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgProjectFileIsReadonlyC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vbmsgProjectFileIsReadonlyS"}

The project file is not writable. To change it, you must save it under a different name or remove the read-only attribute.

# File is read-only

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgFileIsReadonlyvb5C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vbmsgFileIsReadonlyvb5S"}

The file is not writable. To change it, you must save it under a different name or remove the read-only attribute.

# A procedure of that name already exists

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNEWPROCEXISTSS"}

Procedure names within the same scope must be unique. Change the name of the procedure.

# The project file specified contains an invalid key value. Valid range is 0 to 'item3'

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDRANGEYVALUES"}

The range of key values is restricted. Keep the key value within the range specified.

# The project name is too long. Name has been truncated

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgTheProjectNameIsTooLongNameHasBeenTruncatedC"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vbmsgTheProjectNameIsTooLongNameHasBeenTruncatedS"}

If a project name exceeds permitted length, it is truncated to the maximum permitted length.

# The project file specified contains an invalid key. The project can't be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgVBPCORRUPTKEYINVALIDS"}

You can't load the project while the project file contains the invalid key.

# Specified item is an invalid key. The specified file can't be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDFILEKEYS"}

You can't load the file while it contains the invalid key.

# The project file specified contains invalid key value

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDPROJKEYVALUES"}

The specified key value is invalid. Please change it.

# Not enough memory to run; quitting

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOOMBootS"}

Visual Basic couldn't obtain enough memory to run. Close other applications and try again.

# Wrong version of operating system; requires specified build of Windows NT 3.51 or specified build of Windows 95

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWrongBADOSVERS"}

To run this version of Visual Basic, you must be running the specified build of Windows 95 or Windows NT version 3.51.

# The specified system error occurred

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgHRESULTS"}

Visual Basic encountered an error that was generated by the system or an external component.

# The file specified is marked as a version not supported by the current version of Visual Basic and won't be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFORMVERNOTRECOGNIZEDS"}

You tried to load a form from Visual Basic version 1.0 or a form from a version later than this version of Visual Basic. This is not supported.

# The project file specified is corrupt and can't be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgVBPCORRUPTS"}

Visual Basic can't read the project file. This can occur if the file has been modified by an editor outside of Visual Basic. To fix the problem, undo any changes made to the file.

# Unable to write specified Designer cache file; will just use regular files on Load

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNODESIGNERCACHES"}

Your ActiveX <u>designer</u> was unable to write information to a cache file, so the designer will load using uncached information.

To improve performance the next time you start Visual Basic, an ActiveX designer writes a cache file. The designer couldn't write to the cache file due to low disk space or invalid permissions on the drive. Make sure you have enough disk space available and that you have write permissions to the drive. If the problem persists, contact the ActiveX designer's vendor.

# Not enough memory to load file

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoMemS"}

Visual Basic couldn't obtain enough memory to load the file. Close other applications and try again.

# Duplicate procedure name

{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgDupProcA"}

You defined (or are attempting to define) more than one version of a <u>procedure</u> with the same name. Rename one of the procedures. Ensure duplicate **Declare** statements for the same procedure have the same **Alias** clause.

# Unable to display help

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgHelpLoadFailedS"}

The Windows Help application isn't available. If the MSDN library viewer is on your computer, make sure it is on your path. If it isn't on your computer, you must install it before you can view Help.

# Can't display system information

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantDisplaySysInfoS"}

Visual Basic can't display system information when you choose **System Info** from the **About Microsoft Visual Basic** dialog box. Your system may not have enough memory, or a required file may be corrupted or missing.

# The application description can't be more than 2000 characters long

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAPPDESCTOOLONGS"}

You can't have an application description longer than 2000 characters long. Delete some characters from the description.

# Must specify which item(s) to print

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustSpecifyPrintS"}

You haven't specified what to print. Check at least one of the **Form** or **Code** check boxes in the **Print** dialog box after choosing **Print** from the **File** menu.

# Specified name is not a legal object name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgIllegalNameS"}

Form and <u>control</u> names must start with a letter and can be a maximum of 40 characters — including letters, numbers, and underscores (_).

Note that the **Name** property of a form or control is different from the **Label** properties — **Caption**, **Text**, and **Value** — that label or display the contents of a control at <u>run time</u>. These <u>properties</u> can be restricted <u>keywords</u>, can begin with a number, and can contain nonalphanumeric characters.

# Name specified conflicts with existing module, project, or object library

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCLASSNAMES"}

This error has the following causes:

- You loaded a form, User Control , User Document, or Property Page that contains objects with conflicting names. This can occur if the file was edited outside of Visual Basic.

- This error can occur when you rename a form to the same name as the project, another form, or a module. It can also occur when you rename the project to the same name as a form or module.

# Can't set the project name at this time

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCANTSETPROJNAMES"}

The <u>project</u> name can't be set at this time.

# Specified ActiveX component not correctly registered or not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgREGBADFILES"}

A component should be registered in the system <u>registry</u>. This error has the following cause and solution:

- The component's registry information is incorrect, so the component can't be found.

  Correct the registry. Reinstall the component, if necessary.

- The component was removed by deleting it instead of using an uninstall program.

  Replace the component files in the directory specified in the registry.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't perform operation because the project is protected

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPROJECTPROTECTEDS"}

When a project is protected, certain actions are prohibited. This error has the following cause and solution:

- The project was inadvertently protected.

  Remove the protection, and then try the action again.

- The project was intentionally protected.

  Don't attempt the action until the protection is removed by the person that applied it in the first place.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't start new recording until current session is ended

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgALREADYRECORDINGS"}

You can't "nest" recordings. This error has the following cause and solution:

- You already have the recorder running.

  Terminate the current recording before beginning a new one

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Do you want to export specified object before removing it?

{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgEXPORTBEFOREREMOVEA"}

You can export forms and <u>modules</u>, and reload them at another time. This error has the following cause and solution:

- You are removing a form or module from the <u>project</u>.

  To preserve the module, export it. You can then import it at a future time.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The form class contained in the specified file is not supported in Visual Basic for Applications; the file can't be loaded.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFormCorruptS"}

Visual Basic for Applications only supports **UserForm** form objects. This error has the following cause and solution:

- You are trying to load a form from an earlier version of Visual Basic or a form from a current standalone version of Visual Basic.

  It is probably easiest to redesign the form using the **UserForm** tools within Visual Basic for Applications. If you can save the form in ASCII format, you may be able to modify the form and import it. However, you must completely understand the formats and limitations of the various form packages.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The specified file could not be loaded.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCouldntLoadFileS"}

Not all files can be loaded in Visual Basic for Applications. This error has the following cause and solution:

- The file you are trying to load has a format that Visual Basic can't interpret, or the file is corrupt.

  You can't load the file.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This command will stop the debugger.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCLOSEINBREAKMODES"}

Some commands and actions cause Visual Basic to stop analyzing code. This error has the following cause and solution:

- Some edits, like declaring a **Static** <u>variable</u>, and some commands, like those for adding a new <u>module</u> or form, cause running or suspended code to stop.

  If you don't want to stop running code, don't add or execute the command.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# You must save a project before you can reference it.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCANTREFUNSAVEDPROJS"}

You can't add a reference to an unsaved <u>project</u>. This error has the following cause and solution:

- You tried to add a reference while the project was unsaved.

  Save the project before adding the reference.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid object use (Error 425)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOBJILLEGALUSES"}

Most objects can only be used in specific ways, usually when trying to use an object outside the scope for which it is relevant. For example, an object reference passed into a drag-and-drop event can probably only be used in the context of that event.

# Can't print form image to this type of printer (Error 486)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgGFXFORMPRINTERRORS"}

You must have a graphics-capable printer to print a form image.

# The specified object can't be used as an owner form for Show() (Error 371)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDOWNERFORMS"}

You must use an appropriate object with the **Show** method.

# Specified ActiveX control was not found (Error 363)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLDNOSUCHMODELS"}

The form being loaded contains an <u>ActiveX control</u> that isn't part of the current <u>project</u>. This error has the following causes and solutions:

- You may have manually edited the project's .vbp file to add a form containing an ActiveX control that isn't already part of the project.

  After the project loads, use the **Add File** command on the **File** menu to add the ActiveX control to the project.

- You may have manually edited the project's .vbp file to add a form containing an earlier version of an ActiveX control than the ActiveX control that is already part of the project.

  After the project loads, delete the earlier version from the form and put the later version of the control on the form.

# ActiveX component not correctly registered (Error 336)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgREGBADREGISTRATIONS"}

The ActiveX component has not been properly registered in the system registry.

# Data value named not found (Error 327)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPBAGELEMENTNOTFOUNDS"}

The data value could not be found.

# Invalid picture (Error 481)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxInvalidPictureS"}

An invalid graphics format was assigned to the **Picture** property. This error has the following cause and solution:

- You tried to assign a graphics format other than a bitmap, icon, or Windows metafile to the **Picture** property of a form or control.

  Ensure that the file you are trying to load into the **Picture** property is a valid graphics file supported by Visual Basic.

# Printer error (Error 482)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxPrinterErrorS"}

There is some problem that prevents printing. This error has the following causes and solutions:

- You don't have a printer installed from the Windows **Control Panel**.

  Open the **Control Panel**, double-click the **Printers** icon, and click **Add Printer** to install a printer.

- Your printer isn't online.

  Physically switch the printer online.

- Your printer is jammed or out of paper.

  Physically correct the problem.

- You tried to print a form to a printer that can accept only text.

  Switch to an installed printer that can print graphics.

# Printer driver does not support specified property (Error 483)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxDriverNotSupportPropS"}

The printer driver for the printer in use doesn't support this property of the **Printer** object. This error has the following cause and solution:

- The effect of the properties of the **Printer** object depends on the driver supplied by the printer manufacturer. Some property settings may have no effect, or several different property settings may all have the same effect. Settings outside the accepted range may or may not produce an error.

  For more information, see the manufacturer's documentation for the specific driver.

# Problem getting printer information from the system; make sure the printer is set up correctly. (Error 484)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxDriverOrWinINIErrorS"}

There is some problem that prevents getting printer information from the system. This error has the following causes and solutions:

- You don't have a printer installed from the Windows **Control Panel**.

  Open the **Control Panel**, double-click the **Printers** icon, and click **Add Printer** to install a printer.

- Your printer isn't online.

  Physically switch the printer online.

- Your printer is jammed or out of paper.

  Physically correct the problem.

# Invalid picture type (Error 485)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxInvalidPictureTypeS"}

The resource file picture format you tried to load doesn't match the specified property of the object. This error has the following causes and solutions:

- You tried to use the **LoadResPicture** method to load a bitmap resource as the **Icon** property of a form.

  Change the property to the **Picture** property or change the *format* <u>argument</u> of **LoadResPicture** to **vbResIcon**.

- You tried to use the **LoadResPicture** method to load a cursor resource as some property of an object or control other than the **MousePointer** property.

  Change the property reference to **MousePointer**.

# Can't empty Clipboard (Error 520)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgclip2CantEmptyS"}

The Clipboard was opened but could not be emptied. This error has the following cause and solution:

- Another application is using the Clipboard and won't release it to your application.

  Set an error trap for this situation in your code and provide a message box with **Retry** and **Cancel** buttons to allow the user to try again after a short pause.

# Can't open Clipboard (Error 521)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgclip2CantOpenS"}

The Clipboard has already been opened by another application. This error has the following cause and solution:

- Another application is using the Clipboard and won't release it to your application.

  Set an error trap for this situation in your code and provide a message box with **Retry** and **Cancel** buttons to allow the user to try again after a short pause.

# Specified format doesn't match format of data (Error 461)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgclipWrongFormatS"}

The specified Clipboard format is incompatible with the method being executed. This error has the following causes and solutions:

- You tried to use the **GetText** method or **SetText** method with a Clipboard format other than **vbCFText** or **vbCFLink**.

  Before using these methods, use the **GetFormat** method to test whether the current contents of the Clipboard matches the specified format.

- You tried to use the **GetData** method or **SetData** method with a Clipboard format other than **vbCFBitmap**, **vbCFDIB**, or **vbCFMetafile**.

  Before using these methods, use the **GetFormat** method to test whether the current contents of the Clipboard matches the specified graphics format.

# Invalid Clipboard format (Error 460)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgclipInvalidFormatS"}

The specified Clipboard format is incompatible with the method being executed. This error has the following causes and solutions:

- You tried to use the **GetText** method or **SetText** method with a Clipboard format other than **vbCFText** or **vbCFLink**.

  Remove the invalid format and specify one of the two valid formats.

- You tried to use the **GetData** or **SetData** method with a Clipboard format other than **vbCFBitmap**, **vbCFDIB**, or **vbCFMetafile**.

  Remove the invalid format and specify one of the three valid graphics formats.

# License information for this component not found. You don't have an appropriate license to use this functionality in the design environment (Error 429)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgobjNoLicenseS"}

You are not a licensed user of the ActiveX control. This error has the following cause and solution:

- You tried to place an ActiveX control on a form at design time or tried to add a form with an ActiveX control on it to a project, but the associated information in the registry could not be found.

  The information in the registry may have been deleted or become corrupted. Reinstall the ActiveX control or contact the control vendor.

# Form already displayed; can't show modally (Error 400)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgmodShowingFormS"}

You can't use the **Show** method to display a visible form as modal. This error has the following cause and solution:

- You tried to use **Show**, with the *style* <u>argument</u> set to 1 – **vbModal**, on an already visible form.

  Use either the **Unload** statement or the **Hide** method on the form before trying to show it as a modal form.

# Must close or hide topmost modal form first (Error 402)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgmodNotTopModalS"}

The modal form you are trying to close or hide isn't on top of the z-order. This error has the following cause and solution:

- Another modal form is higher in the z-order than the modal form you tried to close or hide.

  First use either the **Unload** statement or the **Hide** method on any modal form higher in the z-order. A modal form is a form displayed by the **Show** method, with the *style* argument set to 1 − **vbModal**.

# Can't load or unload this object (Error 361)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgldNotLoadableS"}

A **Load** statement or **Unload** statement has referenced an invalid object or control. This error has the following causes and solutions:

- You tried to load or unload an object that isn't a loadable object, such as Screen, Printer, or Clipboard.

  Delete the erroneous statement from your code.

- You tried to load or unload an existing control that isn't part of a <u>control array</u>. For example, assuming that a **TextBox** with the **Name** property Text1 exists, `Load Text1` will cause this error.

  Delete the erroneous statement from your code or change the reference to a control in a control array.

- You tried to unload a **Menu** control in the Click event of its parent menu.

  Unload the **Menu** control with some other <u>procedure</u>.

- You tried to unload the last visible menu item of a **Menu** control.

  Check the setting of the **Visible** property for the other menu items in the control array before trying to unload a menu item, or delete the erroneous statement from your code.

# Object already loaded (Error 360)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgldAlreadyLoadedS"}

The control in the <u>control array</u> has already been loaded. This error has the following cause and solution:

- You tried to add a control to a control array at <u>run time</u> with the **Load** statement but the index value you referred to already exists.

  Change the index reference to a new value or check whether your code is executing the same **Load** statement with the same index value reference more than once.

# Form not found (Error 424)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOBJNOSUCHFORMS"}

The form was not found. This error has the following cause and solution:

You tried to add a form to the **UserForms** collection using the **Add** method, but there is no form <u>class</u> of that name. For example, `UserForms.Add "MyForm"`, where `MyForm` doesn't exist.

**Note**   Make sure that the class name is available to your <u>project</u>.

# Unable to unload within this context (Error 365)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgldCantUnloadHereS"}

In some situations you are not allowed to unload a form or a control on a form. This error has the following causes and solutions:

• There is an **Unload** statement in the Paint event for the form or for a control on the form that has the Paint event.

  Remove the **Unload** statement from the Paint event.

• There is an **Unload** statement in the Change, Click, or DropDown events of a **ComboBox**.

  Remove the **Unload** statement from the event.

• There is an **Unload** statement in the Scroll event of an **HScrollBar** or **VScrollBar** control.

  Remove the **Unload** statement from the event.

• There is an **Unload** statement in the Resize event of a **Data**, **Form**, **MDIForm**, or **PictureBox** control.

  Remove the **Unload** statement from the event.

• There is an **Unload** statement in the Resize event of an **MDIForm** that is trying to unload an MDI child form.

  Remove the **Unload** statement from the event.

• There is an **Unload** statement in the RePosition event or Validate event of a **Data** control.

  Remove the **Unload** statement from the event.

• There is an **Unload** statement in the ObjectMove event of an **OLE Container** control.

  Remove the **Unload** statement from the event.

# Specified system DLL could not be loaded (Error 298)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgddeDllNotLoadedS"}

A .dll file provided by the operating system; for example, DDEML.DLL, VERSION.DLL, or WINSPOOL.DRV couldn't be found. This error has the following causes and solutions:

- The file isn't on the proper path.

  Ensure the DLL is on the Windows System path.

- The DLL is corrupted or was deleted.

  Reload the DLL.

- There isn't enough memory or swap space.

  Try to free up some memory by closing other applications.

# Can't use character device names in file names (Error 320)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgfileCharDevInvalidS"}

From within Visual Basic, you can't give a file the same name as a character device driver. This error has the following cause and solution:

- You tried to use a file name such as AUX, CON, COM1, COM2, LPT1, LPT2, LPT3, LPT4, or NUL.

  Give the file another name.

# Invalid file format (Error 321)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgfileCorruptS"}

A Visual Basic form file is damaged. This error has the following causes and solutions:

- The form has a damaged <u>ActiveX control</u>.

  Try replacing the ActiveX control on the form.

- The number of properties in the current version of the ActiveX control doesn't match the expected number of properties.

  Try replacing the ActiveX control with an earlier version or later version.

# Illegal parameter. Can't write arrays (Error 328)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCANTWRITEARRAYSS"}

An illegal <u>parameter</u> was passed to the method. This error has the following cause and solution:

- In the WriteProperties event of your User Control, you tried to do a **PropBag.WriteProperty** X, where X is an <u>array</u>. This isn't supported.

   You must write out each element of the array individually.

# Could not access system registry (Error 335)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgregBadAccessS"}

An attempt to read from or write to the system <u>registry</u> failed.

# ActiveX Component not found (Error 337)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgregServerNotFoundS"}

The required .exe or .dll file can't be found.

# ActiveX Component did not run correctly (Error 338)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgregBadServerS"}

The ActiveX component's .exe file failed to run correctly. There may be a problem with the information in the registry.

# Object was unloaded (Error 364)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgldUnloadedS"}

A form was unloaded from its own **_Load** procedure. This error has the following cause and solution:

- A form with an **Unload** statement in its **_Load** procedure was implicitly loaded. For example, the following will implicitly load `YourForm` if it isn't already loaded:

  `MyForm.BackColor = YourForm.BackColor.`

  Remove the **Unload** statement from the **Form_Load** procedure.

# The file specified is out of date. This program requires a later version (Error 368)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgldBadVBXVersionS"}

An ActiveX control was found to be out of date. This error has the following cause and solution:

- The number of properties in the current version of the ActiveX control don't match the expected number of properties.

  Replace the ActiveX control with a later version.

# Invalid property value (Error 380)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgpropIllegalValueS"}

An inappropriate value is assigned to a <u>property</u>. This error has the following cause and solution:

- You tried to set one of the properties of an object or control to a value outside its permissible range.

  Change the property value to a valid setting. For example, the **MousePointer** property must be set to an integer from 0 − 15 or 99.

# Specified property can't be set at run time (Error 382)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgpropNoWriteRunS"}

The property is read-only at run time. This error has the following cause and solution:

- You tried to set or change a property whose value can only be set at design time.

  Remove the reference to the property from your code or change the reference to only return the value of the property at run time.

# Specified property is read-only (Error 383)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgpropNoWriteS"}

The <u>property</u> is read-only at both <u>design time</u> and <u>run time</u>. This error has the following cause and solution:

- You tried to set or change a property whose value can only be read.

  Remove the reference to the property from your code or change the reference to only return the value of the property at run time.

# Specified property can't be read at run time (Error 393)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgpropNoReadRunS"}

The property is only available at design time. This error has the following cause and solution:

- You tried to read a property at run time that is only accessible at design time.

  Change your code and remove the reference to the property.

# Specified property is write-only (Error 394)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgpropNoReadS"}

The <u>property</u> can't be read. This error has the following cause and solution.

- A property can't be read; for example, `ctl.property = 3` might be legal, but
  "`Print ctl.property`" would generate this error.

  Change your code and remove the reference to the property.

# Permission to use object denied (Error 419)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgobjAccessDeniedS"}

You don't have the necessary permissions for the specified object. This error has the following cause and solution:

- You don't currently have the authority to access this object.

  To change your permission assignments, see your system administrator or the object's creator.

# Can't create AutoRedraw image (Error 480)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsggfxCantMakeBitmapS"}

Visual Basic can't create a persistent bitmap for automatic redraw of the form or picture. This error has the following cause and solution:

- There isn't enough available memory for the **AutoRedraw** property to be set to **True**.

  Set the **AutoRedraw** property to **False** and perform your own redraw in the Paint event procedure, or make the **PictureBox** control or **Form** object smaller and try the operation again with **AutoRedraw** set to **True**.

# Out of memory (Error 31001)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOutOfMemS"}

Your system could not allocate or access enough memory or disk space for the specified operation.

# No object (Error 31004)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoObjectS"}

You tried to perform an action on an object that doesn't exist.

# Class is not set (Error 31018)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoClassS"}

If you don't specify a source document (**SourceDoc** property) when setting **Action** = 0 (**CreateEmbed** method), the **Class** property must be set to the name of a <u>class</u> available on your system.

To display a list of the available class names at <u>design time</u>, right-click the **OLE** container control and choose the **Insert Object** command.

# Unable to activate object (Error 31027)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantActivateS"}

The object's source document can't be loaded, or the application that created the object isn't available.

This error occurs when you try to activate a linked object (set **Action** = 7) and the file specified in the **SourceDoc** property has been deleted or no longer exists.

This error also occurs when you activate an object (set **Action** = 7), and the action specified by the **Verb** property isn't valid. Some applications that provide objects may support different verbs, depending on the state of the application. All the verbs supported by an application are listed in the **ObjectVerbs** property list. However, some verbs may not be valid for the application's current state.

# Unable to create embedded object (Error 31032)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantEmbedS"}

The application that is creating the object can't create the object as specified in the **SourceDoc** property.

For example, this error occurs if you try to embed a spreadsheet object and **SourceDoc** specifies a spreadsheet that is too large to be loaded by the spreadsheet application.

# Error saving to file (Error 31036)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgErrorSavingFileS"}

Visual Basic can't write the object to the specified file (set **Action** = 11 or 18). Possible causes:

- The **FileNumber** property is invalid.
- The specified file wasn't opened in Binary mode.
- There isn't enough disk space.

# Error loading from file (Error 31037)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgErrorLoadingFileC;vbmsgErrorLoadingFileC;vbproBooksOnlineJumpTopic"}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgErrorLoadingFileA"}

An error occurred while attempting to read the specified file (set **Action** = 12). Possible causes:

- The **FileNumber** property is invalid.
- The file wasn't opened in Binary mode.
- The file wasn't saved properly (set **Action** = 11).
- The file is corrupted.
- The file position isn't located at the beginning of a valid OLE object.

# At line specified: The Form name specified is not valid; can't load this form

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidFormNameS"}

The ASCII file contains a form name that isn't a valid string in Visual Basic. The form isn't loaded.

# At line specified: Can't create embedded object specified

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgLineitem1CannotCreateEmbeddedObjectInitem2C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vbmsgLineitem1CannotCreateEmbeddedObjectInitem2S"}

An embedded object could not be created while loading a form, User Control, User Document, or Property Page from a text file. For example, you would get this error if you previously inserted a Microsoft Word document onto the form, and then removed Microsoft Word from your system. This message is written to the error log file.

# At line specified: Can't create embedded object specified; license not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOBJNOTLICENSEDS"}

An embedded object could not be created during the load of a form, User Control, User Document, or Property Page from a text file, due to the license file not being found. You must have a license to use this object. Check with the object's vendor for more information. This message is written to the error log file.

# At line specified: Maximum nesting level for controls exceeded specified item.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMaxNestLevelS"}

The ASCII file contains controls nested more than 7 levels deep.

# At line specified: All controls must precede menus; can't load specified control

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMenusOnlyS"}

A control appeared in an incorrect location in the ASCII form file. All controls must be loaded before menus.

# At line specified: Parent menu specified can't be loaded as a separator

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgParentIsSeparatorS"}

The ASCII file contains a **Menu** control whose parent or top-level menu is defined as a menu separator. Top-level menus can't be menu separators. The separator won't be set.

# At line specified: Can't set checked property in menu specified. Parent menu can't be checked

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoCheckTopLevelS"}

A top-level **Menu** control appeared in the ASCII form file with its **Checked** property set to **True**. Top-level menus can't be checked. The **Menu** control will be loaded, but its **Checked** property won't be set.

# At line specified: Can't set Shortcut property in menu specified. Parent menu cannot have a shortcut key

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoShortCutKeyS"}

A top-level **Menu** control appeared in the ASCII form file with a shortcut key defined. Top-level menus can't have a shortcut key. The **Menu** control will be loaded, but its **Shortcut** property won't be set.

# At line specified: The form name specified is already in use; can't load this form

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFormNameInUseS"}

The ASCII file contains a form with a name that is already being used in the application. The form isn't loaded.

# Conflicting attributes were found in specified item. The defaults will be used

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCONFLICTFLAGSS"}

Some of the attribute statements in a form, User Control, Property Page, User Document, or Class Module conflict with the required settings for their type. For example, forms must always have the **VB_PredeclaredId** attribute equal to **True**. This error can occur if the file was modified by an editor other than Visual Basic.

# Specified item is a read-only file

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileIsReadOnlyS"}

You asked to save to a file that is read-only. Read-only files are shown in the **Project Explorer** as . You can't save to read-only files. Use **Save As** instead.

# At line specified: Could not create specified reference

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDREFERENCES"}

The reference indicated at the specified line could not be created.

# At line specified: The file specified could not be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileNotLoadedS"}

Syntax errors are preventing Visual Basic from parsing and loading a file, or form name conflicts prevent loading of an ASCII form. The form won't be loaded and the form name won't be displayed in the **Project Explorer**.

Make sure that the file causing this error is a valid ASCII form in the correct format and that no conflicts exist among the different forms in the project.

# Errors occurred during load

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgERRORLOGOTHERS"}

Check the error log for more descriptive information.

# Specified item could not be loaded. Remove it from the list of available add-ins?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAddInCantLoadS"}

Visual Basic couldn't load the add-in that you tried to select from the **Available Add-Ins** list in the **Add-In Manager** dialog box. Click **Yes** to remove it from the list or click **No** to leave it on the list. In either case, you can't load it.

# Visual Basic can't load the specified item because it is not in the system registry. Please ensure that all add-ins have been installed correctly.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAddInBadRegS"}

Visual Basic couldn't load the <u>add-in</u> that you tried to select from the **Available Add-Ins** list in the **Add-In Manager** dialog box, because it was not registered properly or is no longer registered in the system <u>registry</u>.

# Display more load errors?

{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgDISPLAYMORELOADERRA"}

Click **OK** to see more errors, otherwise click **Cancel**.

# Specified item could not be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoFileLoadS"}

Syntax errors are preventing Visual Basic from parsing and loading a file, or form name conflicts prevent loading of an ASCII form. The form won't be loaded and the form name won't be displayed in the **Project Explorer**.

Make sure that the file causing this error is a valid ASCII form in the correct format and that no conflicts exist among the different forms in the project.

# Version number missing or invalid

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgVersionMissingS"}

The version signature was not found, or the specified version isn't recognized. Make sure that the first line that is not blank or a <u>comment</u> in the ASCII form specifies the correct version.

# Specified item is referenced by specified project and cannot be updated

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCONTROLREFERENCEDS"}

The specified control is referenced by more than one <u>project</u>. Updating it for one project might invalidate it for another.

# Can't remove control or reference; in use

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCCDLLInUseS"}

The ActiveX control or reference that you tried to remove, is being used by one of the forms in the project. First delete the control or referenced object from the form, and then cancel the selection in the list.

# Can't quit at this time

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantExitDlgS"}

You can't quit Windows while Visual Basic is in run mode or <u>break mode</u>. You also can't quit Windows while a dialog box or message box is displayed.

# Error loading the specified item. An error was encountered loading a property. Continue?

{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgBadPropContLoadQSA"}

You may have tried to load a form with controls whose names conflict with forms already in the project. For example, loading Form2 that contains a Form1 control triggers this error.

# Error loading the specified item. A control could not be loaded due to load error. Continue?

{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamsgBadCtlContLoadQSA"}

This error message appears after another error has occurred. After you've taken the appropriate action for that error, you will see this error message. To load the control anyway, click **Yes**; to cancel the loading, click **No**.

# Specified item has an old file format. When saved, it will be saved in a newer format.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOldRevS"}

This file was created with an earlier version of Visual Basic. When you save it, it will be saved in the file format of the current version.

# Specified item already exists in project

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProjFileExistsS"}

The file you specified is already part of the <u>project</u>. You can't add the same file to a project more than once. You can't save a file with the same name as another file in the project.

# Errors during load. Refer to specified item for details

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgErrorLogS"}

Something unexpected appeared in the ASCII form file. Visual Basic created a log file to provide more detail about the errors. You should examine the log file to determine the severity of the problem. Sometimes you can safely ignore the errors (for example, `Version number missing or invalid...`). Other times, however, the errors could cause the form not to run as expected (for example, `Class MyClass in control MyControl was not a loaded control class`).

# String value too long to process; form load aborted

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgValueTooLongS"}

A string embedded in the form being loaded was too long to process.

# One or more files in the project have changed. Do you want to save the changes now?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDirtyFilesS"}

One of the property settings or a code statement has changed for one or more of the files in the <u>project</u>, and the changes have not yet been saved. This is your last chance to save the changes before loading another project.

# Specified item could not be registered

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoFileRegisterS"}

The specified file couldn't be registered in the system <u>registry</u>. The error is related to <u>type libraries</u> used by components of the Visual Basic <u>development environment</u> and indicates that the specified file's entry in the system registry is corrupted, or that the DLL itself is missing or corrupted.

# Other applications are currently accessing an object in your program. Ending the program now could cause errors in those programs. End program at this time?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgServerRunningS"}

An Automation object in the Visual Basic program you are currently running is being accessed by at least one other application. Terminating your program could cause an error in the other application. Click **Yes** to quit your program or click **No** to continue it.

# One or more of the properties in the specified item was bad. Some or all of the properties might not be set correctly

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnhappyMakPropsS"}

The specified <u>project</u> file has one or more invalid property settings. This error occurs only in regard to a project file.

# Conflicting names were found in the specified item. The specified name will be used

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCONFLICTNAMESS"}

The name of a form occurs twice in the source file for a form, User Control, Property Page, or User Document. This error can occur if the file was modified by an editor other than Visual Basic.

# At line specified: The control name specified is invalid

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidCtlNameS"}

The ASCII file contains a control name that isn't a valid string in Visual Basic. The control isn't loaded.

# At line specified: The property name specified is invalid

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPropNameS"}

The ASCII file contains a property name that isn't a valid <u>property</u> for that control.

# The item at the specified line has a quoted string where the property name should be.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgQuotedStringS"}

A quoted string appeared in the ASCII form file where the property name was expected. Property names are not placed inside quotation marks (" ").

# At line specified: Property specified had an invalid property index

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidIndexS"}

The ASCII file contains a property name with a property index greater than 255.

# At line specified: Property specified could not be loaded

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotLoadPropS"}

The ASCII file contains an unknown property. The property will be skipped when loading the form.

# At line specified: Property specified must be a quoted string.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustBeQuotedS"}

The ASCII file contains a property that should appear inside quotation marks (" "), but the quotation marks are missing. This line in the form description is ignored.

# At line specified: Property specified had an invalid value

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPropValueS"}

The ASCII file contains a property with a value that isn't correct for this control. The property is set with its default value.

# At line specified: Property specified had an invalid file reference

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidFileRefS"}

The ASCII file contains a reference to a file that Visual Basic couldn't find in the specified directory.

# At line specified: Property specified could not be set

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCouldNotSetS"}

Visual Basic can't set the <u>property</u> of the specified <u>control</u> as indicated by the form description in the ASCII file.

# At line specified:   Class specified of specified control was not a loaded control class

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadClassNameS"}

The ASCII file contains a control class that Visual Basic doesn't recognize. Add the custom control with this <u>class</u> to your <u>project</u>.

# At line specified: Did not find an index property, and control specified already exists

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoIndexFoundS"}

The <u>control</u> can't be loaded because there is no index, and it has the same name as a previously loaded control.

# At line specified: Control name too long; truncated as specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCtlNameTooLongS"}

The ASCII file contains a control name longer than 40 characters. The <u>control</u> will be loaded with the name truncated to 40 characters.

# At line specified: Class name too long; truncated as specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgClassNameTooLongS"}

The ASCII file contains a class name longer than 40 characters. The <u>class</u> will be loaded with the name truncated to 40 characters.

# At line specified: Syntax error: property specified was missing an equal sign (=).

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMissingEqualS"}

The ASCII file contains a property name and value without an equal sign (=) between them. The property isn't loaded.

# At line specified: Can't load control specified; containing control not a valid container

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalContainerS"}

You attempted to load a <u>control</u> into a control which isn't a valid <u>container</u>.

# At line specified: Can't load control specified; name already in use

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCtlClsMismatchS"}

The <u>control</u> named in the ASCII text file couldn't be loaded because its name is already in use in the application.

# At line specified: Missing or invalid control class in file specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMissingControlClassS"}

The ASCII file contains an unknown control <u>class</u> in the form description, or the class name isn't a valid string in Visual Basic.

# At line specified: Missing or invalid control name in file specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMissingControlNameS"}

The ASCII file contains an unknown control name in the form description, or the control name isn't a valid string in Visual Basic.

# At line specified: Can't load control specified; license not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCTLNOTLICENSEDS"}

An ActiveX control could not be created while loading a form, User Control, User Document, or Property Page from a text file. The control may be missing or corrupted. Reinstall the control and try again. This message is written to the error log file.

# At line specified: The CLSID specified is invalid.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgINVALIDCLSIDS"}

An object could not be loaded while loading a Form, User Control, User Document, or Property Page from a text file. The CLSID specified in the file is not valid. Applies only to objects that are properties, such as the **Font** object. This message is written to the error log file.

# Could not create reference to specified item

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBADREFERENCESTRS"}

There was an error establishing a reference while loading the file, so the reference was not added.

# Specified item will not be loaded. Name is already in use

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDUPLICATENAMES"}

You can't have two items of the specified kind loaded at the same time.

# ChDir Statement Example

This example uses the **ChDir** statement to change the current directory or folder.   On the Macintosh, the default drive name is "HD" and portions of the pathname are separated by colons instead of backslashes. Similarly, you would specify Macintosh folders instead of \Windows. Finally, wildcard characters have no special meaning on the Macintosh and are treated simply as characters.

```
' Change current directory or folder to "MYDIR".
ChDir "MYDIR"


' Assume "C:" is the current drive. The following statement changes
' the default directory on drive "D:". "C:" remains the current drive.
ChDir "D:\WINDOWS\SYSTEM"
```

# ChDrive Statement Example

This example uses the **ChDrive** statement to change the current drive. On the Macintosh, "HD:" is the default drive name and **ChDrive** would change the current folder to the root folder of the specified drive. The following example assumes the machine actually has a drive named D.

```
ChDrive "D" ' Make "D" the current drive.
```

# CurDir Function Example

This example uses the **CurDir** function to return the current path.   On the Macintosh, *drive* specifications given to **CurDir** are ignored. The default drive name is "HD" and portions of the pathname are separated by colons instead of backslashes. Similarly, you would specify Macintosh folders instead of \Windows.

```
' Assume current path on C drive is "C:\WINDOWS\SYSTEM" (on Microsoft
Windows).
' Assume current path on D drive is "D:\EXCEL".
' Assume C is the current drive.
Dim MyPath
MyPath = CurDir    ' Returns "C:\WINDOWS\SYSTEM".
MyPath = CurDir("C") ' Returns "C:\WINDOWS\SYSTEM".
MyPath = CurDir("D") ' Returns "D:\EXCEL".
```

# Dir Function Example

This example uses the **Dir** function to check if certain files and directories exist. On the Macintosh, "HD:" is the default drive name and portions of the pathname are separated by colons instead of backslashes. Also, the Microsoft Windows wildcard characters are treated as valid file-name characters on the Mac. However, you can use the **MacID** function to specify file groups.

```
Dim MyFile, MyPath, MyName
' Returns "WIN.INI" (on Microsoft Windows) if it exists.
MyFile = Dir("C:\WINDOWS\WIN.INI")

' Returns filename with specified extension. If more than one *.ini
' file exists, the first file found is returned.
MyFile = Dir("C:\WINDOWS\*.INI")

' Call Dir again without arguments to return the next *.INI file in the
' same directory.
MyFile = Dir

' Return first *.TXT file with a set hidden attribute.
MyFile = Dir("*.TXT", vbHidden)

' Display the names in C:\ that represent directories.
MyPath = "c:\" ' Set the path.
MyName = Dir(MyPath, vbDirectory)   ' Retrieve the first entry.
Do While MyName <> ""    ' Start the loop.
   ' Ignore the current directory and the encompassing directory.
   If MyName <> "." And MyName <> ".." Then
      ' Use bitwise comparison to make sure MyName is a directory.
      If (GetAttr(MyPath & MyName) And vbDirectory) = vbDirectory Then
         Debug.Print MyName    ' Display entry only if it
      End If   ' it represents a directory.
   End If
   MyName = Dir    ' Get next entry.
Loop
```

# Environ Function Example

This example uses the **Environ** function to supply the entry number and length of the `PATH` statement from the environment-string table. Not available on the Macintosh.

```
Dim EnvString, Indx, Msg, PathLen   ' Declare variables.
Indx = 1 ' Initialize index to 1.
Do
    EnvString = Environ(Indx)   ' Get environment
            ' variable.
    If Left(EnvString, 5) = "PATH=" Then    ' Check PATH entry.
        PathLen = Len(Environ("PATH"))' Get length.
        Msg = "PATH entry = " & Indx & " and length = " & PathLen
        Exit Do
    Else
        Indx = Indx + 1    ' Not PATH entry,
    End If    ' so increment.
Loop Until EnvString = ""
If PathLen > 0 Then
    MsgBox Msg  ' Display message.
Else
    MsgBox "No PATH environment variable exists."
End If
```

# FileCopy Statement Example

This example uses the **FileCopy** statement to copy one file to another. For purposes of this example, assume that SRCFILE is a file containing some data.

```
Dim SourceFile, DestinationFile
SourceFile = "SRCFILE"  ' Define source file name.
DestinationFile = "DESTFILE"  ' Define target file name.
FileCopy SourceFile, DestinationFile    ' Copy source to target.
```

# FileDateTime Function Example

This example uses the **FileDateTime** function to determine the date and time a file was created or last modified. The format of the date and time displayed is based on the locale settings of your system.

```
Dim MyStamp
' Assume TESTFILE was last modified on February 12, 1993 at 4:35:47 PM.
' Assume English/U.S. locale settings.
MyStamp = FileDateTime("TESTFILE")  ' Returns "2/12/93 4:35:47 PM".
```

# FileLen Function Example

This example uses the **FileLen** function to return the length of a file in bytes. For purposes of this example, assume that TESTFILE is a file containing some data.

```
Dim MySize
MySize = FileLen("TESTFILE")  ' Returns file length (bytes).
```

# GetAttr Function Example

This example uses the **GetAttr** function to determine the attributes of a file and directory or folder. On the Macintosh, only the constants vbNormal, vbReadOnly, vbHidden and vbAlias are available.

```
Dim MyAttr
' Assume file TESTFILE has hidden attribute set.
MyAttr = GetAttr("TESTFILE")   ' Returns 2.

' Returns nonzero if hidden attribute is set on TESTFILE.
Debug.Print MyAttr And vbHidden

' Assume file TESTFILE has hidden and read-only attributes set.
MyAttr = GetAttr("TESTFILE")   ' Returns 3.

' Returns nonzero if hidden attribute is set on TESTFILE.
Debug.Print MyAttr And (vbHidden + vbReadOnly)

' Assume MYDIR is a directory or folder.
MyAttr = GetAttr("MYDIR")   ' Returns 16.
```

# Kill Statement Example

This example uses the **Kill** statement to delete a file from a disk.

```
' Assume TESTFILE is a file containing some data.
Kill "TestFile"   ' Delete file.


' Delete all *.TXT files in current directory.
Kill "*.TXT"
```

# MkDir Statement Example

This example uses the **MkDir** statement to create a directory or folder. If the drive is not specified, the new directory or folder is created on the current drive.

```
MkDir "MYDIR"  ' Make new directory or folder.
```

# Name Statement Example

This example uses the **Name** statement to rename a file. For purposes of this example, assume that the directories or folders that are specified already exist.   On the Macintosh, "HD:" is the default drive name and portions of the pathname are separated by colons instead of backslashes.

```
Dim OldName, NewName
OldName = "OLDFILE": NewName = "NEWFILE"  ' Define file names.
Name OldName As NewName ' Rename file.


OldName = "C:\MYDIR\OLDFILE": NewName = "C:\YOURDIR\NEWFILE"
Name OldName As NewName ' Move and rename file.
```

# QBColor Function Example

This example uses the **QBColor** function to change the **BackColor** property of the form passed in as `MyForm` to the color indicated by `ColorCode`. **QBColor** accepts integer values between 0 and 15.

```
Sub ChangeBackColor (ColorCode As Integer, MyForm As Form)
    MyForm.BackColor = QBColor(ColorCode)
End Sub
```

# RGB Function Example

This example shows how the **RGB** function is used to return a whole number representing an **RGB** color value. It is used for those application methods and properties that accept a color specification. The object `MyObject` and its property are used for illustration purposes only. If `MyObject` does not exist, or if it does not have a **Color** property, an error occurs.

```
Dim RED, I, RGBValue, MyObject
Red = RGB(255, 0, 0) ' Return the value for Red.
I = 75   ' Initialize offset.
RGBValue = RGB(I, 64 + I, 128 + I)  ' Same as RGB(75, 139, 203).
MyObject.Color = RGB(255, 0, 0)      ' Set the Color property of
    ' MyObject to Red.
```

# RmDir Statement Example

This example uses the **RmDir** statement to remove an existing directory or folder.

```
' Assume that MYDIR is an empty directory or folder.
RmDir "MYDIR"  ' Remove MYDIR.
```

# SetAttr Statement Example

This example uses the **SetAttr** statement to set attributes for a file. On the Macintosh, only the constants vbNormal, vbReadOnly, vbHidden and vbAlias are available.

```
SetAttr "TESTFILE", vbHidden  ' Set hidden attribute.
SetAttr "TESTFILE", vbHidden + vbReadOnly ' Set hidden and read-only
    ' attributes.
```

# ChDir Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmChDirC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmChDirX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmChDirS"}

Changes the current directory or folder.

**Syntax**

**ChDir** *path*

The required *path* <u>argument</u> is a <u>string expression</u> that identifies which directory or folder
becomes the new default directory or folder. The *path* may include the drive. If no drive is
specified, **ChDir** changes the default directory or folder on the current drive.

**Remarks**

The **ChDir** statement changes the default directory but not the default drive. For example, if
the default drive is C, the following statement changes the default directory on drive D, but
C remains the default drive:

```
ChDir "D:\TMP"
```

On the Power Macintosh, the default drive always changes to the drive specified in *path*. Full
path specifications begin with the volume name, and relative paths begin with a colon (**:**).
**ChDir** resolves any aliases specified in the path:

```
ChDir "MacDrive:Tmp" ' On the Macintosh.
```

Note that when making relative directory changes, different symbols are used in Microsoft
Windows and on the Macintosh:

```
ChDir ".."  ' Moves up one directory in Microsoft Windows.
ChDir "::"  ' Moves up one directory on the Macintosh.
```

# ChDrive Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmChDriveC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmChDriveX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmChDriveS"}

Changes the current drive.

**Syntax**

**ChDrive** *drive*

The required *drive* <u>argument</u> is a <u>string expression</u> that specifies an existing drive. If you supply a zero-length string (""), the current drive doesn't change. If the *drive* argument is a multiple-character string, **ChDrive** uses only the first letter.

On the Macintosh, **ChDrive** changes the current folder to the root folder of the specified drive.

# CurDir Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCurDirC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctCurDirX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctCurDirS"}

Returns a **Variant** (**String**) representing the current path.

**Syntax**

**CurDir**[**(**_drive_**)**]

The optional _drive_ argument is a string expression that specifies an existing drive. If no
drive is specified or if _drive_ is a zero-length string (""), **CurDir** returns the path for the
current drive. On the Macintosh, **CurDir** ignores any _drive_ specified and simply returns the
path for the current drive.

# Dir Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctDirC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctDirX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctDirS"}

Returns a **String** representing the name of a file, directory, or folder that matches a
specified pattern or file attribute, or the volume label of a drive.

**Syntax**

**Dir**[**(***pathname*[**,** *attributes*]**)**]

The **Dir** function syntax has these parts:

| Part | Description |
|---|---|
| *pathname* | Optional. <u>String expression</u> that specifies a file name — may include directory or folder, and drive. A zero-length string ("") is returned if *pathname* is not found. |
| *attributes* | Optional. <u>Constant</u> or <u>numeric expression</u>, whose sum specifies file attributes. If omitted, returns files that match *pathname* but have no attributes. |

**Settings**

The *attributes* <u>argument</u> settings are:

| Constant | Value | Description |
|---|---|---|
| **vbNormal** | 0 | (Default) Specifies files with no attributes. |
| **vbReadOnly** | 1 | Specifies read-only files in addition to files with no attributes. |
| **vbHidden** | 2 | Specifies hidden files in addition to files with no attributes. |
| **VbSystem** | 4 | Specifies system files in addition to files with no attributes. Not available on the Macintosh. |
| **vbVolume** | 8 | Specifies volume label; if any other attributed is specified, **vbVolume** is ignored. Not available on the Macintosh. |
| **vbDirectory** | 16 | Specifies directories or folders in addition to files with no attributes. |
| **vbAlias** | 64 | Specified file name is an alias. Available only on the Macintosh. |

> **Note**   These constants are specified by Visual Basic for Applications and can be used anywhere in your code in place of the actual values.

**Remarks**

In Microsoft Windows, **Dir** supports the use of multiple character (**\***) and single character
(**?**) wildcards to specify multiple files. On the Macintosh, these characters are treated as
valid file name characters and can't be used as wildcards to specify multiple files.

Since the Macintosh doesn't support the wildcards, use the file type to identify groups of

files. You can use the **MacID** function to specify file type instead of using the file names. For example, the following statement returns the name of the first TEXT file in the current folder:

```
Dir("SomePath", MacID("TEXT"))
```

To iterate over all files in a folder, specify an empty string:

```
Dir("")
```

If you use the **MacID** function with **Dir** in Microsoft Windows, an error occurs.

Any *attribute* value greater than 256 is considered a **MacID** value.

You must specify *pathname* the first time you call the **Dir** function, or an error occurs. If you also specify file attributes, *pathname* must be included.

**Dir** returns the first file name that matches *pathname*. To get any additional file names that match *pathname*, call **Dir** again with no arguments. When no more file names match, **Dir** returns a zero-length string (""). Once a zero-length string is returned, you must specify *pathname* in subsequent calls or an error occurs. You can change to a new *pathname* without retrieving all of the file names that match the current *pathname*. However, you can't call the **Dir** function recursively. Calling **Dir** with the **vbDirectory** attribute does not continually return subdirectories.

> **Tip**   Because file names are retrieved in no particular order, you may want to store returned file names in an <u>array</u>, and then sort the array.

# Environ Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctEnvironC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctEnvironX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctEnvironS"}

Returns the **String** associated with an operating system environment <u>variable</u>. Not available
on the Macintosh

**Syntax**

**Environ(**{*envstring* | *number*}**)**

The **Environ** function syntax has these <u>named arguments</u>:

| Part | Description |
|---|---|
| ***envstring*** | Optional. <u>String expression</u> containing the name of an environment variable. |
| ***number*** | Optional. <u>Numeric expression</u> corresponding to the numeric order of the environment string in the environment-string table. The ***number*** <u>argument</u> can be any numeric expression, but is rounded to a whole number before it is evaluated. |

**Remarks**

If ***envstring*** can't be found in the environment-string table, a zero-length string ("") is
returned. Otherwise, **Environ** returns the text assigned to the specified ***envstring***; that is,
the text following the equal sign (=) in the environment-string table for that environment
variable.

If you specify ***number***, the string occupying that numeric position in the environment-string
table is returned. In this case, **Environ** returns all of the text, including ***envstring***. If there
is no environment string in the specified position, **Environ** returns a zero-length string.

# FileCopy Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmFileCopyC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmFileCopyX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmFileCopyS"}

Copies a file.

**Syntax**

**FileCopy** *source*, *destination*

The **FileCopy** statement syntax has these named arguments:

| Part | Description |
|------|-------------|
| *source* | Required. String expression that specifies the name of the file to be copied. The *source* may include directory or folder, and drive. |
| *destination* | Required. String expression that specifies the target file name. The *destination* may include directory or folder, and drive. |

**Remarks**

If you try to use the **FileCopy** statement on a currently open file, an error occurs.

# FileDateTime Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFileDateTimeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFileDateTimeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFileDateTimeS"}

Returns a **Variant** (**Date**) that indicates the date and time when a file was created or last modified.

**Syntax**

**FileDateTime(***pathname***)**

The required *pathname* argument is a string expression that specifies a file name. The *pathname* may include the directory or folder, and the drive.

# FileLen Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFileLenC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFileLenX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFileLenS"}

Returns a <u>Long</u> specifying the length of a file in bytes.

**Syntax**

**FileLen(***pathname***)**

The required *pathname* <u>argument</u> is a <u>string expression</u> that specifies a file. The *pathname* may include the directory or folder, and the drive.

**Remarks**

If the specified file is open when the **FileLen** function is called, the value returned represents the size of the file immediately before it was opened.

> **Note**   To obtain the length of an open file, use the **LOF** function.

# GetAttr Function

Returns an **Integer** representing the attributes of a file, directory, or folder.

**Syntax**

**GetAttr(**_pathname_**)**

The required _pathname_ argument is a string expression that specifies a file name. The _pathname_ may include the directory or folder, and the drive.

**Return Values**

The value returned by **GetAttr** is the sum of the following attribute values:

| Constant | Value | Description |
|---|---|---|
| **vbNormal** | 0 | Normal. |
| **vbReadOnly** | 1 | Read-only. |
| **vbHidden** | 2 | Hidden. |
| **vbSystem** | 4 | System file. Not available on the Macintosh. |
| **vbDirectory** | 16 | Directory or folder. |
| **vbArchive** | 32 | File has changed since last backup. Not available on the Macintosh. |
| **vbAlias** | 64 | Specified file name is an alias. Available only on the Macintosh. |

**Note**   These constants are specified by Visual Basic for Applications. The names can be used anywhere in your code in place of the actual values.

**Remarks**

To determine which attributes are set, use the **And** operator to perform a bitwise comparison of the value returned by the **GetAttr** function and the value of the individual file attribute you want. If the result is not zero, that attribute is set for the named file. For example, the return value of the following **And** expression is zero if the Archive attribute is not set:

```
Result = GetAttr(FName) And vbArchive
```

A nonzero value is returned if the Archive attribute is set.

# Kill Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmKillC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmKillX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmKillS"}

Deletes files from a disk.

**Syntax**

**Kill** *pathname*

The required *pathname* argument is a string expression that specifies one or more file
names to be deleted. The *pathname* may include the directory or folder, and the drive.

**Remarks**

In Microsoft Windows, **Kill** supports the use of multiple-character (**\***) and single-character
(**?**) wildcards to specify multiple files. However, on the Macintosh, these characters are
treated as valid file name characters and can't be used as wildcards to specify multiple files.

Since the Macintosh doesn't support the wildcards, use the file type to identify groups of
files to delete. You can use the **MacID** function to specify file type instead of repeating the
command with separate file names. For example, the following statement deletes all TEXT
files in the current folder.

```
Kill MacID("TEXT")
```

If you use the **MacID** function with **Kill** in Microsoft Windows, an error occurs.

An error occurs if you try to use **Kill** to delete an open file.

> **Note**   To delete directories, use the **RmDir** statement.

# MkDir Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmMkDirC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmMkDirX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmMkDirS"}

Creates a new directory or folder.

**Syntax**

**MkDir** *path*

The required *path* <u>argument</u> is a <u>string expression</u> that identifies the directory or folder to be created. The *path* may include the drive. If no drive is specified, **MkDir** creates the new directory or folder on the current drive.

# Name Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmNameS"}

Renames a disk file, directory, or folder.

**Syntax**

**Name** *oldpathname* **As** *newpathname*

The **Name** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *oldpathname* | Required. <u>String expression</u> that specifies the existing file name and location — may include directory or folder, and drive. |
| *newpathname* | Required. String expression that specifies the new file name and location — may include directory or folder, and drive. The file name specified by *newpathname* can't already exist. |

**Remarks**

The Name statement renames a file and moves it to a different directory or folder, if necessary. Name can move a file across drives, but it can only rename an existing directory or folder when both newpathname and oldpathname are located on the same drive. Name cannot create a new file, directory, or folder.

Using **Name** on an open file produces an error. You must close an open file before renaming it. **Name** <u>arguments</u> cannot include multiple-character (**\***) and single-character (**?**) wildcards.

# QBColor Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctQBColorC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctQBColorX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctQBColorS"}

Returns a <u>Long</u> representing the RGB color code corresponding to the specified color number.

**Syntax**

**QBColor(**_color_**)**

The required _color_ <u>argument</u> is a whole number in the range 0–15.

**Settings**

The _color_ argument has these settings:

| Number | Color | Number | Color |
|--------|---------|--------|---------------|
| 0 | Black | 8 | Gray |
| 1 | Blue | 9 | Light Blue |
| 2 | Green | 10 | Light Green |
| 3 | Cyan | 11 | Light Cyan |
| 4 | Red | 12 | Light Red |
| 5 | Magenta | 13 | Light Magenta |
| 6 | Yellow | 14 | Light Yellow |
| 7 | White | 15 | Bright White |

**Remarks**

The _color_ argument represents color values used by earlier versions of Basic (such as Microsoft Visual Basic for MS-DOS and the Basic Compiler). Starting with the least-significant byte, the returned value specifies the red, green, and blue values used to set the appropriate color in the RGB system used by Visual Basic for Applications.

# RGB Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctRGBC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctRGBX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctRGBS"}

Returns a <u>Long</u> whole number representing an RGB color value.

**Syntax**

**RGB(*red*, *green*, *blue*)**

The **RGB** function syntax has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| ***red*** | Required; **Variant** (**Integer**). Number in the range 0–255, inclusive, that represents the red component of the color. |
| ***green*** | Required; **Variant** (**Integer**). Number in the range 0–255, inclusive, that represents the green component of the color. |
| ***blue*** | Required; **Variant** (**Integer**). Number in the range 0–255, inclusive, that represents the blue component of the color. |

**Remarks**

Application <u>methods</u> and <u>properties</u> that accept a color specification expect that specification to be a number representing an RGB color value. An RGB color value specifies the relative intensity of red, green, and blue to cause a specific color to be displayed.

The value for any <u>argument</u> to **RGB** that exceeds 255 is assumed to be 255.

The following table lists some standard colors and the red, green, and blue values they include:

| Color | Red Value | Green Value | Blue Value |
|-------|-----------|-------------|------------|
| Black | 0 | 0 | 0 |
| Blue | 0 | 0 | 255 |
| Green | 0 | 255 | 0 |
| Cyan | 0 | 255 | 255 |
| Red | 255 | 0 | 0 |
| Magenta | 255 | 0 | 255 |
| Yellow | 255 | 255 | 0 |
| White | 255 | 255 | 255 |

The RGB color values returned by this function are incompatible with those used by the Macintosh operating system. They may be used within the context of Microsoft applications for the Macintosh, but should not be used when communicating color changes directly to the Macintosh operating system.

# RmDir Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmRmDirC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmRmDirX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmRmDirS"}

Removes an existing directory or folder.

**Syntax**

**RmDir** *path*

The required *path* argument is a string expression that identifies the directory or folder to
be removed. The *path* may include the drive. If no drive is specified, **RmDir** removes the
directory or folder on the current drive.

**Remarks**

An error occurs if you try to use **RmDir** on a directory or folder containing files. Use the **Kill**
statement to delete all files before attempting to remove a directory or folder.

# SetAttr Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSetAttrC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmSetAttrX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmSetAttrS"}

Sets attribute information for a file.

**Syntax**

**SetAttr** *pathname*, *attributes*

The **SetAttr** statement syntax has these named arguments:

| Part | Description |
|------|-------------|
| *pathname* | Required. String expression that specifies a file name — may include directory or folder, and drive. |
| *attributes* | Required. Constant or numeric expression, whose sum specifies file attributes. |

**Settings**

The ***attributes*** argument settings are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbNormal** | 0 | Normal (default). |
| **vbReadOnly** | 1 | Read-only. |
| **vbHidden** | 2 | Hidden. |
| **vbSystem** | 4 | System file. Not available on the Macintosh. |
| **vbArchive** | 32 | File has changed since last backup. |
| **vbAlias** | 64 | Specified file name is an alias. Available only on the Macintosh. |

**Note**   These constants are specified by Visual Basic for Applications. The names can be used anywhere in your code in place of the actual values.

**Remarks**

A run-time error occurs if you try to set the attributes of an open file.

# Close Statement Example

This example uses the **Close** statement to close all three files opened for **Output**.

```
Dim I, FileName
For I = 1 To 3 ' Loop 3 times.
    FileName = "TEST" & I    ' Create file name.
    Open FileName For Output As #I    ' Open file.
    Print #I, "This is a test."' Write string to file.
Next I
Close ' Close all 3 open files.
```

# EOF Function Example

This example uses the **EOF** function to detect the end of a file. This example assumes that MYFILE is a text file with a few lines of text.

```
Dim InputData
Open "MYFILE" For Input As #1 ' Open file for input.
Do While Not EOF(1)   ' Check for end of file.
   Line Input #1, InputData   ' Read line of data.
   Debug.Print InputData   ' Print to the Immediate window.
Loop
Close #1 ' Close file.
```

# FileAttr Function Example

This example uses the **FileAttr** function to return the file mode and file handle of an open file. The file handle is returned only on 16-bit systems; on 32-bit systems, passing 2 as a second argument generates an error.

```
Dim FileNum, Mode, Handle
FileNum = 1 ' Assign file number.
Open "TESTFILE" For Append As FileNum     ' Open file.
Mode = FileAttr(FileNum, 1)    ' Returns 8 (Append file mode).
Handle = FileAttr(FileNum, 2) ' Returns file handle.
Close FileNum  ' Close file.
```

# FreeFile Function Example

This example uses the **FreeFile** function to return the next available file number. Five files are opened for output within the loop, and some sample data is written to each.

```
Dim MyIndex, FileNumber
For MyIndex = 1 To 5 ' Loop 5 times.
    FileNumber = FreeFile   ' Get unused file
        ' number.
    Open "TEST" & MyIndex For Output As #FileNumber    ' Create file name.
    Write #FileNumber, "This is a sample." ' Output text.
    Close #FileNumber ' Close file.
Next MyIndex
```

# Get Statement Example

This example uses the **Get** statement to read data from a file into a variable. This example assumes that TESTFILE is a file containing five records of the user-defined type Record.

```
Type Record ' Define user-defined type.
   ID As Integer
   Name As String * 20
End Type

Dim MyRecord As Record, Position    ' Declare variables.
' Open sample file for random access.
Open "TESTFILE" For Random As #1 Len = Len(MyRecord)
' Read the sample file using the Get statement.
Position = 3   ' Define record number.
Get #1, Position, MyRecord ' Read third record.
Close #1 ' Close file.
```

# Input # Statement Example

This example uses the **Input #** statement to read data from a file into two variables. This example assumes that TESTFILE is a file with a few lines of data written to it using the **Write #** statement; that is, each line contains a string in quotations and a number separated by a comma, for example, ("Hello", 234).

```
Dim MyString, MyNumber
Open "TESTFILE" For Input As #1     ' Open file for input.
Do While Not EOF(1)  ' Loop until end of file.
    Input #1, MyString, MyNumber      ' Read data into two variables.
    Debug.Print MyString, MyNumber    ' Print data to the Immediate window.
Loop
Close #1 ' Close file.
```

# Input Function Example

This example uses the **Input** function to read one character at a time from a file and print it to the **Immediate** window. This example assumes that TESTFILE is a text file with a few lines of sample data.

```
Dim MyChar
Open "TESTFILE" For Input As #1    ' Open file.
Do While Not EOF(1)  ' Loop until end of file.
   MyChar = Input(1, #1)   ' Get one character.
   Debug.Print MyChar   ' Print to the Immediate window.
Loop
Close #1 ' Close file.
```

# Line Input # Statement Example

This example uses the **Line Input #** statement to read a line from a sequential file and assign it to a variable. This example assumes that TESTFILE is a text file with a few lines of sample data.

```
Dim TextLine
Open "TESTFILE" For Input As #1     ' Open file.
Do While Not EOF(1)  ' Loop until end of file.
    Line Input #1, TextLine ' Read line into variable.
    Debug.Print TextLine ' Print to the Immediate window.
Loop
Close #1 ' Close file.
```

# Loc Function Example

This example uses the **Loc** function to return the current read/write position within an open file. This example assumes that TESTFILE is a text file with a few lines of sample data.

```
Dim MyLocation, MyLine
Open "TESTFILE" For Binary As #1    ' Open file just created.
Do While MyLocation < LOF(1)  ' Loop until end of file.
   MyLine = MyLine & Input(1, #1)   ' Read character into variable.
   MyLocation = Loc(1)   ' Get current position within file.
' Print to the Immediate window.
   Debug.Print MyLine; Tab; MyLocation
Loop
Close #1 ' Close file.
```

# Lock, Unlock Statements Example

This example illustrates the use of the **Lock** and **Unlock** statements. While a record is being modified, access by other processes to the record is denied. This example assumes that `TESTFILE` is a file containing five records of the user-defined type `Record`.

```
Type Record ' Define user-defined type.
   ID As Integer
   Name As String * 20
End Type

Dim MyRecord As Record, RecordNumber      ' Declare variables.
' Open sample file for random access.
Open "TESTFILE" For Random Shared As #1 Len = Len(MyRecord)
RecordNumber = 4  ' Define record number.
Lock #1, RecordNumber   ' Lock record.
Get #1, RecordNumber, MyRecord      ' Read record.
MyRecord.ID = 234 ' Modify record.
MyRecord.Name = "John Smith"
Put #1, RecordNumber, MyRecord      ' Write modified record.
Unlock #1, RecordNumber ' Unlock current record.
Close #1 ' Close file.
```

# LOF Function Example

This example uses the **LOF** function to determine the size of an open file. This example assumes that TESTFILE is a text file containing sample data.

```
Dim FileLength
Open "TESTFILE" For Input As #1     ' Open file.
FileLength = LOF(1)  ' Get length of file.
Close #1 ' Close file.
```

# Open Statement Example

This example illustrates various uses of the **Open** statement to enable input and output to a file.

The following code opens the file `TESTFILE` in sequential-input mode.

```
Open "TESTFILE" For Input As #1
' Close before reopening in another mode.
Close #1
```

This example opens the file in Binary mode for writing operations only.

```
Open "TESTFILE" For Binary Access Write As #1
' Close before reopening in another mode.
Close #1
```

The following example opens the file in Random mode. The file contains records of the user-defined type `Record`.

```
Type Record ' Define user-defined type.
    ID As Integer
    Name As String * 20
End Type

Dim MyRecord As Record  ' Declare variable.
Open "TESTFILE" For Random As #1 Len = Len(MyRecord)
' Close before reopening in another mode.
Close #1
```

This code example opens the file for sequential output; any process can read or write to file.

```
Open "TESTFILE" For Output Shared As #1
' Close before reopening in another mode.
Close #1
```

This code example opens the file in Binary mode for reading; other processes can't read file.

```
Open "TESTFILE" For Binary Access Read Lock Read As #1
```

# Print # Statement Example

This example uses the **Print #** statement to write data to a file.

```
Open "TESTFILE" For Output As #1    ' Open file for output.
Print #1, "This is a test" ' Print text to file.
Print #1,    ' Print blank line to file.
Print #1, "Zone 1"; Tab ; "Zone 2"  ' Print in two print zones.
Print #1, "Hello" ; " " ; "World"   ' Separate strings with space.
Print #1, Spc(5) ; "5 leading spaces "   ' Print five leading spaces.
Print #1, Tab(10) ; "Hello"   ' Print word at column 10.

' Assign Boolean, Date, Null and Error values.
Dim MyBool, MyDate, MyNull, MyError
MyBool = False : MyDate = #February 12, 1969# : MyNull = Null
MyError = CVErr(32767)
' True, False, Null, and Error are translated using locale settings of
' your system. Date literals are written using standard short date
' format.
Print #1, MyBool ; " is a Boolean value"
Print #1, MyDate ; " is a date"
Print #1, MyNull ; " is a null value"
Print #1, MyError ; " is an error value"
Close #1 ' Close file.
```

# Put Statement Example

This example uses the **Put** statement to write data to a file. Five records of the user-defined type `Record` are written to the file.

```
Type Record ' Define user-defined type.
   ID As Integer
   Name As String * 20
End Type

Dim MyRecord As Record, RecordNumber      ' Declare variables.
' Open file for random access.
Open "TESTFILE" For Random As #1 Len = Len(MyRecord)
For RecordNumber = 1 To 5  ' Loop 5 times.
   MyRecord.ID = RecordNumber ' Define ID.
   MyRecord.Name = "My Name" & RecordNumber      ' Create a string.
   Put #1, RecordNumber, MyRecord   ' Write record to file.
Next RecordNumber
Close #1 ' Close file.
```

# Reset Statement Example

This example uses the **Reset** statement to close all open files and write the contents of all file buffers to disk. Note the use of the **Variant** variable `FileNumber` as both a string and a number.

```
Dim FileNumber
For FileNumber = 1 To 5 ' Loop 5 times.
    ' Open file for output. FileNumber is concatenated into the string
    ' TEST for the file name, but is a number following a #.
    Open "TEST" & FileNumber For Output As #FileNumber
    Write #FileNumber, "Hello World" ' Write data to file.
Next FileNumber
Reset ' Close files and write contents
        ' to disk.
```

# Seek Function Example

This example uses the **Seek** function to return the current file position. The example assumes TESTFILE is a file containing records of the user-defined type Record.

```
Type Record ' Define user-defined type.
   ID As Integer
   Name As String * 20
End Type
```

For files opened in Random mode, **Seek** returns number of next record.

```
Dim MyRecord As Record  ' Declare variable.
Open "TESTFILE" For Random As #1 Len = Len(MyRecord)
Do While Not EOF(1)  ' Loop until end of file.
   Get #1, , MyRecord   ' Read next record.
   Debug.Print Seek(1)  ' Print record number to the
        ' Immediate window.
Loop
Close #1 ' Close file.
```

For files opened in modes other than Random mode, **Seek** returns the byte position at which the next operation takes place. Assume TESTFILE is a file containing a few lines of text.

```
Dim MyChar
Open "TESTFILE" For Input As #1     ' Open file for reading.
Do While Not EOF(1)  ' Loop until end of file.
   MyChar = Input(1, #1)   ' Read next character of data.
   Debug.Print Seek(1)  ' Print byte position to the
        ' Immediate window.
Loop
Close #1 ' Close file.
```

# Seek Statement Example

This example uses the **Seek** statement to set the position for the next read or write within a file. This example assumes `TESTFILE` is a file containing records of the user-defined type `Record`.

```
Type Record ' Define user-defined type.
   ID As Integer
   Name As String * 20
End Type
```

For files opened in Random mode, **Seek** sets the next record.

```
Dim MyRecord As Record, MaxSize, RecordNumber   ' Declare variables.
' Open file in random-file mode.
Open "TESTFILE" For Random As #1 Len = Len(MyRecord)
MaxSize = LOF(1) \ Len(MyRecord)    ' Get number of records in file.
' The loop reads all records starting from the last.
For RecordNumber = MaxSize To 1 Step - 1
   Seek #1, RecordNumber   ' Set position.
   Get #1, , MyRecord   ' Read record.
Next RecordNumber
Close #1 ' Close file.
```

For files opened in modes other than Random mode, **Seek** sets the byte position at which the next operation takes place. Assume `TESTFILE` is a file containing a few lines of text.

```
Dim MaxSize, NextChar, MyChar
Open "TESTFILE" For Input As #1     ' Open file for input.
MaxSize = LOF(1)  ' Get size of file in bytes.
' The loop reads all characters starting from the last.
For NextChar = MaxSize To 1 Step -1
   Seek #1, NextChar ' Set position.
   MyChar = Input(1, #1)   ' Read character.
Next NextChar
Close #1 ' Close file.
```

# Spc Function Example

This example uses the **Spc** function to position output in a file and in the **Immediate** window.

```
' The Spc function can be used with the Print # statement.
Open "TESTFILE" For Output As #1    ' Open file for output.
Print #1, "10 spaces between here"; Spc(10); "and here."
Close #1 ' Close file.
```

The following statement causes the text to be printed in the **Immediate** window (using the **Print** method), preceded by 30 spaces.

```
Debug.Print Spc(30); "Thirty spaces later..."
```

# Tab Function Example

This example uses the **Tab** function to position output in a file and in the **Immediate** window.

```
' The Tab function can be used with the Print # statement.
Open "TESTFILE" For Output As #1    ' Open file for output.
' The second word prints at column 20.
Print #1, "Hello"; Tab(20); "World."
' If the argument is omitted, cursor is moved to the next print zone.
Print #1, "Hello"; Tab; "World"
Close #1 ' Close file.
```

The **Tab** function can also be used with the **Print** method. The following statement prints text starting at column 10.

```
Debug.Print Tab(10); "10 columns from start."
```

# Width # Statement Example

This example uses the **Width #** statement to set the output line width for a file.

```
Dim I
Open "TESTFILE" For Output As #1    ' Open file for output.
VBA.Width 1, 5 ' Set output line width to 5.
For I = 0 To 9 ' Loop 10 times.
    Print #1, Chr(48 + I);  ' Prints five characters per line.
Next I
Close #1 ' Close file.
```

# Write # Statement Example

This example uses the **Write #** statement to write raw data to a sequential file.

```
Open "TESTFILE" For Output As #1    ' Open file for output.
Write #1, "Hello World", 234  ' Write comma-delimited data.
Write #1,   ' Write blank line.

Dim MyBool, MyDate, MyNull, MyError
' Assign Boolean, Date, Null, and Error values.
MyBool = False : MyDate = #February 12, 1969# : MyNull = Null
MyError = CVErr(32767)
' Boolean data is written as #TRUE# or #FALSE#. Date literals are
' written in universal date format, for example, #1994-07-13#
 'represents July 13, 1994. Null data is written as #NULL#.
' Error data is written as #ERROR errorcode#.
Write #1, MyBool ; " is a Boolean value"
Write #1, MyDate ; " is a date"
Write #1, MyNull ; " is a null value"
Write #1, MyError ; " is an error value"
Close #1 ' Close file.
```

# Close Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmCloseC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmCloseX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmCloseS"}

Concludes input/output (I/O) to a file opened using the **Open** statement.

**Syntax**

**Close** [*filenumberlist*]

The optional *filenumberlist* <u>argument</u> can be one or more <u>file numbers</u> using the following syntax, where *filenumber* is any valid file number:

[[**#**]*filenumber*] [**,** [**#**]*filenumber*] **. . .**

**Remarks**

If you omit *filenumberlist*, all active files opened by the **Open** statement are closed.

When you close files that were opened for **Output** or **Append**, the final buffer of output is written to the operating system buffer for that file. All buffer space associated with the closed file is released.

When the **Close** statement is executed, the association of a file with its file number ends.

# EOF Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctEOFC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctEOFX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctEOFS"}

Returns an <u>Integer</u> containing the <u>Boolean</u> value **True** when the end of a file opened for
**Random** or sequential **Input** has been reached.

**Syntax**

**EOF(**_filenumber_**)**

The required _filenumber_ <u>argument</u> is an **Integer** containing any valid <u>file number</u>.

**Remarks**

Use **EOF** to avoid the error generated by attempting to get input past the end of a file.

The **EOF** function returns **False** until the end of the file has been reached. With files opened
for **Random** or **Binary** access, **EOF** returns **False** until the last executed **Get** statement is
unable to read an entire record.

With files opened for **Binary** access, an attempt to read through the file using the **Input**
function until **EOF** returns **True** generates an error. Use the **LOF** and **Loc** functions instead
of **EOF** when reading binary files with **Input**, or use **Get** when using the **EOF** function. With
files opened for **Output**, **EOF** always returns **True**.

# FileAttr Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFileAttrC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctFileAttrX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctFileAttrS"}

Returns a Long representing the file mode for files opened using the **Open** statement.

**Syntax**

**FileAttr(*filenumber*, *returntype*)**

The **FileAttr** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *filenumber* | Required; Integer. Any valid file number. |
| *returntype* | Required; **Integer**. Number indicating the type of information to return. Specify 1 to return a value indicating the file mode. On 16-bit systems only, specify 2 to retrieve an operating system file handle. **Returntype** 2 is not supported in 32-bit systems and causes an error. |

**Return Values**

When the **returntype** argument is 1, the following return values indicate the file access mode:

| Mode | Value |
|------|-------|
| **Input** | 1 |
| **Output** | 2 |
| **Random** | 4 |
| **Append** | 8 |
| **Binary** | 32 |

# FreeFile Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFreeFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFreeFileX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFreeFileS"}

Returns an <u>Integer</u> representing the next <u>file number</u> available for use by the **Open** statement.

**Syntax**

**FreeFile**[**(**_rangenumber_**)**]

The optional _rangenumber_ argument is a <u>Variant</u> that specifies the range from which the next free file number is to be returned. Specify a 0 (default) to return a file number in the range 1 – 255, inclusive. Specify a 1 to return a file number in the range 256 – 511.

**Remarks**

Use **FreeFile** to supply a file number that is not already in use.

# Get Statement

Reads data from an open disk file into a <u>variable</u>.

**Syntax**

**Get** [**#**]*filenumber***,** [*recnumber*]**,** *varname*

The **Get** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *recnumber* | Optional. **Variant** (**Long**). Record number (**Random** mode files) or byte number (**Binary** mode files) at which reading begins. |
| *varname* | Required. Valid variable name into which data is read. |

**Remarks**

Data read with **Get** is usually written to a file with **Put**.

The first record or byte in a file is at position 1, the second record or byte is at position 2, and so on. If you omit *recnumber*, the next record or byte following the last **Get** or **Put** <u>statement</u> (or pointed to by the last **Seek** function) is read. You must include delimiting commas, for example:

```
Get #4,,FileBuffer
```

For files opened in **Random** mode, the following rules apply:

- If the length of the data being read is less than the length specified in the **Len** clause of the **Open** statement, **Get** reads subsequent records on record-length boundaries. The space between the end of one record and the beginning of the next record is padded with the existing contents of the file buffer. Because the amount of padding data can't be determined with any certainty, it is generally a good idea to have the record length match the length of the data being read.

- If the variable being read into is a variable-length string, **Get** reads a 2-byte descriptor containing the string length and then reads the data that goes into the variable. Therefore, the record length specified by the **Len** clause in the **Open** statement must be at least 2 bytes greater than the actual length of the string.

- If the variable being read into is a <u>Variant</u> of <u>numeric type</u>, **Get** reads 2 bytes identifying the **VarType** of the **Variant** and then the data that goes into the variable. For example, when reading a **Variant** of **VarType** 3, **Get** reads 6 bytes: 2 bytes identifying the **Variant** as **VarType** 3 (**Long**) and 4 bytes containing the <u>Long</u> data. The record length specified by the **Len** clause in the **Open** statement must be at least 2 bytes greater than the actual number of bytes required to store the variable.

    **Note**   You can use the **Get** statement to read a **Variant** <u>array</u> from disk, but you can't use **Get** to read a scalar **Variant** containing an array. You also can't use **Get** to read objects from disk.

- If the variable being read into is a **Variant** of **VarType** 8 (**String**), **Get** reads 2 bytes identifying the **VarType**, 2 bytes indicating the length of the string, and then reads the string data. The record length specified by the **Len** clause in the **Open** statement must

be at least 4 bytes greater than the actual length of the string.

- If the variable being read into is a dynamic array, **Get** reads a descriptor whose length equals 2 plus 8 times the number of dimensions, that is, 2 + 8 * *NumberOfDimensions*. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the sum of all the bytes required to read the array data and the array descriptor. For example, the following array declaration requires 118 bytes when the array is written to disk.

```
Dim MyArray(1 To 5,1 To 10) As Integer
```

The 118 bytes are distributed as follows: 18 bytes for the descriptor (2 + 8 * 2), and 100 bytes for the data (5 * 10 * 2).

- If the variable being read into is a fixed-size array, **Get** reads only the data. No descriptor is read.

- If the variable being read into is any other type of variable (not a variable-length string or a **Variant**), **Get** reads only the variable data. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the length of the data being read.

- **Get** reads elements of <u>user-defined types</u> as if each were being read individually, except that there is no padding between elements. On disk, a dynamic array in a user-defined type (written with **Put**) is prefixed by a descriptor whose length equals 2 plus 8 times the number of dimensions, that is, 2 + 8 * *NumberOfDimensions*. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the sum of all the bytes required to read the individual elements, including any arrays and their descriptors.

For files opened in **Binary** mode, all of the **Random** rules apply, except:

- The **Len** clause in the **Open** statement has no effect. **Get** reads all variables from disk contiguously; that is, with no padding between records.

- For any array other than an array in a user-defined type, **Get** reads only the data. No descriptor is read.

- **Get** reads variable-length strings that aren't elements of user-defined types without expecting the 2-byte length descriptor. The number of bytes read equals the number of characters already in the string. For example, the following statements read 10 bytes from <u>file number</u> 1:

```
VarString = String(10," ")
Get #1,,VarString
```

# Input # Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmInputC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmInputX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmInputS"}

Reads data from an open sequential file and assigns the data to underlinevariables.

**Syntax**

**Input #**_filenumber, varlist_

The **Input #** statement syntax has these parts:

| Part | Description |
|------|-------------|
| _filenumber_ | Required. Any valid file number. |
| _varlist_ | Required. Comma-delimited list of variables that are assigned values read from the file — can't be an array or object variable. However, variables that describe an element of an array or user-defined type may be used. |

**Remarks**

Data read with **Input #** is usually written to a file with **Write #**. Use this statement only with files opened in **Input** or **Binary** mode.

When read, standard string or numeric data is assigned to variables without modification. The following table illustrates how other input data is treated:

| Data | Value assigned to variable |
|------|----------------------------|
| Delimiting comma or blank line | Empty |
| #NULL# | Null |
| #TRUE# or #FALSE# | **True** or **False** |
| _#yyyy-mm-dd hh:mm:ss#_ | The date and/or time represented by the expression |
| #ERROR _errornumber_# | _errornumber_ (variable is a Variant tagged as an error) |

Double quotation marks (" ") within input data are ignored.

> **Note**   You should not write strings that contain embedded quotation marks, for example, `"1,2""X"` for use with the **Input #** statement: **Input #** parses this string as two complete and separate strings.

Data items in a file must appear in the same order as the variables in _varlist_ and match variables of the same data type. If a variable is numeric and the data is not numeric, a value of zero is assigned to the variable.

If you reach the end of the file while you are inputting a data item, the input is terminated and an error occurs.

> **Note**   To be able to correctly read data from a file into variables using **Input #**, use the **Write #** statement instead of the **Print #** statement to write the data to the files. Using **Write #** ensures each separate data field is properly delimited.

# Input Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctInputC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctInputX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctInputS"}

Returns <u>String</u> containing characters from a file opened in **Input** or **Binary** mode.

**Syntax**

**Input(**_number_, [**#**]_filenumber_)

The **Input** function syntax has these parts:

| Part | Description |
|------|-------------|
| _number_ | Required. Any valid <u>numeric expression</u> specifying the number of characters to return. |
| _filenumber_ | Required. Any valid <u>file number</u>. |

**Remarks**

Data read with the **Input** function is usually written to a file with **Print #** or **Put**. Use this function only with files opened in **Input** or **Binary** mode.

Unlike the **Input #** statement, the **Input** function returns all of the characters it reads, including commas, carriage returns, linefeeds, quotation marks, and leading spaces.

With files opened for **Binary** access, an attempt to read through the file using the **Input** function until **EOF** returns **True** generates an error. Use the **LOF** and **Loc** functions instead of **EOF** when reading binary files with **Input**, or use **Get** when using the **EOF** function.

> **Note**   Use the **InputB** function for byte data contained within text files. With **InputB**, _number_ specifies the number of bytes to return rather than the number of characters to return.

# Line Input # Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmLineInputC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmLineInputX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmLineInputS"}

Reads a single line from an open sequential file and assigns it to a <u>String</u> <u>variable</u>.

**Syntax**

**Line Input #**_filenumber_, _varname_

The **Line Input #** statement syntax has these parts:

| Part | Description |
|------|-------------|
| _filenumber_ | Required. Any valid <u>file number</u>. |
| _varname_ | Required. Valid <u>Variant</u> or **String** variable name. |

**Remarks**

Data read with **Line Input #** is usually written from a file with **Print #**.

The **Line Input #** statement reads from a file one character at a time until it encounters a carriage return (**Chr(**13**)**) or carriage return–linefeed (**Chr(**13**)** + **Chr(**10**)**) sequence. Carriage return–linefeed sequences are skipped rather than appended to the character string.

# Loc Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLocC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLocX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLocS"}

Returns a <u>Long</u> specifying the current read/write position within an open file.

**Syntax**

**Loc(**_filenumber_**)**

The required _filenumber_ <u>argument</u> is any valid <u>Integer</u> <u>file number</u>.

**Remarks**

The following describes the return value for each file access mode:

| Mode | Return Value |
|------|-------------|
| **Random** | Number of the last record read from or written to the file. |
| **Sequential** | Current byte position in the file divided by 128. However, information returned by **Loc** for sequential files is neither used nor required. |
| **Binary** | Position of the last byte read or written. |

# Lock, Unlock Statements

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmLockC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmLockX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmLockS"}

Controls access by other processes to all or part of a file opened using the **Open** statement.

**Syntax**

**Lock** [**#**]*filenumber*[, *recordrange*]

**. . .**

**Unlock** [**#**]*filenumber*[, *recordrange*]

The **Lock** and **Unlock** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *recordrange* | Optional. The range of records to lock or unlock. |

**Settings**

The *recordrange* <u>argument</u> settings are:

*recnumber* | [*start*] **To** *end*

| Setting | Description |
|---------|-------------|
| *recnumber* | Record number (**Random** mode files) or byte number (**Binary** mode files) at which locking or unlocking begins. |
| *start* | Number of the first record or byte to lock or unlock. |
| *end* | Number of the last record or byte to lock or unlock. |

**Remarks**

The **Lock** and **Unlock** statements are used in environments where several processes might need access to the same file.

**Lock** and **Unlock** statements are always used in pairs. The arguments to **Lock** and **Unlock** must match exactly.

The first record or byte in a file is at position 1, the second record or byte is at position 2, and so on. If you specify just one record, then only that record is locked or unlocked. If you specify a range of records and omit a starting record (*start*), all records from the first record to the end of the range (*end*) are locked or unlocked. Using **Lock** without *recnumber* locks the entire file; using **Unlock** without *recnumber* unlocks the entire file.

If the file has been opened for sequential input or output, **Lock** and **Unlock** affect the entire file, regardless of the range specified by *start* and *end*.

> **Caution**   Be sure to remove all locks with an **Unlock** statement before closing a file or quitting your program. Failure to remove locks produces unpredictable results.

# LOF Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLOFC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLOFX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLOFS"}

Returns a <u>Long</u> representing the size, in bytes, of a file opened using the **Open** statement.

**Syntax**

**LOF(**_filenumber_**)**

The required _filenumber_ <u>argument</u> is an <u>Integer</u> containing a valid <u>file number</u>.

> **Note**   Use the **FileLen** function to obtain the length of a file that is not open.

# Open Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmOpenC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmOpenX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmOpenS"}

Enables input/output (I/O) to a file.

**Syntax**

**Open** *pathname* **For** *mode* [**Access** *access*] [*lock*] **As** [**#**]*filenumber* [**Len**=*reclength*]

The **Open** statement syntax has these parts:

| Part | Description |
| --- | --- |
| *pathname* | Required. String expression that specifies a file name — may include directory or folder, and drive. |
| *mode* | Required. Keyword specifying the file mode: **Append**, **Binary**, **Input**, **Output**, or **Random**. If unspecified, the file is opened for **Random** access. |
| *access* | Optional. Keyword specifying the operations permitted on the open file: **Read**, **Write**, or **Read Write**. |
| *lock* | Optional. Keyword specifying the operations restricted on the open file by other processes: **Shared**, **Lock Read**, **Lock Write**, and **Lock Read Write**. |
| *filenumber* | Required. A valid file number in the range 1 to 511, inclusive. Use the **FreeFile** function to obtain the next available file number. |
| *reclength* | Optional. Number less than or equal to 32,767 (bytes). For files opened for random access, this value is the record length. For sequential files, this value is the number of characters buffered. |

**Remarks**

You must open a file before any I/O operation can be performed on it. **Open** allocates a buffer for I/O to the file and determines the mode of access to use with the buffer.

If the file specified by *pathname* doesn't exist, it is created when a file is opened for **Append**, **Binary**, **Output**, or **Random** modes.

If the file is already opened by another process and the specified type of access is not allowed, the **Open** operation fails and an error occurs.

The **Len** clause is ignored if *mode* is **Binary**.

> **Important**  In **Binary**, **Input**, and **Random** modes, you can open a file using a different file number without first closing the file. In **Append** and **Output** modes, you must close a file before opening it with a different file number.

# Print # Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmPrintC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmPrintX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmPrintS"}

Writes display-formatted data to a sequential file.

**Syntax**

**Print #***filenumber*, [*outputlist*]

The **Print #** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *outputlist* | Optional. <u>Expression</u> or list of expressions to print. |

**Settings**

The *outputlist* <u>argument</u> settings are:

[{**Spc(***n***)** | **Tab**[**(***n***)**]}] [*expression*] [*charpos*]

| Setting | Description |
|---------|-------------|
| **Spc(***n***)** | Used to insert space characters in the output, where *n* is the number of space characters to insert. |
| **Tab(***n***)** | Used to position the insertion point to an absolute column number, where *n* is the column number. Use **Tab** with no argument to position the insertion point at the beginning of the next <u>print zone</u>. |
| *expression* | <u>Numeric expressions</u> or <u>string expressions</u> to print. |
| *charpos* | Specifies the insertion point for the next character. Use a semicolon to position the insertion point immediately after the last character displayed. Use **Tab(***n***)** to position the insertion point to an absolute column number. Use **Tab** with no argument to position the insertion point at the beginning of the next print zone. If *charpos* is omitted, the next character is printed on the next line. |

**Remarks**

Data written with **Print #** is usually read from a file with **Line Input #** or **Input**.

If you omit *outputlist* and include only a list separator after *filenumber*, a blank line is printed to the file. Multiple expressions can be separated with either a space or a semicolon. A space has the same effect as a semicolon.

For <u>Boolean</u> data, either `True` or `False` is printed. The **True** and **False** keywords are not translated, regardless of the <u>locale</u>.

<u>Date</u> data is written to the file using the standard short date format recognized by your system. When either the date or the time component is missing or zero, only the part provided gets written to the file.

Nothing is written to the file if *outputlist* data is <u>Empty</u>. However, if *outputlist* data is <u>Null</u>, **Null** is written to the file.

For **Error** data, the output appears as `Error errorcode`. The **Error** keyword is not translated regardless of the locale.

All data written to the file using **Print #** is internationally aware; that is, the data is properly formatted using the appropriate decimal separator.

Because **Print #** writes an image of the data to the file, you must delimit the data so it prints correctly. If you use **Tab** with no arguments to move the print position to the next print zone, **Print #** also writes the spaces between print fields to the file.

> **Note**  If, at some future time, you want to read the data from a file using the **Input #** statement, use the **Write #** statement instead of the **Print #** statement to write the data to the file. Using **Write #** ensures the integrity of each separate data field by properly delimiting it, so it can be read back in using **Input #**. Using **Write #** also ensures it can be correctly read in any locale.

# Put Statement

Writes data from a <u>variable</u> to a disk file.

**Syntax**

**Put** [**#**]*filenumber*, [*recnumber*], *varname*

The **Put** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *recnumber* | Optional. **Variant** (**Long**). Record number (**Random** mode files) or byte number (**Binary** mode files) at which writing begins. |
| *varname* | Required. Name of variable containing data to be written to disk. |

**Remarks**

Data written with **Put** is usually read from a file with **Get**.

The first record or byte in a file is at position 1, the second record or byte is at position 2, and so on. If you omit *recnumber*, the next record or byte after the last **Get** or **Put** statement or pointed to by the last **Seek** function is written. You must include delimiting commas, for example:

```
Put #4,,FileBuffer
```

For files opened in **Random** mode, the following rules apply:

- If the length of the data being written is less than the length specified in the **Len** clause of the **Open** statement, **Put** writes subsequent records on record-length boundaries. The space between the end of one record and the beginning of the next record is padded with the existing contents of the file buffer. Because the amount of padding data can't be determined with any certainty, it is generally a good idea to have the record length match the length of the data being written. If the length of the data being written is greater than the length specified in the **Len** clause of the **Open** statement, an error occurs.

- If the variable being written is a variable-length string, **Put** writes a 2-byte descriptor containing the string length and then the variable. The record length specified by the **Len** clause in the **Open** statement must be at least 2 bytes greater than the actual length of the string.

- If the variable being written is a <u>Variant</u> of a <u>numeric type</u>, **Put** writes 2 bytes identifying the **VarType** of the **Variant** and then writes the variable. For example, when writing a **Variant** of **VarType** 3, **Put** writes 6 bytes: 2 bytes identifying the **Variant** as **VarType** 3 (**Long**) and 4 bytes containing the **Long** data. The record length specified by the **Len** clause in the **Open** statement must be at least 2 bytes greater than the actual number of bytes required to store the variable.

  **Note**   You can use the **Put** statement to write a **Variant** <u>array</u> to disk, but you can't use **Put** to write a scalar **Variant** containing an array to disk. You also can't use **Put** to write objects to disk.

- If the variable being written is a **Variant** of **VarType** 8 (**String**), **Put** writes 2 bytes

identifying the **VarType**, 2 bytes indicating the length of the string, and then writes the string data. The record length specified by the **Len** clause in the **Open** statement must be at least 4 bytes greater than the actual length of the string.

- If the variable being written is a dynamic array, **Put** writes a descriptor whose length equals 2 plus 8 times the number of dimensions, that is, 2 + 8 * *NumberOfDimensions*. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the sum of all the bytes required to write the array data and the array descriptor. For example, the following array declaration requires 118 bytes when the array is written to disk.

```
Dim MyArray(1 To 5,1 To 10) As Integer
```

- The 118 bytes are distributed as follows: 18 bytes for the descriptor (2 + 8 * 2), and 100 bytes for the data (5 * 10 * 2).

- If the variable being written is a fixed-size array, **Put** writes only the data. No descriptor is written to disk.

- If the variable being written is any other type of variable (not a variable-length string or a **Variant**), **Put** writes only the variable data. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the length of the data being written.

- **Put** writes elements of <u>user-defined types</u> as if each were written individually, except there is no padding between elements. On disk, a dynamic array in a user-defined type written with **Put** is prefixed by a descriptor whose length equals 2 plus 8 times the number of dimensions, that is, 2 + 8 * *NumberOfDimensions*. The record length specified by the **Len** clause in the **Open** statement must be greater than or equal to the sum of all the bytes required to write the individual elements, including any arrays and their descriptors.

For files opened in **Binary** mode, all of the **Random** rules apply, except:

- The **Len** clause in the **Open** statement has no effect. **Put** writes all variables to disk contiguously; that is, with no padding between records.

- For any array other than an array in a user-defined type, **Put** writes only the data. No descriptor is written.

- **Put** writes variable-length strings that are not elements of user-defined types without the 2-byte length descriptor. The number of bytes written equals the number of characters in the string. For example, the following statements write 10 bytes to file number 1:

```
VarString$ = String$(10," ")
Put #1,,VarString$
```

# Reset Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmResetC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmResetX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmResetS"}

Closes all disk files opened using the **Open** statement.

**Syntax**

**Reset**

**Remarks**

The **Reset** statement closes all active files opened by the **Open** statement and writes the contents of all file buffers to disk.

# Seek Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSeekC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vafctSeekX":1}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctSeekS"}

Returns a <u>Long</u> specifying the current read/write position within a file opened using the **Open** statement.

**Syntax**

**Seek(**_filenumber_**)**

The required _filenumber_ <u>argument</u> is an <u>Integer</u> containing a valid <u>file number</u>.

**Remarks**

**Seek** returns a value between 1 and 2,147,483,647 (equivalent to $2^{31} - 1$), inclusive.

The following describes the return values for each file access mode.

| Mode | Return Value |
| --- | --- |
| **Random** | Number of the next record read or written |
| **Binary**, **Output**, **Append**, **Input** | Byte position at which the next operation takes place. The first byte in a file is at position 1, the second byte is at position 2, and so on. |

# Seek Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSeekC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmSeekX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmSeekS"}

Sets the position for the next read/write operation within a file opened using the **Open**
statement.

**Syntax**

**Seek** [**#**]*filenumber*, *position*

The **Seek** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *position* | Required. Number in the range $1 - 2{,}147{,}483{,}647$, inclusive, that indicates where the next read/write operation should occur. |

**Remarks**

Record numbers specified in **Get** and **Put** statements override file positioning performed by
**Seek**.

Performing a file-write operation after a **Seek** operation beyond the end of a file extends the
file. If you attempt a **Seek** operation to a negative or zero position, an error occurs.

# Spc Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSpcC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctSpcX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctSpcS"}

Used with the **Print #** statement or the **Print** method to position output.

**Syntax**

**Spc(**_n_**)**

The required _n_ argument is the number of spaces to insert before displaying or printing the next expression in a list.

**Remarks**

If _n_ is less than the output line width, the next print position immediately follows the number of spaces printed. If _n_ is greater than the output line width, **Spc** calculates the next print position using the formula:

_currentprintposition_ + (_n_ **Mod** _width_)

For example, if the current print position is 24, the output line width is 80, and you specify **Spc(**90**)**, the next print will start at position 34 (current print position + the remainder of 90/80). If the difference between the current print position and the output line width is less than _n_ (or _n_ **Mod** _width_), the **Spc** function skips to the beginning of the next line and generates spaces equal to _n_ − (_width_ − _currentprintposition_).

    **Note**   Make sure your tabular columns are wide enough to accommodate wide letters.

When you use the **Print** method with a proportionally spaced font, the width of space characters printed using the **Spc** function is always an average of the width of all characters in the point size for the chosen font. However, there is no correlation between the number of characters printed and the number of fixed-width columns those characters occupy. For example, the uppercase letter W occupies more than one fixed-width column and the lowercase letter i occupies less than one fixed-width column.

# Tab Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTabC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctTabX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctTabS"}

Used with the **Print #** statement or the **Print** method to position output.

**Syntax**

**Tab**[**(**n**)**]

The optional n argument is the column number moved to before displaying or printing the next expression in a list. If omitted, **Tab** moves the insertion point to the beginning of the next print zone. This allows **Tab** to be used instead of a comma in locales where the comma is used as a decimal separator.

**Remarks**

If the current print position on the current line is greater than n, **Tab** skips to the nth column on the next output line. If n is less than 1, **Tab** moves the print position to column 1. If n is greater than the output line width, **Tab** calculates the next print position using the formula:

n **Mod** width

For example, if width is 80 and you specify **Tab(**90**)**, the next print will start at column 10 (the remainder of 90/80). If n is less than the current print position, printing begins on the next line at the calculated print position. If the calculated print position is greater than the current print position, printing begins at the calculated print position on the same line.

The leftmost print position on an output line is always 1. When you use the **Print #** statement to print to files, the rightmost print position is the current width of the output file, which you can set using the **Width #** statement.

   **Note**   Make sure your tabular columns are wide enough to accommodate wide letters.

When you use the **Tab** function with the **Print** method, the print surface is divided into uniform, fixed-width columns. The width of each column is an average of the width of all characters in the point size for the chosen font. However, there is no correlation between the number of characters printed and the number of fixed-width columns those characters occupy. For example, the uppercase letter W occupies more than one fixed-width column and the lowercase letter i occupies less than one fixed-width column.

# Width # Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmWidthC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmWidthX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmWidthS"}

Assigns an output line width to a file opened using the **Open** statement.

**Syntax**

**Width #***filenumber*, *width*

The **Width #** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid file number. |
| *width* | Required. Numeric expression in the range 0–255, inclusive, that indicates how many characters appear on a line before a new line is started. If *width* equals 0, there is no limit to the length of a line. The default value for *width* is 0. |

# Write # Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmWriteC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmWriteX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmWriteS"}

Writes data to a sequential file.

**Syntax**

**Write #***filenumber*, [*outputlist*]

The **Write #** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *filenumber* | Required. Any valid <u>file number</u>. |
| *outputlist* | Optional. One or more comma-delimited <u>numeric expressions</u> or <u>string expressions</u> to write to a file. |

**Remarks**

Data written with **Write #** is usually read from a file with **Input #**.

If you omit *outputlist* and include a comma after *filenumber*, a blank line is printed to the file. Multiple expressions can be separated with a space, a semicolon, or a comma. A space has the same effect as a semicolon.

When **Write #** is used to write data to a file, several universal assumptions are followed so the data can always be read and correctly interpreted using **Input #**, regardless of <u>locale</u>:

• Numeric data is always written using the period as the decimal separator.

• For <u>Boolean</u> data, either `#TRUE#` or `#FALSE#` is printed. The **True** and **False** <u>keywords</u> are not translated, regardless of locale.

• <u>Date</u> data is written to the file using the <u>universal date format</u>. When either the date or the time component is missing or zero, only the part provided gets written to the file.

• Nothing is written to the file if *outputlist* data is <u>Empty</u>. However, for <u>Null</u> data, `#NULL#` is written.

• If *outputlist* data is **Null** data, `#NULL#` is written to the file.

• For **Error** data, the output appears as `#ERROR errorcode#`. The **Error** keyword is not translated, regardless of locale.

Unlike the **Print #** statement, the **Write #** statement inserts commas between items and quotation marks around strings as they are written to the file. You don't have to put explicit delimiters in the list. **Write #** inserts a newline character, that is, a carriage return–linefeed (**Chr(**13**)** + **Chr(**10**)**), after it has written the final character in *outputlist* to the file.

> **Note**   You should not write strings that contain embedded quotation marks, for example, `"1,2""X"` for use with the **Input #** statement: **Input #** parses this string as two complete and separate strings.

# DDB Function Example

This example uses the **DDB** function to return the depreciation of an asset for a specified period given the initial cost (`InitCost`), the salvage value at the end of the asset's useful life (`SalvageVal`), the total life of the asset in years (`LifeTime`), and the period in years for which the depreciation is calculated (`Depr`).

```
Dim Fmt, InitCost, SalvageVal, MonthLife, LifeTime, DepYear, Depr
Const YRMOS = 12  ' Number of months in a year.
Fmt = "###,##0.00"
InitCost = InputBox("What's the initial cost of the asset?")
SalvageVal = InputBox("Enter the asset's value at end of its life.")
MonthLife = InputBox("What's the asset's useful life in months?")
Do While MonthLife < YRMOS ' Ensure period is >= 1 year.
   MsgBox "Asset life must be a year or more."
   MonthLife = InputBox("What's the asset's useful life in months?")
Loop
LifeTime = MonthLife / YRMOS  ' Convert months to years.
If LifeTime <> Int(MonthLife / YRMOS) Then
   LifeTime = Int(LifeTime + 1)     ' Round up to nearest year.
End If
DepYear = CInt(InputBox("Enter year for depreciation calculation."))
Do While DepYear < 1 Or DepYear > LifeTime
   MsgBox "You must enter at least 1 but not more than " & LifeTime
   DepYear = InputBox("Enter year for depreciation calculation.")
Loop
Depr = DDB(InitCost, SalvageVal, LifeTime, DepYear)
MsgBox "The depreciation for year " & DepYear & " is " & _
Format(Depr, Fmt) & "."
```

# FV Function Example

This example uses the **FV** function to return the future value of an investment given the percentage rate that accrues per period (APR / 12), the total number of payments (TotPmts), the payment (Payment), the current value of the investment (PVal), and a number that indicates whether the payment is made at the beginning or end of the payment period (PayType). Note that because Payment represents cash paid out, it's a negative number.

```
Dim Fmt, Payment, APR, TotPmts, PayType, PVal, FVal
Const ENDPERIOD = 0, BEGINPERIOD = 1      ' When payments are made.
Fmt = "###,###,##0.00"  ' Define money format.
Payment = InputBox("How much do you plan to save each month?")
APR = InputBox("Enter the expected interest annual percentage rate.")
If APR > 1 Then APR = APR / 100     ' Ensure proper form.
TotPmts = InputBox("For how many months do you expect to save?")
PayType = MsgBox("Do you make payments at the end of month?", vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
PVal = InputBox("How much is in this savings account now?")
FVal = FV(APR / 12, TotPmts, -Payment, -PVal, PayType)
MsgBox "Your savings will be worth " & Format(FVal, Fmt) & "."
```

# IPmt Function Example

This example uses the **IPmt** function to calculate how much of a payment is interest when all the payments are of equal value. Given are the interest percentage rate per period (`APR / 12`), the payment period for which the interest portion is desired (`Period`), the total number of payments (`TotPmts`), the present value or principal of the loan (`PVal`), the future value of the loan (`FVal`), and a number that indicates whether the payment is due at the beginning or end of the payment period (`PayType`).

```
Dim FVal, Fmt, PVal, APR, TotPmts, PayType, Period, IntPmt, TotInt, Msg
Const ENDPERIOD = 0, BEGINPERIOD = 1      ' When payments are made.
FVal = 0 ' Usually 0 for a loan.
Fmt = "###,###,##0.00"  ' Define money format.
PVal = InputBox("How much do you want to borrow?")
APR = InputBox("What is the annual percentage rate of your loan?")
If APR > 1 Then APR = APR / 100     ' Ensure proper form.
TotPmts = InputBox("How many monthly payments?")
PayType = MsgBox("Do you make payments at end of the month?", vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
For Period = 1 To TotPmts  ' Total all interest.
   IntPmt = IPmt(APR / 12, Period, TotPmts, -PVal, FVal, PayType)
   TotInt = TotInt + IntPmt
Next Period
Msg = "You'll pay a total of " & Format(TotInt, Fmt)
Msg = Msg & " in interest for this loan."
MsgBox Msg  ' Display results.
```

# IRR Function Example

In this example, the **IRR** function returns the internal rate of return for a series of 5 cash flows contained in the array `Values()`. The first array element is a negative cash flow representing business start-up costs. The remaining 4 cash flows represent positive cash flows for the subsequent 4 years. `Guess` is the estimated internal rate of return.

```
Dim Guess, Fmt, RetRate, Msg
Static Values(5) As Double ' Set up array.
Guess = .1  ' Guess starts at 10 percent.
Fmt = "#0.00"  ' Define percentage format.
Values(0) = -70000   ' Business start-up costs.
' Positive cash flows reflecting income for four successive years.
Values(1) = 22000 : Values(2) = 25000
Values(3) = 28000 : Values(4) = 31000
RetRate = IRR(Values(), Guess) * 100      ' Calculate internal rate.
Msg = "The internal rate of return for these five cash flows is "
Msg = Msg & Format(RetRate, Fmt) & " percent."
MsgBox Msg  ' Display internal return rate.
```

# MIRR Function Example

This example uses the **MIRR** function to return the modified internal rate of return for a series of cash flows contained in the array `Values()`. `LoanAPR` represents the financing interest, and `InvAPR` represents the interest rate received on reinvestment.

```
Dim LoanAPR, InvAPR, Fmt, RetRate, Msg
Static Values(5) As Double ' Set up array.
LoanAPR = .1    ' Loan rate.
InvAPR = .12    ' Reinvestment rate.
Fmt = "#0.00"  ' Define money format.
Values(0) = -70000    ' Business start-up costs.
' Positive cash flows reflecting income for four successive years.
Values(1) = 22000 : Values(2) = 25000
Values(3) = 28000 : Values(4) = 31000
RetRate = MIRR(Values(), LoanAPR, InvAPR) ' Calculate internal rate.
Msg = "The modified internal rate of return for these five cash flows is"
Msg = Msg & Format(Abs(RetRate) * 100, Fmt) & "%."
MsgBox Msg  ' Display internal return
        ' rate.
```

# NPer Function Example

This example uses the **NPer** function to return the number of periods during which payments must be made to pay off a loan whose value is contained in `PVal`. Also provided are the interest percentage rate per period (`APR / 12`), the payment (`Payment`), the future value of the loan (`FVal`), and a number that indicates whether the payment is due at the beginning or end of the payment period (`PayType`).

```
Dim FVal, PVal, APR, Payment, PayType, TotPmts
Const ENDPERIOD = 0, BEGINPERIOD = 1      ' When payments are made.
FVal = 0 ' Usually 0 for a loan.
PVal = InputBox("How much do you want to borrow?")
APR = InputBox("What is the annual percentage rate of your loan?")
If APR > 1 Then APR = APR / 100      ' Ensure proper form.
Payment = InputBox("How much do you want to pay each month?")
PayType = MsgBox("Do you make payments at the end of month?", vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
TotPmts = NPer(APR / 12, -Payment, PVal, FVal, PayType)
If Int(TotPmts) <> TotPmts Then TotPmts = Int(TotPmts) + 1
MsgBox "It will take you " & TotPmts & " months to pay off your loan."
```

# NPV Function Example

This example uses the **NPV** function to return the net present value for a series of cash flows contained in the array `Values()`. `RetRate` represents the fixed internal rate of return.

```
Dim Fmt, Guess, RetRate, NetPVal, Msg
Static Values(5) As Double ' Set up array.
Fmt = "###,##0.00"   ' Define money format.
Guess = .1  ' Guess starts at 10 percent.
RetRate = .0625   ' Set fixed internal rate.
Values(0) = -70000   ' Business start-up costs.
' Positive cash flows reflecting income for four successive years.
Values(1) = 22000 : Values(2) = 25000
Values(3) = 28000 : Values(4) = 31000
NetPVal = NPV(RetRate, Values())    ' Calculate net present value.
Msg = "The net present value of these cash flows is "
Msg = Msg & Format(NetPVal, Fmt) & "."
MsgBox Msg  ' Display net present value.
```

# Pmt Function Example

This example uses the **Pmt** function to return the monthly payment for a loan over a fixed period. Given are the interest percentage rate per period (`APR / 12`), the total number of payments (`TotPmts`), the present value or principal of the loan (`PVal`), the future value of the loan (`FVal`), and a number that indicates whether the payment is due at the beginning or end of the payment period (`PayType`).

```
Dim Fmt, FVal, PVal, APR, TotPmts, PayType, Payment
Const ENDPERIOD = 0, BEGINPERIOD = 1        ' When payments are made.
Fmt = "###,###,##0.00"  ' Define money format.
FVal = 0 ' Usually 0 for a loan.
PVal = InputBox("How much do you want to borrow?")
APR = InputBox("What is the annual percentage rate of your loan?")
If APR > 1 Then APR = APR / 100     ' Ensure proper form.
TotPmts = InputBox("How many monthly payments will you make?")
PayType = MsgBox("Do you make payments at the end of month?", vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
Payment = Pmt(APR / 12, TotPmts, -PVal, FVal, PayType)
MsgBox "Your payment will be " & Format(Payment, Fmt) & " per month."
```

# PPmt Function Example

This example uses the **PPmt** function to calculate how much of a payment for a specific period is principal when all the payments are of equal value. Given are the interest percentage rate per period (`APR / 12`), the payment period for which the principal portion is desired (`Period`), the total number of payments (`TotPmts`), the present value or principal of the loan (`PVal`), the future value of the loan (`FVal`), and a number that indicates whether the payment is due at the beginning or end of the payment period (`PayType`).

```
Dim NL, TB, Fmt, FVal, PVal, APR, TotPmts, PayType, Payment, Msg, MakeChart,
Period, P, I
Const ENDPERIOD = 0, BEGINPERIOD = 1      ' When payments are made.
NL = Chr(13) & Chr(10)  ' Define newline.
TB = Chr(9) ' Define tab.
Fmt = "###,###,##0.00"  ' Define money format.
FVal = 0 ' Usually 0 for a loan.
PVal = InputBox("How much do you want to borrow?")
APR = InputBox("What is the annual percentage rate of your loan?")
If APR > 1 Then APR = APR / 100     ' Ensure proper form.
TotPmts = InputBox("How many monthly payments do you have to make?")
PayType = MsgBox("Do you make payments at the end of month?", vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
Payment = Abs(-Pmt(APR / 12, TotPmts, PVal, FVal, PayType))
Msg = "Your monthly payment is " & Format(Payment, Fmt) & ". "
Msg = Msg & "Would you like a breakdown of your principal and "
Msg = Msg & "interest per period?"
MakeChart = MsgBox(Msg, vbYesNo)     ' See if chart is desired.
If MakeChart <> vbNo Then
   If TotPmts > 12 Then MsgBox "Only first year will be shown."
   Msg = "Month  Payment  Principal  Interest" & NL
   For Period = 1 To TotPmts
      If Period > 12 Then Exit For  ' Show only first 12.
      P = PPmt(APR / 12, Period, TotPmts, -PVal, FVal, PayType)
      P = (Int((P + .005) * 100) / 100)    ' Round principal.
      I = Payment - P
      I = (Int((I + .005) * 100) / 100)    ' Round interest.
      Msg = Msg & Period & TB & Format(Payment, Fmt)
      Msg = Msg & TB & Format(P, Fmt) & TB & Format(I, Fmt) & NL
   Next Period
   MsgBox Msg  ' Display amortization table.
End If
```

# PV Function Example

In this example, the **PV** function returns the present value of an $1,000,000 annuity that will provide $50,000 a year for the next 20 years. Provided are the expected annual percentage rate (APR), the total number of payments (TotPmts), the amount of each payment (YrIncome), the total future value of the investment (FVal), and a number that indicates whether each payment is made at the beginning or end of the payment period (PayType). Note that YrIncome is a negative number because it represents cash paid out from the annuity each year.

```
Dim Fmt, APR, TotPmts, YrIncome, FVal, PayType, PVal
Const ENDPERIOD = 0, BEGINPERIOD = 1      ' When payments are made.
Fmt = "###,##0.00"   ' Define money format.
APR = .0825 ' Annual percentage rate.
TotPmts = 20   ' Total number of payments.
YrIncome = 50000  ' Yearly income.
FVal = 1000000 ' Future value.
PayType = BEGINPERIOD   ' Payment at beginning of month.
PVal = PV(APR, TotPmts, -YrIncome, FVal, PayType)
MsgBox "The present value is " & Format(PVal, Fmt) & "."
```

# Rate Function Example

This example uses the **Rate** function to calculate the interest rate of a loan given the total number of payments (`TotPmts`), the amount of the loan payment (`Payment`), the present value or principal of the loan (`PVal`), the future value of the loan (`FVal`), a number that indicates whether the payment is due at the beginning or end of the payment period (`PayType`), and an approximation of the expected interest rate (`Guess`).

```
Dim Fmt, FVal, Guess, PVal, Payment, TotPmts, PayType, APR
Const ENDPERIOD = 0, BEGINPERIOD = 1       ' When payments are made.
Fmt = "##0.00" ' Define percentage format.
FVal = 0 ' Usually 0 for a loan.
Guess = .1  ' Guess of 10 percent.
PVal = InputBox("How much did you borrow?")
Payment = InputBox("What's your monthly payment?")
TotPmts = InputBox("How many monthly payments do you have to make?")
PayType = MsgBox("Do you make payments at the end of the month?", _
vbYesNo)
If PayType = vbNo Then PayType = BEGINPERIOD Else PayType = ENDPERIOD
APR = (Rate(TotPmts, -Payment, PVal, FVal, PayType, Guess) * 12) * 100
MsgBox "Your interest rate is " & Format(CInt(APR), Fmt) & " percent."
```

# SLN Function Example

This example uses the **SLN** function to return the straight-line depreciation of an asset for a single period given the asset's initial cost (`InitCost`), the salvage value at the end of the asset's useful life (`SalvageVal`), and the total life of the asset in years (`LifeTime`).

```
Dim Fmt, InitCost, SalvageVal, MonthLife, LifeTime, PDepr
Const YEARMONTHS = 12   ' Number of months in a year.
Fmt = "###,##0.00"   ' Define money format.
InitCost = InputBox("What's the initial cost of the asset?")
SalvageVal = InputBox("What's the asset's value at the end of its useful
life?")
MonthLife = InputBox("What's the asset's useful life in months?")
Do While MonthLife < YEARMONTHS     ' Ensure period is >= 1 year.
   MsgBox "Asset life must be a year or more."
   MonthLife = InputBox("What's the asset's useful life in months?")
Loop
LifeTime = MonthLife / YEARMONTHS   ' Convert months to years.
If LifeTime <> Int(MonthLife / YEARMONTHS) Then
   LifeTime = Int(LifeTime + 1)     ' Round up to nearest year.
End If
PDepr = SLN(InitCost, SalvageVal, LifeTime)
MsgBox "The depreciation is " & Format(PDepr, Fmt) & " per year."
```

# SYD Function Example

This example uses the **SYD** function to return the depreciation of an asset for a specified period given the asset's initial cost (`InitCost`), the salvage value at the end of the asset's useful life (`SalvageVal`), and the total life of the asset in years (`LifeTime`). The period in years for which the depreciation is calculated is `PDepr`.

```
Dim Fmt, InitCost, SalvageVal, MonthLife, LifeTime, DepYear, PDepr
Const YEARMONTHS = 12    ' Number of months in a year.
Fmt = "###,##0.00"    ' Define money format.
InitCost = InputBox("What's the initial cost of the asset?")
SalvageVal = InputBox("What's the asset's value at the end of its life?")
MonthLife = InputBox("What's the asset's useful life in months?")
Do While MonthLife < YEARMONTHS     ' Ensure period is >= 1 year.
   MsgBox "Asset life must be a year or more."
   MonthLife = InputBox("What's the asset's useful life in months?")
Loop
LifeTime = MonthLife / YEARMONTHS    ' Convert months to years.
If LifeTime <> Int(MonthLife / YEARMONTHS) Then
   LifeTime = Int(LifeTime + 1)     ' Round up to nearest year.
End If
DepYear = CInt(InputBox("For which year do you want depreciation?"))
Do While DepYear < 1 Or DepYear > LifeTime
   MsgBox "You must enter at least 1 but not more than " & LifeTime
   DepYear = CInt(InputBox("For what year do you want depreciation?"))
Loop
PDepr = SYD(InitCost, SalvageVal, LifeTime, DepYear)
MsgBox "The depreciation for year " & DepYear & " is " & Format(PDepr, Fmt) &
"."
```

# DDB Function

Returns a Double specifying the depreciation of an asset for a specific time period using the double-declining balance method or some other method you specify.

**Syntax**

**DDB(*cost*, *salvage*, *life*, *period*[, *factor*])**

The **DDB** function has these named arguments:

| Part | Description |
|------|-------------|
| *cost* | Required. **Double** specifying initial cost of the asset. |
| *salvage* | Required. **Double** specifying value of the asset at the end of its useful life. |
| *life* | Required. **Double** specifying length of useful life of the asset. |
| *period* | Required. **Double** specifying period for which asset depreciation is calculated. |
| *factor* | Optional. Variant specifying rate at which the balance declines. If omitted, 2 (double-declining method) is assumed. |

**Remarks**

The double-declining balance method computes depreciation at an accelerated rate. Depreciation is highest in the first period and decreases in successive periods.

The **life** and **period** arguments must be expressed in the same units. For example, if **life** is given in months, **period** must also be given in months. All arguments must be positive numbers.

The **DDB** function uses the following formula to calculate depreciation for a given period:

Depreciation / **period** = ((**cost** − **salvage**) * **factor**) / **life**

# FV Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFVC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctFVX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctFVS"}

Returns a Double specifying the future value of an annuity based on periodic, fixed
payments and a fixed interest rate.

**Syntax**

**FV(*rate*, *nper*, *pmt*[, *pv*[, *type*]])**

The **FV** function has these named arguments:

| Part | Description |
| --- | --- |
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *nper* | Required. Integer specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pmt* | Required. **Double** specifying payment to be made each period. Payments usually contain principal and interest that doesn't change over the life of the annuity. |
| *pv* | Optional. Variant specifying present value (or lump sum) of a series of future payments. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be
a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

The *rate* and *nper* arguments must be calculated using payment periods expressed in the
same units. For example, if *rate* is calculated using months, *nper* must also be calculated
using months.

For all arguments, cash paid out (such as deposits to savings) is represented by negative
numbers; cash received (such as dividend checks) is represented by positive numbers.

# IPmt Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIPmtC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctIPmtX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctIPmtS"}

Returns a Double specifying the interest payment for a given period of an annuity based on periodic, fixed payments and a fixed interest rate.

**Syntax**

**IPmt(*rate*, *per*, *nper*, *pv*[, *fv*[, *type*]])**

The **IPmt** function has these named arguments:

| Part | Description |
|------|-------------|
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *per* | Required. **Double** specifying payment period in the range 1 through *nper*. |
| *nper* | Required. **Double** specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pv* | Required. **Double** specifying present value, or value today, of a series of future payments or receipts. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. |
| *fv* | Optional. Variant specifying future value or cash balance you want after you've made the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

The *rate* and *nper* arguments must be calculated using payment periods expressed in the same units. For example, if *rate* is calculated using months, *nper* must also be calculated using months.

For all arguments, cash paid out (such as deposits to savings) is represented by negative numbers; cash received (such as dividend checks) is represented by positive numbers.

# IRR Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIRRC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIRRX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIRRS"}

Returns a Double specifying the internal rate of return for a series of periodic cash flows (payments and receipts).

**Syntax**

**IRR(*values*()**[, *guess*]**)**

The **IRR** function has these named arguments:

| Part | Description |
|------|-------------|
| ***values*()** | Required. Array of **Double** specifying cash flow values. The array must contain at least one negative value (a payment) and one positive value (a receipt). |
| ***guess*** | Optional. Variant specifying value you estimate will be returned by **IRR**. If omitted, ***guess*** is 0.1 (10 percent). |

**Remarks**

The internal rate of return is the interest rate received for an investment consisting of payments and receipts that occur at regular intervals.

The **IRR** function uses the order of values within the array to interpret the order of payments and receipts. Be sure to enter your payment and receipt values in the correct sequence. The cash flow for each period doesn't have to be fixed, as it is for an annuity.

**IRR** is calculated by iteration. Starting with the value of ***guess***, **IRR** cycles through the calculation until the result is accurate to within 0.00001 percent. If **IRR** can't find a result after 20 tries, it fails.

# MIRR Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMIRRC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctMIRRX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctMIRRS"}

Returns a Double specifying the modified internal rate of return for a series of periodic cash flows (payments and receipts).

**Syntax**

**MIRR(*values*(), *finance_rate*, *reinvest_rate*)**

The **MIRR** function has these named arguments:

| Part | Description |
|------|-------------|
| *values*() | Required. Array of **Double** specifying cash flow values. The array must contain at least one negative value (a payment) and one positive value (a receipt). |
| *finance_rate* | Required. **Double** specifying interest rate paid as the cost of financing. |
| *reinvest_rate* | Required. **Double** specifying interest rate received on gains from cash reinvestment. |

**Remarks**

The modified internal rate of return is the internal rate of return when payments and receipts are financed at different rates. The **MIRR** function takes into account both the cost of the investment (*finance_rate*) and the interest rate received on reinvestment of cash (*reinvest_rate*).

The *finance_rate* and *reinvest_rate* arguments are percentages expressed as decimal values. For example, 12 percent is expressed as 0.12.

The **MIRR** function uses the order of values within the array to interpret the order of payments and receipts. Be sure to enter your payment and receipt values in the correct sequence.

# NPer Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctNPerC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctNPerX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctNPerS"}

Returns a Double specifying the number of periods for an annuity based on periodic, fixed
payments and a fixed interest rate.

**Syntax**

**NPer(*rate*, *pmt*, *pv*[, *fv*[, *type*]])**

The **NPer** function has these named arguments:

| Part | Description |
| --- | --- |
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *pmt* | Required. **Double** specifying payment to be made each period. Payments usually contain principal and interest that doesn't change over the life of the annuity. |
| *pv* | Required. **Double** specifying present value, or value today, of a series of future payments or receipts. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. |
| *fv* | Optional. Variant specifying future value or cash balance you want after you've made the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be
a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

For all arguments, cash paid out (such as deposits to savings) is represented by negative
numbers; cash received (such as dividend checks) is represented by positive numbers.

# NPV Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctNPVC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctNPVX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctNPVS"}

Returns a <u>Double</u> specifying the net present value of an investment based on a series of periodic cash flows (payments and receipts) and a discount rate.

**Syntax**

**NPV(*rate*, *values*())**

The **NPV** function has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| *rate* | Required. **Double** specifying discount rate over the length of the period, expressed as a decimal. |
| *values*() | Required. <u>Array</u> of **Double** specifying cash flow values. The array must contain at least one negative value (a payment) and one positive value (a receipt). |

**Remarks**

The net present value of an investment is the current value of a future series of payments and receipts.

The **NPV** function uses the order of values within the array to interpret the order of payments and receipts. Be sure to enter your payment and receipt values in the correct sequence.

The **NPV** investment begins one period before the date of the first cash flow value and ends with the last cash flow value in the array.

The net present value calculation is based on future cash flows. If your first cash flow occurs at the beginning of the first period, the first value must be added to the value returned by **NPV** and must not be included in the cash flow values of **values( )**.

The **NPV** function is similar to the **PV** function (present value) except that the **PV** function allows cash flows to begin either at the end or the beginning of a period. Unlike the variable **NPV** cash flow values, **PV** cash flows must be fixed throughout the investment.

# Pmt Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctPmtC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vafctPmtX":1}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctPmtS"}

Returns a Double specifying the payment for an annuity based on periodic, fixed payments and a fixed interest rate.

**Syntax**

**Pmt(*rate*, *nper*, *pv*[, *fv*[, *type*]])**

The **Pmt** function has these named arguments:

| Part | Description |
|------|-------------|
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *nper* | Required. Integer specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pv* | Required. **Double** specifying present value (or lump sum) that a series of payments to be paid in the future is worth now. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. |
| *fv* | Optional. Variant specifying future value or cash balance you want after you've made the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

The *rate* and *nper* arguments must be calculated using payment periods expressed in the same units. For example, if *rate* is calculated using months, *nper* must also be calculated using months.

For all arguments, cash paid out (such as deposits to savings) is represented by negative numbers; cash received (such as dividend checks) is represented by positive numbers.

# PPmt Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctPPmtC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctPPmtX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctPPmtS"}

Returns a <u>Double</u> specifying the principal payment for a given period of an annuity based on periodic, fixed payments and a fixed interest rate.

**Syntax**

**PPmt(***rate***,** *per***,** *nper***,** *pv*[**,** *fv*[**,** *type*]]**)**

The **PPmt** function has these <u>named arguments</u>:

| Part | Description |
| --- | --- |
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *per* | Required. <u>Integer</u> specifying payment period in the range 1 through **nper**. |
| *nper* | Required. **Integer** specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pv* | Required. **Double** specifying present value, or value today, of a series of future payments or receipts. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. |
| *fv* | Optional. <u>Variant</u> specifying future value or cash balance you want after you've made the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

The *rate* and *nper* <u>arguments</u> must be calculated using payment periods expressed in the same units. For example, if *rate* is calculated using months, *nper* must also be calculated using months.

For all arguments, cash paid out (such as deposits to savings) is represented by negative numbers; cash received (such as dividend checks) is represented by positive numbers.

# PV Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctPVC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctPVX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctPVS"}

Returns a Double specifying the present value of an annuity based on periodic, fixed payments to be paid in the future and a fixed interest rate.

**Syntax**

**PV(*rate*, *nper*, *pmt*[, *fv*[, *type*]])**

The **PV** function has these named arguments:

| Part | Description |
|------|-------------|
| *rate* | Required. **Double** specifying interest rate per period. For example, if you get a car loan at an annual percentage rate (APR) of 10 percent and make monthly payments, the rate per period is 0.1/12, or 0.0083. |
| *nper* | Required. Integer specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pmt* | Required. **Double** specifying payment to be made each period. Payments usually contain principal and interest that doesn't change over the life of the annuity. |
| *fv* | Optional. Variant specifying future value or cash balance you want after you've made the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

The *rate* and *nper* arguments must be calculated using payment periods expressed in the same units. For example, if *rate* is calculated using months, *nper* must also be calculated using months.

For all arguments, cash paid out (such as deposits to savings) is represented by negative numbers; cash received (such as dividend checks) is represented by positive numbers.

# Rate Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctRateC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctRateX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctRateS"}

Returns a Double specifying the interest rate per period for an annuity.

**Syntax**

**Rate(*nper*, *pmt*, *pv*[, *fv*[, *type*[, *guess*]]])**

The **Rate** function has these named arguments:

| Part | Description |
|------|-------------|
| *nper* | Required. **Double** specifying total number of payment periods in the annuity. For example, if you make monthly payments on a four-year car loan, your loan has a total of 4 * 12 (or 48) payment periods. |
| *pmt* | Required. **Double** specifying payment to be made each period. Payments usually contain principal and interest that doesn't change over the life of the annuity. |
| *pv* | Required. **Double** specifying present value, or value today, of a series of future payments or receipts. For example, when you borrow money to buy a car, the loan amount is the present value to the lender of the monthly car payments you will make. |
| *fv* | Optional. Variant specifying future value or cash balance you want after you make the final payment. For example, the future value of a loan is $0 because that's its value after the final payment. However, if you want to save $50,000 over 18 years for your child's education, then $50,000 is the future value. If omitted, 0 is assumed. |
| *type* | Optional. **Variant** specifying a number indicating when payments are due. Use 0 if payments are due at the end of the payment period, or use 1 if payments are due at the beginning of the period. If omitted, 0 is assumed. |
| *guess* | Optional. **Variant** specifying value you estimate will be returned by **Rate**. If omitted, *guess* is 0.1 (10 percent). |

**Remarks**

An annuity is a series of fixed cash payments made over a period of time. An annuity can be a loan (such as a home mortgage) or an investment (such as a monthly savings plan).

For all arguments, cash paid out (such as deposits to savings) is represented by negative numbers; cash received (such as dividend checks) is represented by positive numbers.

**Rate** is calculated by iteration. Starting with the value of *guess*, **Rate** cycles through the calculation until the result is accurate to within 0.00001 percent. If **Rate** can't find a result after 20 tries, it fails. If your guess is 10 percent and **Rate** fails, try a different value for *guess*.

# SLN Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSLNC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSLNX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSLNS"}

Returns a <u>Double</u> specifying the straight-line depreciation of an asset for a single period.

**Syntax**

**SLN(*cost*, *salvage*, *life*)**

The **SLN** function has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| *cost* | Required. **Double** specifying initial cost of the asset. |
| *salvage* | Required. **Double** specifying value of the asset at the end of its useful life. |
| *life* | Required. **Double** specifying length of the useful life of the asset. |

**Remarks**

The depreciation period must be expressed in the same unit as the *life* <u>argument</u>. All arguments must be positive numbers.

# SYD Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSYDC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctSYDX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctSYDS"}

Returns a <u>Double</u> specifying the sum-of-years' digits depreciation of an asset for a specified period.

**Syntax**

**SYD(*cost*, *salvage*, *life*, *period*)**

The **SYD** function has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| *cost* | Required. **Double** specifying initial cost of the asset. |
| *salvage* | Required. **Double** specifying value of the asset at the end of its useful life. |
| *life* | Required. **Double** specifying length of the useful life of the asset. |
| *period* | Required. **Double** specifying period for which asset depreciation is calculated. |

**Remarks**

The *life* and *period* <u>arguments</u> must be expressed in the same units. For example, if *life* is given in months, *period* must also be given in months. All arguments must be positive numbers.

# IsArray Function Example

This example uses the **IsArray** function to check if a variable is an array.

```
Dim MyArray(1 To 5) As Integer, YourArray, MyCheck    ' Declare array
variables.
YourArray = Array(1, 2, 3) ' Use Array function.
MyCheck = IsArray(MyArray) ' Returns True.
MyCheck = IsArray(YourArray)  ' Returns True.
```

# IsDate Function Example

This example uses the **IsDate** function to determine if an expression can be converted to a date.

```
Dim MyDate, YourDate, NoDate, MyCheck
MyDate = "February 12, 1969": YourDate = #2/12/69#: NoDate = "Hello"
MyCheck = IsDate(MyDate)    ' Returns True.
MyCheck = IsDate(YourDate) ' Returns True.
MyCheck = IsDate(NoDate)    ' Returns False.
```

# IsEmpty Function Example

This example uses the **IsEmpty** function to determine whether a variable has been initialized.

```
Dim MyVar, MyCheck
MyCheck = IsEmpty(MyVar)    ' Returns True.

MyVar = Null   ' Assign Null.
MyCheck = IsEmpty(MyVar)    ' Returns False.

MyVar = Empty  ' Assign Empty.
MyCheck = IsEmpty(MyVar)    ' Returns True.
```

# IsError Function Example

This example uses the **IsError** function to check if a numeric expression is an error value. The **CVErr** function is used to return an **Error Variant** from a user-defined function. Assume `UserFunction` is a user-defined function procedure that returns an error value; for example, a return value assigned with the statement `UserFunction = CVErr(32767)`, where 32767 is a user-defined number.

```
Dim ReturnVal, MyCheck
ReturnVal = UserFunction()
MyCheck = IsError(ReturnVal)   ' Returns True.
```

# IsMissing Function Example

This example uses the **IsMissing** function to check if an optional argument has been passed to a user-defined procedure. Note that **Optional** arguments can now have default values and types other than **Variant**.

```
Dim ReturnValue
' The following statements call the user-defined function procedure.
ReturnValue = ReturnTwice()   ' Returns Null.
ReturnValue = ReturnTwice(2)  ' Returns 4.


' Function procedure definition.
Function ReturnTwice(Optional A)
   If IsMissing(A) Then
      ' If argument is missing, return a Null.
      ReturnTwice = Null
   Else
      ' If argument is present, return twice the value.
      ReturnTwice = A * 2
   End If
End Function
```

# IsNull Function Example

This example uses the **IsNull** function to determine if a variable contains a **Null**.

```
Dim MyVar, MyCheck
MyCheck = IsNull(MyVar) ' Returns False.


MyVar = ""
MyCheck = IsNull(MyVar) ' Returns False.


MyVar = Null
MyCheck = IsNull(MyVar) ' Returns True.
```

# IsNumeric Function Example

This example uses the **IsNumeric** function to determine if a variable can be evaluated as a number.

```
Dim MyVar, MyCheck

MyVar = "53"    ' Assign value.
MyCheck = IsNumeric(MyVar) ' Returns True.


MyVar = "459.95"  ' Assign value.
MyCheck = IsNumeric(MyVar) ' Returns True.


MyVar = "45 Help" ' Assign value.
MyCheck = IsNumeric(MyVar) ' Returns False.
```

# IsObject Function Example

This example uses the **IsObject** function to determine if an identifier represents an object variable. `MyObject` and `YourObject` are object variables of the same type. They are generic names used for illustration purposes only.

```
Dim MyInt As Integer, YourObject, MyCheck ' Declare variables.
Dim MyObject As Object
Set YourObject = MyObject  ' Assign an object reference.
MyCheck = IsObject(YourObject)      ' Returns True.
MyCheck = IsObject(MyInt)  ' Returns False.
```

# TypeName Function Example

This example uses the **TypeName** function to return information about a variable.

```
' Declare variables.
Dim NullVar, MyType, StrVar As String, IntVar As Integer, CurVar As Currency
Dim ArrayVar (1 To 5) As Integer
NullVar = Null ' Assign Null value.
MyType = TypeName(StrVar)   ' Returns "String".
MyType = TypeName(IntVar)   ' Returns "Integer".
MyType = TypeName(CurVar)   ' Returns "Currency".
MyType = TypeName(NullVar) ' Returns "Null".
MyType = TypeName(ArrayVar)    ' Returns "Integer()".
```

# VarType Function Example

This example uses the **VarType** function to determine the subtype of a variable.

```
Dim IntVar, StrVar, DateVar, MyCheck
' Initialize variables.
IntVar = 459: StrVar = "Hello World": DateVar = #2/12/69#
MyCheck = VarType(IntVar)   ' Returns 2.
MyCheck = VarType(DateVar) ' Returns 7.
MyCheck = VarType(StrVar)   ' Returns 8.
```

# IsArray Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsArrayC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIsArrayX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsArrayS"}

Returns a **Boolean** value indicating whether a <u>variable</u> is an <u>array</u>.

**Syntax**

**IsArray(***varname***)**

The required *varname* <u>argument</u> is an <u>identifier</u> specifying a variable.

**Remarks**

**IsArray** returns **True** if the variable is an array; otherwise, it returns **False**. **IsArray** is
especially useful with <u>variants</u> containing arrays.

# IsDate Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsDateC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIsDateX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsDateS"}

Returns a **Boolean** value indicating whether an <u>expression</u> can be converted to a date.

**Syntax**

**IsDate(**_expression_**)**

The required _expression_ <u>argument</u> is a <u>Variant</u> containing a <u>date expression</u> or <u>string expression</u> recognizable as a date or time.

**Remarks**

**IsDate** returns **True** if the expression is a date or is recognizable as a valid date; otherwise, it returns **False**. In Microsoft Windows, the range of valid dates is January 1, 100 A.D. through December 31, 9999 A.D.; the ranges vary among operating systems.

# IsEmpty Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsEmptyC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctIsEmptyX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsEmptyS"}

Returns a **Boolean** value indicating whether a <u>variable</u> has been initialized.

**Syntax**

**IsEmpty(**_expression_**)**

The required _expression_ <u>argument</u> is a <u>Variant</u> containing a <u>numeric</u> or <u>string expression</u>. However, because **IsEmpty** is used to determine if individual variables are initialized, the _expression_ argument is most often a single variable name.

**Remarks**

**IsEmpty** returns **True** if the variable is uninitialized, or is explicitly set to <u>Empty</u>; otherwise, it returns **False**. **False** is always returned if _expression_ contains more than one variable. **IsEmpty** only returns meaningful information for <u>variants</u>.

# IsError Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsErrorC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctIsErrorX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsErrorS"}

Returns a **Boolean** value indicating whether an <u>expression</u> is an error value.

**Syntax**

**IsError(**_expression_**)**

The required _expression_ <u>argument</u> can be any valid expression.

**Remarks**

Error values are created by converting real numbers to error values using the **CVErr** function. The **IsError** function is used to determine if a <u>numeric expression</u> represents an error. **IsError** returns **True** if the _expression_ argument indicates an error; otherwise, it returns **False**.

# IsMissing Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsMissingC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctIsMissingX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsMissingS"}

Returns a **Boolean** value indicating whether an optional **Variant** <u>argument</u> has been passed to a <u>procedure</u>.

**Syntax**

**IsMissing(***argname***)**

The required *argname* argument contains the name of an optional **Variant** procedure argument.

**Remarks**

Use the **IsMissing** function to detect whether or not optional **Variant** arguments have been provided in calling a procedure. **IsMissing** returns **True** if no value has been passed for the specified argument; otherwise, it returns **False**. If **IsMissing** returns **True** for an argument, use of the missing argument in other code may cause a user-defined error. If **IsMissing** is used on a **ParamArray** argument, it always returns **False**. To detect an empty **ParamArray**, test to see if the <u>array's</u> upper bound is less than its lower bound.

> **Note**   **IsMissing** does not work on simple data types (such as **Integer** or **Double**) because, unlike **Variants**, they don't have a provision for a "missing" flag bit. Because of this, the syntax for typed optional arguments allows you to specify a default value. If the argument is omitted when the procedure is called, then the argument will have this default value, as in the example below:

```
Sub MySub(Optional MyVar As String = "specialvalue")
    If MyVar = "specialvalue" Then
       ' MyVar was omitted.
    Else
    ...
End Sub
```

In many cases you can omit the `If MyVar` test entirely by making the default value equal to the value you want `MyVar` to contain if the user omits it from the function call. This makes your code more concise and efficient.

# IsNull Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsNullC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIsNullX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsNullS"}

Returns a **Boolean** value that indicates whether an <u>expression</u> contains no valid data (<u>Null</u>).

**Syntax**

**IsNull(***expression***)**

The required *expression* <u>argument</u> is a <u>Variant</u> containing a <u>numeric expression</u> or <u>string expression</u>.

**Remarks**

**IsNull** returns **True** if *expression* is **Null**; otherwise, **IsNull** returns **False**. If *expression* consists of more than one <u>variable</u>, **Null** in any constituent variable causes **True** to be returned for the entire expression.

The **Null** value indicates that the **Variant** contains no valid data. **Null** is not the same as <u>Empty</u>, which indicates that a variable has not yet been initialized. It is also not the same as a zero-length string (""), which is sometimes referred to as a null string.

> **Important**   Use the **IsNull** function to determine whether an expression contains a **Null** value. Expressions that you might expect to evaluate to **True** under some circumstances, such as `If Var = Null` and `If Var <> Null`, are always **False**. This is because any expression containing a **Null** is itself **Null** and, therefore, **False**.

# IsNumeric Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsNumericC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIsNumericX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsNumericS"}

Returns a **Boolean** value indicating whether an <u>expression</u> can be evaluated as a number.

**Syntax**

**IsNumeric(**_expression_**)**

The required _expression_ <u>argument</u> is a <u>Variant</u> containing a <u>numeric expression</u> or <u>string expression</u>.

**Remarks**

**IsNumeric** returns **True** if the entire _expression_ is recognized as a number; otherwise, it returns **False**.

**IsNumeric** returns **False** if _expression_ is a <u>date expression</u>.

# IsObject Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIsObjectC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIsObjectX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIsObjectS"}

Returns a **Boolean** value indicating whether an <u>identifier</u> represents an object <u>variable</u>.

**Syntax**

**IsObject(**_identifier_**)**

The required _identifier_ <u>argument</u> is a variable name.

**Remarks**

**IsObject** is useful only in determining whether a <u>Variant</u> is of **VarType vbObject**. This could occur if the **Variant** actually references (or once referenced) an object, or if it contains **Nothing.**

**IsObject** returns **True** if _identifier_ is a variable declared with <u>Object</u> type or any valid <u>class</u> type, or if _identifier_ is a **Variant** of **VarType vbObject**, or a user-defined object; otherwise, it returns **False**. **IsObject** returns **True** even if the variable has been set to **Nothing**.

Use error trapping to be sure that an object reference is valid.

# TypeName Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTypeNameC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctTypeNameX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctTypeNameS"}

Returns a **String** that provides information about a <u>variable</u>.

**Syntax**

**TypeName(**_varname_**)**

The required _varname_ <u>argument</u> is a <u>Variant</u> containing any variable except a variable of a <u>user-defined type</u>.

**Remarks**

The string returned by **TypeName** can be any one of the following:

| String returned | Variable |
|---|---|
| <u>object type</u> | An object whose type is _objecttype_ |
| <u>Byte</u> | Byte value |
| <u>Integer</u> | Integer |
| <u>Long</u> | Long integer |
| <u>Single</u> | Single-precision floating-point number |
| <u>Double</u> | Double-precision floating-point number |
| <u>Currency</u> | Currency value |
| <u>Decimal</u> | Decimal value |
| <u>Date</u> | Date value |
| <u>String</u> | String |
| <u>Boolean</u> | Boolean value |
| **Error** | An error value |
| <u>Empty</u> | Uninitialized |
| <u>Null</u> | No valid data |
| <u>Object</u> | An object |
| Unknown | An object whose type is unknown |
| **Nothing** | Object variable that doesn't refer to an object |

If _varname_ is an <u>array</u>, the returned string can be any one of the possible returned strings (or **Variant**) with empty parentheses appended. For example, if _varname_ is an array of integers, **TypeName** returns "`Integer()`".

# VarType Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctVarTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctVarTypeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctVarTypeS"}

Returns an **Integer** indicating the subtype of a <u>variable</u>.

**Syntax**

**VarType(**_varname_**)**

The required _varname_ <u>argument</u> is a <u>Variant</u> containing any variable except a variable of a <u>user-defined type</u>.

**Return Values**

| Constant | Value | Description |
| --- | --- | --- |
| **vbEmpty** | 0 | <u>Empty</u> (uninitialized) |
| **vbNull** | 1 | <u>Null</u> (no valid data) |
| **vbInteger** | 2 | Integer |
| **vbLong** | 3 | Long integer |
| **vbSingle** | 4 | Single-precision floating-point number |
| **vbDouble** | 5 | Double-precision floating-point number |
| **vbCurrency** | 6 | Currency value |
| **vbDate** | 7 | Date value |
| **vbString** | 8 | String |
| **vbObject** | 9 | Object |
| **vbError** | 10 | Error value |
| **vbBoolean** | 11 | Boolean value |
| **vbVariant** | 12 | **Variant** (used only with <u>arrays</u> of variants) |
| **vbDataObject** | 13 | A data access object |
| **vbDecimal** | 14 | Decimal value |
| **vbByte** | 17 | Byte value |
| **vbUserDefinedType** | 36 | Variants that contain user-defined types |
| **vbArray** | 8192 | Array |

> **Note**   These <u>constants</u> are specified by Visual Basic for Applications. The names can be used anywhere in your code in place of the actual values.

**Remarks**

The **VarType** function never returns the value for **vbArray** by itself. It is always added to some other value to indicate an array of a particular type. The constant **vbVariant** is only returned in conjunction with **vbArray** to indicate that the argument to the **VarType** function is an array of type **Variant**. For example, the value returned for an array of integers is calculated as **vbInteger** + **vbArray**, or 8194. If an object has a default <u>property</u>, **VarType (**_object_**)** returns the type of the object's default property.

# Empty

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vakeyEmptyC"}

The **Empty** <u>keyword</u> is used as a <u>Variant</u> subtype. It indicates an uninitialized <u>variable</u> value.

# False

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vakeyFalseC"}

The **False** <u>keyword</u> has a value equal to 0.

# Me

The **Me** keyword behaves like an implicitly declared variable. It is automatically available to every procedure in a class module. When a class can have more than one instance, **Me** provides a way to refer to the specific instance of the class where the code is executing. Using **Me** is particularly useful for passing information about the currently executing instance of a class to a procedure in another module. For example, suppose you have the following procedure in a module:

```
Sub ChangeFormColor(FormName As Form)
    FormName.BackColor = RGB(Rnd * 256, Rnd * 256, Rnd * 256)
End Sub
```

You can call this procedure and pass the current instance of the Form class as an argument using the following statement:

```
ChangeFormColor Me
```

# Nothing

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vakeyNothingC"}

The **Nothing** keyword is used to disassociate an object variable from an actual object. Use the **Set** statement to assign **Nothing** to an object variable. For example:

```
Set MyObject = Nothing
```

Several object variables can refer to the same actual object. When **Nothing** is assigned to an object variable, that variable no longer refers to an actual object. When several object variables refer to the same object, memory and system resources associated with the object to which the variables refer are released only after all of them have been set to **Nothing**, either explicitly using **Set**, or implicitly after the last object variable set to **Nothing** goes out of scope.

# Null

The <u>Null</u> <u>keyword</u> is used as a <u>Variant</u> subtype. It indicates that a <u>variable</u> contains no valid data.

# True

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vakeyTrueC"}

The **True** <u>keyword</u> has a value equal to -1.

# MacScript Function Example

This example uses the **MacScript** function to open the **Choose File** dialog box (the Macintosh standard-file dialog). The full path of the file chosen by the user is returned. If appropriate, the path specification is preceded by the type of the file.

```
ThePath$ = Macscript("ChooseFile")
```

# MacID Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMacIDC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctMacIDX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctMacIDS"}

Used on the Macintosh to convert a 4-character <u>constant</u> to a value that may be used by **Dir**, **Kill**, **Shell**, and **AppActivate**.

**Syntax**

**MacID(**constant**)**

The required *constant* argument consists of 4 characters used to specify a resource type, file type, application signature, or Apple Event, for example, TEXT, OBIN, "XLS5" for Excel   files ("XLS8"   for Excel 97), Microsoft Word uses "W6BN" ("W8BN" for Word 97), and so on.

**Remarks**

**MacID** is used with **Dir** and **Kill** to specify a Macintosh file type. Since the Macintosh does not support **\*** and **?** as wildcards, you can use a four-character constant instead to identify groups of files. For example, the following statement returns TEXT type files from the current folder:

```
Dir("SomePath", MacID("TEXT"))
```

**MacID** is used with **Shell** and **AppActivate** to specify an application using the application's unique signature.

# MacScript Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMacScriptC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctMacScriptX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctMacScriptS"}

Executes an AppleScript script and returns a value returned by the script, if any.

**Syntax**

**MacScript** *script*

The *script* argument is a <u>String expression</u>. The **String** expression either can be a series of AppleScript commands or can specify the name of an AppleScript script or a script file.

**Remarks**

Multiline scripts can be created by embedding carriage-return characters (**Chr(**13**)**).

# Abs Function Example

This example uses the **Abs** function to compute the absolute value of a number.

```
Dim MyNumber
MyNumber = Abs(50.3) ' Returns 50.3.
MyNumber = Abs(-50.3)   ' Returns 50.3.
```

# Atn Function Example

This example uses the **Atn** function to calculate the value of pi.

```
Dim pi
pi = 4 * Atn(1)    ' Calculate the value of pi.
```

# Cos Function Example

This example uses the **Cos** function to return the cosine of an angle.

```
Dim MyAngle, MySecant
MyAngle = 1.3  ' Define angle in radians.
MySecant = 1 / Cos(MyAngle)   ' Calculate secant.
```

# Exp Function Example

This example uses the **Exp** function to return *e* raised to a power.

```
Dim MyAngle, MyHSin
' Define angle in radians.
MyAngle = 1.3
' Calculate hyperbolic sine.
MyHSin = (Exp(MyAngle) - Exp(-1 * MyAngle)) / 2
```

# Int Function, Fix Function Example

This example illustrates how the **Int** and **Fix** functions return integer portions of numbers. In the case of a negative number argument, the **Int** function returns the first negative integer less than or equal to the number; the **Fix** function returns the first negative integer greater than or equal to the number.

```
Dim MyNumber
MyNumber = Int(99.8) ' Returns 99.
MyNumber = Fix(99.2) ' Returns 99.

MyNumber = Int(-99.8)   ' Returns -100.
MyNumber = Fix(-99.8)   ' Returns -99.

MyNumber = Int(-99.2)   ' Returns -100.
MyNumber = Fix(-99.2)   ' Returns -99.
```

# Log Function Example

This example uses the **Log** function to return the natural logarithm of a number.

```
Dim MyAngle, MyLog
' Define angle in radians.
MyAngle = 1.3
' Calculate inverse hyperbolic sine.
MyLog = Log(MyAngle + Sqr(MyAngle * MyAngle + 1))
```

# Randomize Statement Example

This example uses the **Randomize** statement to initialize the random-number generator. Because the number argument has been omitted, **Randomize** uses the return value from the **Timer** function as the new seed value.

```
Dim MyValue
Randomize    ' Initialize random-number generator.

MyValue = Int((6 * Rnd) + 1)   ' Generate random value between 1 and 6.
```

# Rnd Function Example

This example uses the **Rnd** function to generate a random integer value from 1 to 6.

```
Dim MyValue
MyValue = Int((6 * Rnd) + 1)   ' Generate random value between 1 and 6.
```

# Sgn Function Example

This example uses the **Sgn** function to determine the sign of a number.

```
Dim MyVar1, MyVar2, MyVar3, MySign
MyVar1 = 12: MyVar2 = -2.4: MyVar3 = 0
MySign = Sgn(MyVar1) ' Returns 1.
MySign = Sgn(MyVar2) ' Returns -1.
MySign = Sgn(MyVar3) ' Returns 0.
```

# Sin Function Example

This example uses the **Sin** function to return the sine of an angle.

```
Dim MyAngle, MyCosecant
MyAngle = 1.3  ' Define angle in radians.
MyCosecant = 1 / Sin(MyAngle) ' Calculate cosecant.
```

# Sqr Function Example

This example uses the **Sqr** function to calculate the square root of a number.

```
Dim MySqr
MySqr = Sqr(4)  ' Returns 2.
MySqr = Sqr(23)   ' Returns 4.79583152331272.
MySqr = Sqr(0)  ' Returns 0.
MySqr = Sqr(-4)   ' Generates a run-time error.
```

# Tan Function Example

This example uses the **Tan** function to return the tangent of an angle.

```
Dim MyAngle, MyCotangent
MyAngle = 1.3  ' Define angle in radians.
MyCotangent = 1 / Tan(MyAngle)     ' Calculate cotangent.
```

# Math Functions

# Abs Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctAbsC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctAbsX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctAbsS"}

Returns a value of the same type that is passed to it specifying the absolute value of a
number.

**Syntax**

**Abs(***number***)**

The required *number* argument can be any valid numeric expression. If *number* contains
Null, **Null** is returned; if it is an uninitialized variable, zero is returned.

**Remarks**

The absolute value of a number is its unsigned magnitude. For example, `ABS(-1)` and
`ABS(1)` both return `1`.

# Atn Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctAtnC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctAtnX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctAtnS"}

Returns a **Double** specifying the arctangent of a number.

**Syntax**

**Atn(**_number_**)**

The required _number_ argument is a Double or any valid numeric expression.

**Remarks**

The **Atn** function takes the ratio of two sides of a right triangle (_number_) and returns the corresponding angle in radians. The ratio is the length of the side opposite the angle divided by the length of the side adjacent to the angle.

The range of the result is **-**pi/2 to pi/2 radians.

To convert degrees to radians, multiply degrees by pi/180. To convert radians to degrees, multiply radians by 180/pi.

> **Note**   **Atn** is the inverse trigonometric function of **Tan**, which takes an angle as its argument and returns the ratio of two sides of a right triangle. Do not confuse **Atn** with the cotangent, which is the simple inverse of a tangent (1/tangent).

# Cos Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCosC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctCosX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctCosS"}

Returns a **Double** specifying the cosine of an angle.

**Syntax**

**Cos(**_number_**)**

The required _number_ <u>argument</u> is a <u>Double</u> or any valid <u>numeric expression</u> that expresses an angle in radians.

**Remarks**

The **Cos** function takes an angle and returns the ratio of two sides of a right triangle. The ratio is the length of the side adjacent to the angle divided by the length of the hypotenuse.

The result lies in the range -1 to 1.

To convert degrees to radians, multiply degrees by <u>pi</u>/180. To convert radians to degrees, multiply radians by 180/pi.

# Exp Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctExpC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctExpX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctExpS"}

Returns a **Double** specifying *e* (the base of natural logarithms) raised to a power.

**Syntax**

**Exp(**_number_**)**

The required *number* argument is a Double or any valid numeric expression.

**Remarks**

If the value of *number* exceeds 709.782712893, an error occurs. The constant *e* is approximately 2.718282.

> **Note**   The **Exp** function complements the action of the **Log** function and is sometimes referred to as the antilogarithm.

# Int, Fix Functions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIntC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctIntX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctIntS"}

Returns the integer portion of a number.

**Syntax**

**Int(**_number_**)**

**Fix(**_number_**)**

The required _number_ argument is a Double or any valid numeric expression. If _number_ contains Null, **Null** is returned.

**Remarks**

Both **Int** and **Fix** remove the fractional part of _number_ and return the resulting integer value.

The difference between **Int** and **Fix** is that if _number_ is negative, **Int** returns the first negative integer less than or equal to _number,_ whereas **Fix** returns the first negative integer greater than or equal to _number._ For example, **Int** converts -8.4 to -9, and **Fix** converts -8.4 to -8.

**Fix(**_number_**)** is equivalent to:

```
Sgn(number) * Int(Abs(number))
```

# Log Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLogC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLogX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLogS"}

Returns a **Double** specifying the natural logarithm of a number.

**Syntax**

**Log(**_number_**)**

The required _number_ argument is a Double or any valid numeric expression greater than
zero.

**Remarks**

The natural logarithm is the logarithm to the base _e_. The constant _e_ is approximately
2.718282.

You can calculate base-_n_ logarithms for any number _x_ by dividing the natural logarithm of _x_
by the natural logarithm of _n_ as follows:

Log_n(x)_ = **Log**(_x_) / **Log**(_n_)

The following example illustrates a custom **Function** that calculates base-10 logarithms:

```
Static Function Log10(X)
   Log10 = Log(X) / Log(10#)
End Function
```

# Randomize Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmRandomizeC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmRandomizeX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmRandomizeS"}

Initializes the random-number generator.

**Syntax**

**Randomize** [*number*]

The optional *number* argument is a Variant or any valid numeric expression.

**Remarks**

**Randomize** uses *number* to initialize the **Rnd** function's random-number generator, giving it a new seed value. If you omit *number,* the value returned by the system timer is used as the new seed value.

If **Randomize** is not used, the **Rnd** function (with no arguments) uses the same number as a seed the first time it is called, and thereafter uses the last generated number as a seed value.

> **Note**   To repeat sequences of random numbers, call **Rnd** with a negative argument immediately before using **Randomize** with a numeric argument. Using **Randomize** with the same value for *number* does not repeat the previous sequence.

# Rnd Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctRndC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctRndX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctRndS"}

Returns a **Single** containing a random number.

**Syntax**

**Rnd**[**(**number**)**]

The optional *number* argument is a Single or any valid numeric expression.

**Return Values**

| If *number* is | Rnd generates |
| --- | --- |
| Less than zero | The same number every time, using *number* as the seed. |
| Greater than zero | The next random number in the sequence. |
| Equal to zero | The most recently generated number. |
| Not supplied | The next random number in the sequence. |

**Remarks**

The **Rnd** function returns a value less than 1 but greater than or equal to zero.

The value of *number* determines how **Rnd** generates a random number:

For any given initial seed, the same number sequence is generated because each successive call to the **Rnd** function uses the previous number as a seed for the next number in the sequence.

Before calling **Rnd,** use the **Randomize** statement without an argument to initialize the random-number generator with a seed based on the system timer.

To produce random integers in a given range, use this formula:

```
Int((upperbound - lowerbound + 1) * Rnd + lowerbound)
```

Here, *upperbound* is the highest number in the range, and *lowerbound* is the lowest number in the range.

> **Note**   To repeat sequences of random numbers, call **Rnd** with a negative argument immediately before using **Randomize** with a numeric argument. Using **Randomize** with the same value for *number* does not repeat the previous sequence.

# Sgn Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSgnC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSgnX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSgnS"}

Returns a **Variant** (**Integer**) indicating the sign of a number.

**Syntax**

**Sgn(**_number_**)**

The required _number_ argument can be any valid numeric expression.

**Return Values**

| If _number_ is | Sgn returns |
| --- | --- |
| Greater than zero | 1 |
| Equal to zero | 0 |
| Less than zero | -1 |

**Remarks**

The sign of the _number_ argument determines the return value of the **Sgn** function.

# Sin Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSinC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSinX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSinS"}

Returns a **Double** specifying the sine of an angle.

**Syntax**

**Sin(**_number_**)**

The required _number_ argument is a Double or any valid numeric expression that expresses an angle in radians.

**Remarks**

The **Sin** function takes an angle and returns the ratio of two sides of a right triangle. The ratio is the length of the side opposite the angle divided by the length of the hypotenuse.

The result lies in the range -1 to 1.

To convert degrees to radians, multiply degrees by pi/180. To convert radians to degrees, multiply radians by 180/pi.

# Sqr Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSqrC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSqrX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSqrS"}

Returns a **Double** specifying the square root of a number.

**Syntax**

**Sqr(***number***)**

The required *number* argument is a Double or any valid numeric expression greater than or
equal to zero.

# Tan Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctTanC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctTanX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctTanS"}

Returns a **Double** specifying the tangent of an angle.

**Syntax**

**Tan(**_number_**)**

The required _number_ argument is a Double or any valid numeric expression that expresses an angle in radians.

**Remarks**

**Tan** takes an angle and returns the ratio of two sides of a right triangle. The ratio is the length of the side opposite the angle divided by the length of the side adjacent to the angle.

To convert degrees to radians, multiply degrees by pi/180. To convert radians to degrees, multiply radians by 180/pi.

# Derived Math Functions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpderivedmathc"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpDerivedMathS"}

The following is a list of nonintrinsic math functions that can be derived from the intrinsic math functions:

| Function | Derived equivalents |
|---|---|
| Secant | Sec(X) = 1 / Cos(X) |
| Cosecant | Cosec(X) = 1 / Sin(X) |
| Cotangent | Cotan(X) = 1 / Tan(X) |
| Inverse Sine | Arcsin(X) = Atn(X / Sqr(-X * X + 1)) |
| Inverse Cosine | Arccos(X) = Atn(-X / Sqr(-X * X + 1)) + 2 * Atn(1) |
| Inverse Secant | Arcsec(X) = Atn(X / Sqr(X * X – 1)) + Sgn((X) – 1) * (2 * Atn(1)) |
| Inverse Cosecant | Arccosec(X) = Atn(X / Sqr(X * X - 1)) + (Sgn(X) – 1) * (2 * Atn(1)) |
| Inverse Cotangent | Arccotan(X) = Atn(X) + 2 * Atn(1) |
| Hyperbolic Sine | HSin(X) = (Exp(X) – Exp(-X)) / 2 |
| Hyperbolic Cosine | HCos(X) = (Exp(X) + Exp(-X)) / 2 |
| Hyperbolic Tangent | HTan(X) = (Exp(X) – Exp(-X)) / (Exp(X) + Exp(-X)) |
| Hyperbolic Secant | HSec(X) = 2 / (Exp(X) + Exp(-X)) |
| Hyperbolic Cosecant | HCosec(X) = 2 / (Exp(X) – Exp(-X)) |
| Hyperbolic Cotangent | HCotan(X) = (Exp(X) + Exp(-X)) / (Exp(X) – Exp(-X)) |
| Inverse Hyperbolic Sine | HArcsin(X) = Log(X + Sqr(X * X + 1)) |
| Inverse Hyperbolic Cosine | HArccos(X) = Log(X + Sqr(X * X – 1)) |
| Inverse Hyperbolic Tangent | HArctan(X) = Log((1 + X) / (1 – X)) / 2 |
| Inverse Hyperbolic Secant | HArcsec(X) = Log((Sqr(-X * X + 1) + 1) / X) |
| Inverse Hyperbolic Cosecant | HArccosec(X) = Log((Sgn(X) * Sqr(X * X + 1) + 1) / X) |
| Inverse Hyperbolic Cotangent | HArccotan(X) = Log((X + 1) / (X – 1)) / 2 |
| Logarithm to base N | LogN(X) = Log(X) / Log(N) |

# Add Method Example

This example uses the **Add** method to add `Inst` objects (instances of a class called `Class1` containing a **Public** variable `InstanceName`) to a collection called `MyClasses`. To see how this works, insert a class module and declare a public variable called `InstanceName` at module level of `Class1` (type **Public** `InstanceName`) to hold the names of each instance. Leave the default name as `Class1`. Copy and paste the following code into the Form_Load event procedure of a form module.

```
Dim MyClasses As New Collection    ' Create a Collection object.
Dim Num As Integer   ' Counter for individualizing keys.
Dim Msg
Dim TheName ' Holder for names user enters.
Do
   Dim Inst As New Class1  ' Create a new instance of Class1.
   Num = Num + 1  ' Increment Num, then get a name.
   Msg = "Please enter a name for this object." & Chr(13) _
    & "Press Cancel to see names in collection."
   TheName = InputBox(Msg, "Name the Collection Items")
   Inst.InstanceName = TheName' Put name in object instance.
   ' If user entered name, add it to the collection.
   If Inst.InstanceName <> "" Then
      ' Add the named object to the collection.
      MyClasses.Add item := Inst, key := CStr(Num)
   End If
   ' Clear the current reference in preparation for next one.
   Set Inst = Nothing
Loop Until TheName = ""
For Each x In MyClasses
   MsgBox x.instancename, , "Instance Name"
Next
```

# Clear Method Example

This example uses the **Err** object's **Clear** method to reset the numeric properties of the **Err** object to zero and its string properties to zero-length strings. If **Clear** were omitted from the following code, the error message dialog box would be displayed on every iteration of the loop (after an error occurs) whether or not a successive calculation generated an error. You can single-step through the code to see the effect.

```
Dim Result(10) As Integer  ' Declare array whose elements
        ' will overflow easily.
Dim indx
On Error Resume Next ' Defer error trapping.
Do Until indx = 10
   ' Generate an occasional error or store result if no error.
   Result(indx) = Rnd * indx * 20000
   If Err.Number <> 0 Then
      MsgBox Err, , "Error Generated: ", Err.HelpFile, Err.HelpContext
      Err.Clear   ' Clear Err object properties.
   End If
   indx = indx + 1
Loop
```

# Item Method Example

This example uses the **Item** method to retrieve a reference to an object in a collection. Assuming `Birthdays` is a **Collection** object, the following code retrieves from the collection references to the objects representing Bill Smith's birthday and Adam Smith's birthday, using the keys "SmithBill" and "SmithAdam" as the *index* arguments. Note that the first call explicitly specifies the **Item** method, but the second does not. Both calls work because the **Item** method is the default for a **Collection** object. The references, assigned to `SmithBillBD` and `SmithAdamBD` using **Set**, can be used to access the properties and methods of the specified objects. To run this code, create the collection and populate it with at least the two referenced members.

```
Dim SmithBillBD As Object
Dim SmithAdamBD As Object
Dim Birthdays
Set SmithBillBD = Birthdays.Item("SmithBill")
Set SmithAdamBD = Birthdays("SmithAdam")
```

# Print Method Example

Using the **Print** method, this example displays the value of the variable `MyVar` in the **Immediate** window. Note that the **Print** method only applies to objects that can display text.

```
Dim MyVar
MyVar = "Come see me in the Immediate pane."
Debug.Print MyVar
```

# Raise Method Example

This example uses the **Err** object's **Raise** method to generate an error within an Automation object written in Visual Basic. It has the programmatic ID `MyProj.MyObject`.  On the MacIntosh, the default drive name is "HD" and portions of the pathname are separated by colons instead of backslashes.

```
Const MyContextID = 1010407    ' Define a constant for contextID.
Function TestName(CurrentName, NewName)
   If Instr(NewName, "bob") Then    ' Test the validity of NewName.
      ' Raise the exception
      Err.Raise vbObjectError + 513, "MyProj.MyObject", _
      "No ""bob"" allowed in your name", "c:\MyProj\MyHelp.Hlp", _
      MyContextID
   End If
End Function
```

# Remove Method Example

This example illustrates the use of the **Remove** method to remove objects from a **Collection** object, `MyClasses`. This code removes the object whose index is 1 on each iteration of the loop.

```
Dim Num, MyClasses
For Num = 1 To MyClasses.Count
   MyClasses.Remove 1   ' Remove the first object each time
         ' through the loop until there are
         ' no objects left in the collection.
Next Num
```

# Add Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthAddC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthAddX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthAddA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthAddS"}

Adds a member to a **Collection** object.

**Syntax**

*object*.**Add** *item*, *key*, *before*, *after*

The **Add** method syntax has the following object qualifier and named arguments:

| Part | Description |
| --- | --- |
| *object* | Required. An object expression that evaluates to an object in the Applies To list. |
| *item* | Required. An expression of any type that specifies the member to add to the collection. |
| *key* | Optional. A unique string expression that specifies a key string that can be used, instead of a positional index, to access a member of the collection. |
| *before* | Optional. An expression that specifies a relative position in the collection. The member to be added is placed in the collection before the member identified by the *before* argument. If a numeric expression, *before* must be a number from 1 to the value of the collection's **Count** property. If a string expression, *before* must correspond to the *key* specified when the member being referred to was added to the collection. You can specify a *before* position or an *after* position, but not both. |
| *after* | Optional. An expression that specifies a relative position in the collection. The member to be added is placed in the collection after the member identified by the *after* argument. If numeric, *after* must be a number from 1 to the value of the collection's **Count** property. If a string, *after* must correspond to the *key* specified when the member referred to was added to the collection. You can specify a *before* position or an *after* position, but not both. |

**Remarks**

Whether the *before* or *after* argument is a string expression or numeric expression, it must refer to an existing member of the collection, or an error occurs.

An error also occurs if a specified *key* duplicates the *key* for an existing member of the collection.

# Clear Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthClearC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthClearX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthClearA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthClearS"}

Clears all <u>property</u> settings of the **Err** object.

**Syntax**

*object*.**Clear**

The *object* is always the **Err** object.

**Remarks**

Use **Clear** to explicitly clear the **Err** object after an error has been handled, for example, when you use deferred error handling with **On Error Resume Next**. The **Clear** method is called automatically whenever any of the following <u>statements</u> is executed:

- Any type of **Resume** statement

- **Exit Sub**, **Exit Function**, **Exit Property**

- Any **On Error** statement

    **Note**   The **On Error Resume Next** construct may be preferable to **On Error GoTo** when handling errors generated during access to other objects. Checking **Err** after each interaction with an object removes ambiguity about which object was accessed by the code. You can be sure which object placed the error code in **Err.Number**, as well as which object originally generated the error (the object specified in **Err.Source**).

# Item Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthItemC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthItemX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthItemA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthItem_S"}

Returns a specific <u>member</u> of a **Collection** object either by position or by key.

**Syntax**

*object***.Item(***index***)**

The **Item** method syntax has the following object qualifier and part:

| Part | Description |
|------|-------------|
| *object* | Required. An <u>object expression</u> that evaluates to an object in the Applies To list. |
| *index* | Required. An <u>expression</u> that specifies the position of a member of the <u>collection</u>. If a <u>numeric expression</u>, *index* must be a number from 1 to the value of the collection's **Count** property. If a <u>string expression</u>, *index* must correspond to the **key** <u>argument</u> specified when the member referred to was added to the collection. |

**Remarks**

If the value provided as *index* doesn't match any existing member of the collection, an error occurs.

The **Item** method is the default method for a collection. Therefore, the following lines of code are equivalent:

```
Print MyCollection(1)
Print MyCollection.Item(1)
```

# Print Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthPrintC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthPrintX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthPrintA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthprintS"}

Prints text in the **Immediate** window.

**Syntax**

*object*.**Print** [*outputlist*]

The **Print** method syntax has the following object qualifier and part:

| Part | Description |
|------|-------------|
| *object* | Optional. An <u>object expression</u> that evaluates to an object in the Applies To list. |
| *outputlist* | Optional. <u>Expression</u> or list of expressions to print. If omitted, a blank line is printed. |

The *outputlist* <u>argument</u> has the following syntax and parts:

{**Spc(***n***)** | **Tab(***n***)**} *expression charpos*

| Part | Description |
|------|-------------|
| **Spc(***n***)** | Optional. Used to insert space characters in the output, where *n* is the number of space characters to insert. |
| **Tab(***n***)** | Optional. Used to position the insertion point at an absolute column number where *n* is the column number. Use **Tab** with no argument to position the insertion point at the beginning of the next <u>print zone</u>. |
| *expression* | Optional. <u>Numeric expression</u> or <u>string expression</u> to print. |
| *charpos* | Optional. Specifies the insertion point for the next character. Use a semicolon (**;**) to position the insertion point immediately following the last character displayed. Use **Tab(***n***)** to position the insertion point at an absolute column number. Use **Tab** with no argument to position the insertion point at the beginning of the next print zone. If *charpos* is omitted, the next character is printed on the next line. |

**Remarks**

Multiple expressions can be separated with either a space or a semicolon.

All data printed to the **Immediate** window is properly formatted using the decimal separator for the <u>locale</u> settings specified for your system. The <u>keywords</u> are output in the appropriate language for the <u>host application</u>.

For <u>Boolean</u> data, either `True` or `False` is printed. The **True** and **False** keywords are translated according to the locale setting for the host application.

<u>Date</u> data is written using the standard short date format recognized by your system. When either the date or the time component is missing or zero, only the data provided is written.

Nothing is written if *outputlist* data is <u>Empty</u>. However, if *outputlist* data is <u>Null</u>, `Null` is output. The **Null** keyword is appropriately translated when it is output.

For error data, the output is written as `Error errorcode`. The **Error** keyword is appropriately translated when it is output.

The *object* is required if the method is used outside a <u>module</u> having a default display space. For example an error occurs if the method is called in a <u>standard module</u> without specifying an *object*, but if called in a form module, *outputlist* is displayed on the form.

> **Note**   Because the **Print** method typically prints with proportionally-spaced characters, there is no correlation between the number of characters printed and the number of fixed-width columns those characters occupy. For example, a wide letter, such as a "W", occupies more than one fixed-width column, and a narrow letter, such as an "i", occupies less. To allow for cases where wider than average characters are used, your tabular columns must be positioned far enough apart. Alternatively, you can print using a fixed-pitch font (such as Courier) to ensure that each character uses only one column.

# Raise Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthRaiseC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthRaiseX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthRaiseA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthRaiseS"}

Generates a run-time error.

**Syntax**

*object*.**Raise *number, source, description, helpfile, helpcontext***

The **Raise** method has the following object qualifier and named arguments:

| Argument | Description |
|---|---|
| *object* | Required. Always the **Err** object. |
| *number* | Required. Long integer that identifies the nature of the error. Visual Basic errors (both Visual Basic-defined and user-defined errors) are in the range 0–65535. The range 0–512 is reserved for system errors; the range 513–65535 is available for user-defined errors. When setting the **Number** property to your own error code in a class module, you add your error code number to the **vbObjectError** constant. For example, to generate the error number 513, assign **vbObjectError** + 513 to the **Number** property. |
| *source* | Optional. String expression naming the object or application that generated the error. When setting this property for an object, use the form *project.class*. If *source* is not specified, the programmatic ID of the current Visual Basic project is used. |
| *description* | Optional. String expression describing the error. If unspecified, the value in **Number** is examined. If it can be mapped to a Visual Basic run-time error code, the string that would be returned by the **Error** function is used as **Description**. If there is no Visual Basic error corresponding to **Number**, the "Application-defined or object-defined error" message is used. |
| *helpfile* | Optional. The fully qualified path to the Help file in which help on this error can be found. If unspecified, Visual Basic uses the fully qualified drive, path, and file name of the Visual Basic Help file. |
| *helpcontext* | Optional. The context ID identifying a topic within *helpfile* that provides help for the error. If omitted, the Visual Basic Help file context ID for the error corresponding to the **Number** property is used, if it exists. |

**Remarks**

All of the arguments are optional except *number*. If you use **Raise** without specifying some arguments, and the property settings of the **Err** object contain values that have not been cleared, those values serve as the values for your error.

**Raise** is used for generating run-time errors and can be used instead of the **Error** statement. **Raise** is useful for generating errors when writing class modules, because the **Err** object gives richer information than is possible if you generate errors with the **Error** statement. For example, with the **Raise** method, the source that generated the error can be specified in the **Source** property, online Help for the error can be referenced, and so on.

# Remove Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthRemoveC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthRemoveX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthRemoveA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthRemoveS"}

Removes a <u>member</u> from a **Collection** object.

**Syntax**

*object*.**Remove** *index*

The **Remove** method syntax has the following object qualifier and part:

| Part | Description |
|------|-------------|
| *object* | Required. An <u>object expression</u> that evaluates to an object in the Applies To list. |
| *index* | Required. An <u>expression</u> that specifies the position of a member of the <u>collection</u>. If a <u>numeric expression</u>, *index* must be a number from 1 to the value of the collection's **Count** <u>property</u>. If a <u>string expression</u>, *index* must correspond to the **key** <u>argument</u> specified when the member referred to was added to the collection. |

**Remarks**

If the value provided as *index* doesn't match an existing member of the collection, an error occurs.

# AppActivate Statement Example

This example illustrates various uses of the **AppActivate** statement to activate an application window. The **Shell** statements assume the applications are in the paths specified.   On the Macintosh, the default drive name is "HD" and portions of the pathname are separated by colons instead of backslashes.

```
Dim MyAppID, ReturnValue
AppActivate "Microsoft Word"  ' Activate Microsoft
    ' Word.


' AppActivate can also use the return value of the Shell function.
MyAppID = Shell("C:\WORD\WINWORD.EXE", 1) ' Run Microsoft Word.
AppActivate MyAppID  ' Activate Microsoft
    ' Word.



' You can also use the return value of the Shell function.
ReturnValue = Shell("c:\EXCEL\EXCEL.EXE",1)     ' Run Microsoft Excel.
AppActivate ReturnValue ' Activate Microsoft
    ' Excel.
```

# Beep Statement Example

This example uses the **Beep** statement to sound three consecutive tones through the computer's speaker.

```
Dim I
For I = 1 To 3 ' Loop 3 times.
    Beep  ' Sound a tone.
Next I
```

# Command Function Example

This example uses the **Command** function to get the command line arguments in a function that returns them in a **Variant** containing an array. Not available in Microsoft Office.

```
Function GetCommandLine(Optional MaxArgs)
    'Declare variables.
    Dim C, CmdLine, CmdLnLen, InArg, I, NumArgs
    'See if MaxArgs was provided.
    If IsMissing(MaxArgs) Then MaxArgs = 10
    'Make array of the correct size.
    ReDim ArgArray(MaxArgs)
    NumArgs = 0: InArg = False
    'Get command line arguments.
    CmdLine = Command()
    CmdLnLen = Len(CmdLine)
    'Go thru command line one character
    'at a time.
    For I = 1 To CmdLnLen
        C = Mid(CmdLine, I, 1)
        'Test for space or tab.
        If (C <> " " And C <> vbTab) Then
            'Neither space nor tab.
            'Test if already in argument.
            If Not InArg Then
            'New argument begins.
            'Test for too many arguments.
                If NumArgs = MaxArgs Then Exit For
                NumArgs = NumArgs + 1
                InArg = True
            End If
            'Concatenate character to current argument.
            ArgArray(NumArgs) = ArgArray(NumArgs) & C
        Else
            'Found a space or tab.
            'Set InArg flag to False.
            InArg = False
        End If
    Next I
    'Resize array just enough to hold arguments.
    ReDim Preserve ArgArray(NumArgs)
    'Return Array in Function name.
    GetCommandLine = ArgArray()
End Function
```

# InputBox Function Example

This example shows various ways to use the **InputBox** function to prompt the user to enter a value. If the x and y positions are omitted, the dialog box is automatically centered for the respective axes. The variable MyValue contains the value entered by the user if the user clicks **OK** or presses the ENTER key . If the user clicks **Cancel**, a zero-length string is returned.

```
Dim Message, Title, Default, MyValue
Message = "Enter a value between 1 and 3" ' Set prompt.
Title = "InputBox Demo" ' Set title.
Default = "1"  ' Set default.
' Display message, title, and default value.
MyValue = InputBox(Message, Title, Default)

' Use Helpfile and context. The Help button is added automatically.
MyValue = InputBox(Message, Title, , , , "DEMO.HLP", 10)

' Display dialog box at position 100, 100.
MyValue = InputBox(Message, Title, Default, 100, 100)
```

# MsgBox Function Example

This example uses the **MsgBox** function to display a critical-error message in a dialog box with Yes and No buttons. The No button is specified as the default response. The value returned by the **MsgBox** function depends on the button chosen by the user. This example assumes that `DEMO.HLP` is a Help file that contains a topic with a Help context number equal to `1000`.

```
Dim Msg, Style, Title, Help, Ctxt, Response, MyString
Msg = "Do you want to continue ?"   ' Define message.
Style = vbYesNo + vbCritical + vbDefaultButton2 ' Define buttons.
Title = "MsgBox Demonstration"      ' Define title.
Help = "DEMO.HLP" ' Define Help file.
Ctxt = 1000 ' Define topic
       ' context.
       ' Display message.
Response = MsgBox(Msg, Style, Title, Help, Ctxt)
If Response = vbYes Then   ' User chose Yes.
   MyString = "Yes"  ' Perform some action.
Else  ' User chose No.
   MyString = "No"   ' Perform some action.
End If
```

# SendKeys Statement Example

This example uses the **Shell** function to run the Calculator application included with Microsoft Windows. It uses the **SendKeys** statement to send keystrokes to add some numbers, and then quit the Calculator. (To see the example, paste it into a procedure, then run the procedure. Because **AppActivate** changes the focus to the Calculator application, you can't single step through the code.). On the Macintosh, use a Macintosh application that accepts keyboard input instead of the Windows Calculator.

```
Dim ReturnValue, I
ReturnValue = Shell("CALC.EXE", 1)  ' Run Calculator.
AppActivate ReturnValue    ' Activate the Calculator.
For I = 1 To 100  ' Set up counting loop.
    SendKeys I & "{+}", True   ' Send keystrokes to Calculator
Next I   ' to add each value of I.
SendKeys "=", True   ' Get grand total.
SendKeys "%{F4}", True  ' Send ALT+F4 to close Calculator.
```

# AppActivate Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmAppActivateC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmAppActivateX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmAppActivateS"}

Activates an application window.

**Syntax**

**AppActivate** *title*[, *wait*]

The **AppActivate** statement syntax has these named arguments:

| Part | Description |
| --- | --- |
| *title* | Required. String expression specifying the title in the title bar of the application window you want to activate. The task ID returned by the **Shell** function can be used in place of *title* to activate an application. |
| *wait* | Optional. Boolean value specifying whether the calling application has the focus before activating another. If **False** (default), the specified application is immediately activated, even if the calling application does not have the focus. If **True**, the calling application waits until it has the focus, then activates the specified application. |

**Remarks**

The **AppActivate** statement changes the focus to the named application or window but does not affect whether it is maximized or minimized. Focus moves from the activated application window when the user takes some action to change the focus or close the window. Use the **Shell** function to start an application and set the window style.

In determining which application to activate, *title* is compared to the title string of each running application. If there is no exact match, any application whose title string begins with *title* is activated. If there is more than one instance of the application named by *title*, one instance is arbitrarily activated.

# Beep Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmBeepC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmBeepX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmBeepS"}

Sounds a tone through the computer's speaker.

**Syntax**

**Beep**

**Remarks**

The frequency and duration of the beep depend on your hardware and system software, and vary among computers.

# Command Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctCommandC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctCommandX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctCommandS"}

Returns the <u>argument</u> portion of the <u>command line</u> used to launch Microsoft Visual Basic or an executable program developed with Visual Basic. The Visual Basic **Command** function is not available in Microsoft Office applications.

**Syntax**

**Command**

**Remarks**

When Visual Basic is launched from the command line, any portion of the command line that follows `/cmd` is passed to the program as the command-line argument. In the following example, `cmdlineargs` represents the argument information returned by the **Command** function.

```
VB /cmd cmdlineargs
```

For applications developed with Visual Basic and compiled to an .exe file, **Command** returns any arguments that appear after the name of the application on the command line. For example:

```
MyApp cmdlineargs
```

To find how command line arguments can be changed in the user interface of the application you're using, search Help for "command line arguments."

# InputBox Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctInputBoxC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"VAFCTInputBoxX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctInputBoxS"}

Displays a prompt in a dialog box, waits for the user to input text or click a button, and
returns a String containing the contents of the text box.

**Syntax**

**InputBox(***prompt*[, *title*] [, *default*] [, *xpos*] [, *ypos*] [, *helpfile*, *context*]**)**

The **InputBox** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *prompt* | Required. String expression displayed as the message in the dialog box. The maximum length of *prompt* is approximately 1024 characters, depending on the width of the characters used. If *prompt* consists of more than one line, you can separate the lines using a carriage return character (**Chr(**13**)**), a linefeed character (**Chr(**10**)**), or carriage return–linefeed character combination (**Chr(**13**)** & **Chr(**10**)**) between each line. |
| *title* | Optional. String expression displayed in the title bar of the dialog box. If you omit *title*, the application name is placed in the title bar. |
| *default* | Optional. String expression displayed in the text box as the default response if no other input is provided. If you omit *default*, the text box is displayed empty. |
| *xpos* | Optional. Numeric expression that specifies, in twips, the horizontal distance of the left edge of the dialog box from the left edge of the screen. If *xpos* is omitted, the dialog box is horizontally centered. |
| *ypos* | Optional. Numeric expression that specifies, in twips, the vertical distance of the upper edge of the dialog box from the top of the screen. If *ypos* is omitted, the dialog box is vertically positioned approximately one-third of the way down the screen. |
| *helpfile* | Optional. String expression that identifies the Help file to use to provide context-sensitive Help for the dialog box. If *helpfile* is provided, *context* must also be provided. |
| *context* | Optional. Numeric expression that is the Help context number assigned to the appropriate Help topic by the Help author. If *context* is provided, *helpfile* must also be provided. |

**Remarks**

When both *helpfile* and *context* are provided, the user can press F1 (Windows) or HELP
(Macintosh) to view the Help topic corresponding to the *context*. Some host applications,
for example, Microsoft Excel, also automatically add a **Help** button to the dialog box. If the
user clicks **OK** or presses ENTER , the **InputBox** function returns whatever is in the text
box. If the user clicks **Cancel**, the function returns a zero-length string ("").

   **Note**   To specify more than the first named argument, you must use **InputBox** in an
   expression. To omit some positional arguments, you must include the corresponding
   comma delimiter.

# MsgBox Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMsgBoxC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctMsgBoxX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctMsgBoxS"}

Displays a message in a dialog box, waits for the user to click a button, and returns an
**Integer** indicating which button the user clicked.

**Syntax**

**MsgBox(**prompt[, **buttons**] [, **title**] [, **helpfile**, **context**]**)**

The **MsgBox** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| **prompt** | Required. String expression displayed as the message in the dialog box. The maximum length of **prompt** is approximately 1024 characters, depending on the width of the characters used. If **prompt** consists of more than one line, you can separate the lines using a carriage return character (**Chr(**13**)**), a linefeed character (**Chr(**10**)**), or carriage return – linefeed character combination (**Chr(**13**)** & **Chr(**10**)**) between each line. |
| **buttons** | Optional. Numeric expression that is the sum of values specifying the number and type of buttons to display, the icon style to use, the identity of the default button, and the modality of the message box. If omitted, the default value for **buttons** is 0. |
| **title** | Optional. String expression displayed in the title bar of the dialog box. If you omit **title**, the application name is placed in the title bar. |
| **helpfile** | Optional. String expression that identifies the Help file to use to provide context-sensitive Help for the dialog box. If **helpfile** is provided, **context** must also be provided. |
| **context** | Optional. Numeric expression that is the Help context number assigned to the appropriate Help topic by the Help author. If **context** is provided, **helpfile** must also be provided. |

**Settings**

The **buttons** argument settings are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbOKOnly** | 0 | Display **OK** button only. |
| **vbOKCancel** | 1 | Display **OK** and **Cancel** buttons. |
| **vbAbortRetryIgnore** | 2 | Display **Abort**, **Retry**, and **Ignore** buttons. |
| **vbYesNoCancel** | 3 | Display **Yes**, **No**, and **Cancel** buttons. |
| **vbYesNo** | 4 | Display **Yes** and **No** buttons. |
| **vbRetryCancel** | 5 | Display **Retry** and **Cancel** buttons. |
| **vbCritical** | 16 | Display **Critical Message** icon. |
| **vbQuestion** | 32 | Display **Warning Query** icon. |
| **vbExclamation** | 48 | Display **Warning Message** icon. |
| **vbInformation** | 64 | Display **Information Message** icon. |

| vbDefaultButton1 | 0 | First button is default. |
|---|---|---|
| **vbDefaultButton2** | 256 | Second button is default. |
| **vbDefaultButton3** | 512 | Third button is default. |
| **vbDefaultButton4** | 768 | Fourth button is default. |
| **vbApplicationModal** | 0 | Application modal; the user must respond to the message box before continuing work in the current application. |
| **vbSystemModal** | 4096 | System modal; all applications are suspended until the user responds to the message box. |
| **vbMsgBoxHelpButton** | 16384 | Adds Help button to the message box |
| **VbMsgBoxSetForeground** | 65536 | Specifies the message box window as the foreground window |
| **vbMsgBoxRight** | 524288 | Text is right aligned |
| **vbMsgBoxRtlReading** | 1048576 | Specifies text should appear as right-to-left reading on Hebrew and Arabic systems |

The first group of values (0–5) describes the number and type of buttons displayed in the dialog box; the second group (16, 32, 48, 64) describes the icon style; the third group (0, 256, 512) determines which button is the default; and the fourth group (0, 4096) determines the modality of the message box. When adding numbers to create a final value for the **buttons** argument, use only one number from each group.

**Note**   These constants are specified by Visual Basic for Applications. As a result, the names can be used anywhere in your code in place of the actual values.

**Return Values**

| Constant | Value | Description |
|---|---|---|
| **vbOK** | 1 | **OK** |
| **vbCancel** | 2 | **Cancel** |
| **vbAbort** | 3 | **Abort** |
| **vbRetry** | 4 | **Retry** |
| **vbIgnore** | 5 | **Ignore** |
| **vbYes** | 6 | **Yes** |
| **vbNo** | 7 | **No** |

**Remarks**

When both **helpfile** and **context** are provided, the user can press F1 (Windows) or HELP (Macintosh) to view the Help topic corresponding to the **context**. Some host applications, for example, Microsoft Excel, also automatically add a **Help** button to the dialog box.

If the dialog box displays a **Cancel** button, pressing the ESC key has the same effect as clicking **Cancel**. If the dialog box contains a **Help** button, context-sensitive Help is provided for the dialog box. However, no value is returned until one of the other buttons is clicked.

**Note**   To specify more than the first named argument, you must use **MsgBox** in an

expression. To omit some positional <u>arguments</u>, you must include the corresponding comma delimiter.

# SendKeys Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSendKeysC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmSendKeysX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmSendKeysS"}

Sends one or more keystrokes to the active window as if typed at the keyboard.

**Syntax**

**SendKeys** *string*[, *wait*]

The **SendKeys** statement syntax has these named arguments:

| Part | Description |
|------|-------------|
| *string* | Required. String expression specifying the keystrokes to send. |
| *Wait* | Optional. Boolean value specifying the wait mode. If **False** (default), control is returned to the procedure immediately after the keys are sent. If **True**, keystrokes must be processed before control is returned to the procedure. |

**Remarks**

Each key is represented by one or more characters. To specify a single keyboard character, use the character itself. For example, to represent the letter A, use `"A"` for *string*. To represent more than one character, append each additional character to the one preceding it. To represent the letters A, B, and C, use `"ABC"` for *string*.

The plus sign (**+**), caret (**^**), percent sign (**%**), tilde (**~**), and parentheses **( )** have special meanings to **SendKeys**. To specify one of these characters, enclose it within braces (`{}`). For example, to specify the plus sign, use `{+}`. Brackets ([ ]) have no special meaning to **SendKeys**, but you must enclose them in braces. In other applications, brackets do have a special meaning that may be significant when dynamic data exchange (DDE) occurs. To specify brace characters, use `{{}` and `{}}`.

To specify characters that aren't displayed when you press a key, such as ENTER or TAB, and keys that represent actions rather than characters, use the codes shown below:

| Key | Code |
|-----|------|
| BACKSPACE | `{BACKSPACE}`, `{BS}`, or `{BKSP}` |
| BREAK | `{BREAK}` |
| CAPS LOCK | `{CAPSLOCK}` |
| DEL or DELETE | `{DELETE}` or `{DEL}` |
| DOWN ARROW | `{DOWN}` |
| END | `{END}` |
| ENTER | `{ENTER}`or ~ |
| ESC | `{ESC}` |
| HELP | `{HELP}` |
| HOME | `{HOME}` |
| INS or INSERT | `{INSERT}` or `{INS}` |
| LEFT ARROW | `{LEFT}` |
| NUM LOCK | `{NUMLOCK}` |

| | |
|---|---|
| PAGE DOWN | `{PGDN}` |
| PAGE UP | `{PGUP}` |
| PRINT SCREEN | `{PRTSC}` |
| RIGHT ARROW | `{RIGHT}` |
| SCROLL LOCK | `{SCROLLLOCK}` |
| TAB | `{TAB}` |
| UP ARROW | `{UP}` |
| F1 | `{F1}` |
| F2 | `{F2}` |
| F3 | `{F3}` |
| F4 | `{F4}` |
| F5 | `{F5}` |
| F6 | `{F6}` |
| F7 | `{F7}` |
| F8 | `{F8}` |
| F9 | `{F9}` |
| F10 | `{F10}` |
| F11 | `{F11}` |
| F12 | `{F12}` |
| F13 | `{F13}` |
| F14 | `{F14}` |
| F15 | `{F15}` |
| F16 | `{F16}` |

To specify keys combined with any combination of the SHIFT, CTRL, and ALT keys, precede the key code with one or more of the following codes:

| Key | Code |
|---|---|
| SHIFT | + |
| CTRL | ^ |
| ALT | % |

To specify that any combination of SHIFT, CTRL, and ALT should be held down while several other keys are pressed, enclose the code for those keys in parentheses. For example, to specify to hold down SHIFT while E and C are pressed, use "`+(EC)`". To specify to hold down SHIFT while E is pressed, followed by C without SHIFT, use "`+EC`".

To specify repeating keys, use the form `{key number}`. You must put a space between `key` and `number`. For example, `{LEFT 42}` means press the LEFT ARROW key 42 times; `{h 10}` means press H 10 times.

   **Note**   You can't use **SendKeys** to send keystrokes to an application that is not

designed to run in Microsoft Windows or Macintosh. **Sendkeys** also can't send the PRINT SCREEN key {PRTSC} to any application.

# Character Set (0 – 127)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscANSITableC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscANSITableS"}

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | • | 32 | [space] | 64 | @ | 96 | ` |
| 1 | • | 33 | ! | 65 | A | 97 | a |
| 2 | • | 34 | " | 66 | B | 98 | b |
| 3 | • | 35 | # | 67 | C | 99 | c |
| 4 | • | 36 | $ | 68 | D | 100 | d |
| 5 | • | 37 | % | 69 | E | 101 | e |
| 6 | • | 38 | & | 70 | F | 102 | f |
| 7 | • | 39 | ' | 71 | G | 103 | g |
| 8 | * * | 40 | ( | 72 | H | 104 | h |
| 9 | * * | 41 | ) | 73 | I | 105 | i |
| 10 | * * | 42 | * | 74 | J | 106 | j |
| 11 | • | 43 | + | 75 | K | 107 | k |
| 12 | • | 44 | , | 76 | L | 108 | l |
| 13 | * * | 45 | - | 77 | M | 109 | m |
| 14 | • | 46 | . | 78 | N | 110 | n |
| 15 | • | 47 | / | 79 | O | 111 | o |
| 16 | • | 48 | 0 | 80 | P | 112 | p |
| 17 | • | 49 | 1 | 81 | Q | 113 | q |
| 18 | • | 50 | 2 | 82 | R | 114 | r |
| 19 | • | 51 | 3 | 83 | S | 115 | s |
| 20 | • | 52 | 4 | 84 | T | 116 | t |
| 21 | • | 53 | 5 | 85 | U | 117 | u |
| 22 | • | 54 | 6 | 86 | V | 118 | v |
| 23 | • | 55 | 7 | 87 | W | 119 | w |
| 24 | • | 56 | 8 | 88 | X | 120 | x |
| 25 | • | 57 | 9 | 89 | Y | 121 | y |
| 26 | • | 58 | : | 90 | Z | 122 | z |
| 27 | • | 59 | ; | 91 | [ | 123 | { |
| 28 | • | 60 | < | 92 | \ | 124 | | |
| 29 | • | 61 | = | 93 | ] | 125 | } |
| 30 | • | 62 | > | 94 | ^ | 126 | ~ |
| 31 | • | 63 | ? | 95 | _ | 127 | • |

•   These characters aren't supported by Microsoft Windows.

* * Values 8, 9, 10, and 13 convert to backspace, tab, linefeed, and carriage return characters, respectively. They

have no graphical representation but, depending on the application, can affect the visual display of text.

# IMEStatus Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctIMEStatusC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctIMEStatusX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctIMEStatusS"}

Returns an <u>Integer</u> specifying the current Input Method Editor (IME) mode of Microsoft
Windows; available in East Asian versions only.

**Syntax**

**IMEStatus**

**Return Values**

The return values for the Japanese <u>locale</u> are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME (default) |
| **vbIMEModeOn** | 1 | IME on |
| **vbIMEModeOff** | 2 | IME off |
| **vbIMEModeDisable** | 3 | IME disabled |
| **vbIMEModeHiragana** | 4 | Full-width Hiragana mode |
| **vbIMEModeKatakana** | 5 | Full-width Katakana mode |
| **vbIMEModeKatakanaHalf** | 6 | Half-width Katakana mode |
| **vbIMEModeAlphaFull** | 7 | Full-width Alphanumeric mode |
| **vbIMEModeAlpha** | 8 | Half-width Alphanumeric mode |

The return values for the Korean locale are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME(default) |
| **vbIMEModeAlphaFull** | 7 | Full-width Alphanumeric mode |
| **vbIMEModeAlpha** | 8 | Half-width Alphanumeric mode |
| **vbIMEModeHangulFull** | 9 | Full-width Hangul mode |
| **vbIMEModeHangul** | 10 | Half-width Hangul mode |

The return values for the Chinese locale are as follows:

| Constant | Value | Description |
| --- | --- | --- |
| **vbIMEModeNoControl** | 0 | Don't control IME (default) |
| **vbIMEModeOn** | 1 | IME on |
| **vbIMEModeOff** | 2 | IME off |

# Can't execute code in break mode

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantExecCodeInBreakModeS"}

You enter <u>break mode</u> when you suspend execution of code. This error has the following causes and solutions:

- You tried to run code from the **Macro** dialog box. However, Visual Basic was already running code, although the code was suspended in break mode.

  You may have entered break mode without knowing it, for example, if a <u>syntax error</u> or <u>run-time error</u> occurred. Continue running the suspended code, or terminate its execution before you run code from the **Macro** dialog box. You can fix the error and choose **Continue**, or you can return to the **Macro** dialog box and restart the macro.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't call Friend procedure on an object that isn't an instance of the defining class (Error 97)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadCallToFriendFunctionS"}

A **Friend** procedure is callable from a <u>module</u> that is outside the <u>class</u>, but part of the <u>project</u> within which the class is defined. This error has the following causes and solutions:

- You tried to call the **Friend** procedure of a class. Although your reference variable is of the proper type, the variable points to an instance that isn't an instance of the class.

  For example, this can occur if there are two classes, class*ics* and class*y* (that implements class*y*), but you mistakenly assign the instance of *classy* to the instance of clas*sics*.

- You tried to access a **Friend** property or method either cross-process or cross-thread. Friend procedures are not part of a class's public interface, so they cannot be marshaled cross-process or cross-thread.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't exit design mode because control can't be created

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotExitDesignModeS"}

All controls must be instantiated before you can exit design mode. This error has the following causes and solutions:

- The control specified in the error message dialog box could not be created.

  Code can only run after all controls are instantiated and properly connected. Make sure every file needed for the control is available before trying again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object does not source Automation events

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoDefaultSourceS"}

An object must provide a default source interface so that you can write event procedures for its events. This error has the following causes and solutions:

- You tried to write an event procedure for an event of an object, but that event isn't available outside the object.

  See your object's documentation for suggestions on less direct ways to deal with the event you are interested in.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Operation not allowed in DLL

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgOperationNotAllowedInDLLC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgOperationNotAllowedInDLLS"}

Not all Visual Basic statements are allowed within a dynamic-link library (DLL). This error has the following causes and solutions:

- You tried to create a DLL from a class that contains a statement that can't be executed from a DLL.

  Check your class and remove any statements that can't be executed within a DLL, for example, the **End statement**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid outside Enum

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvOutsideEnumC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvOutsideEnumS"}

An **Enum** is a <u>data type</u> that can be used to create groups of related constants (called enumerations). This error has the following causes and solutions:

- You used an **End Enum** where it wasn't part of an **Enum** definition.

  Check for text that may appear between the body of the **Enum** definition and the **End Enum** statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This document was opened with Macros Disabled

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantExitVirusDesignModeS"}

A host application may disable or enable macros. This error has the following causes and solutions:

- You opened the document with **Macros Disabled**.

  Close the document, and then reopen it with **Enable Macros**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The library containing this symbol is not referenced by the current project, so the symbol is undefined. Would you like to add a reference to the containing library now?

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLibNotReferencedS"}

Type and object information is contained in libraries. This error has the following causes and solutions:

- A definition for this symbol exists in a <u>type library</u>.

  If you want to define the symbol as contained in the library mentioned, click **OK** to add the reference to the library.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Object does not have a Property Let procedure

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLetNotSupportedS"}

You can't assign a value to a property unless it has exposed a **Property Let** method. This error has the following causes and solutions:

- You tried to assign a value to a property that hasn't exposed a **Property Let** method.

  You can't directly assign a value to this property. If you created the class, you can modify the interface by exposing a **Property Let** method. Otherwise, check the component's documentation to determine if there is an indirect method for assigning the value.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# No Help available

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoHelpS"}

Not all errors have an associated help topic. This error has the following causes and solutions:

- You generated an error for which no Help exists.

  Check the Readme file. Help for late-breaking errors is often available through the Readme file.

# Can't sink this object's events because it's already firing events to the maximum number of supported event recipients (Error 96)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAdviseLimitS"}

Each object specifies the maximum number of simultaneous recipients to which it can fire events. This error has the following causes and solutions:

- You tried to use **Set** for a **WithEvents** variable for a control on a form.

  You can't use **Set** for a **WithEvents** variable because the number of recipients allowed for these events.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't find DLL entry point in specified DLL

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantFindDLLEntryPointS"}

An entry point is the name of a DLL (Windows) or code resource (Macintosh) procedure or the ordinal representing the procedure. This error has the following causes and solutions:

- A <u>type library</u> incorrectly described the entry point, perhaps misspelling the name or specifying the ordinal incorrectly.

  Contact the vendor for a corrected type library.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Could not execute specified program

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantExecuteProgramS"}

When you create a native-code executable file, some extra programs must run. This error has the following causes and solutions:

- Memory or system resources were insufficient to run the code generator or linker.

  Close as many running applications as possible to free memory and other system resources.

- Visual Basic was installed incorrectly.

  Reinstall Visual Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Duplicate resources with same type and name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDuplicateResourceS"}

A Microsoft Windows resource file typically contains bitmaps, text strings, and other similar data used by an application. This error has the following causes and solutions:

- The Windows resource file you are trying to use in your <u>project</u> contains two or more resources with the same type and name, or the file contains a resource that Visual Basic automatically creates.

  Use another resource file, or recreate the invalid resource file and delete one of the duplicate resources.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# A property or method call cannot include a reference to a private object, either as an argument or as a return value (Error 98)

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantPassPrivateObjectS"}

Private objects should never be passed outside a project. The following, all of which are prohibited, are possible causes for the error:

- A client invoked a property or method of an out-of-process component and attempted to pass a reference to a private object as one of the arguments. A client invoked a property or method of an out-of-process component and the component attempted to return a reference to a private object, or to assign such a reference to a **ByRef** argument.

- An out-of-process component has invoked a call-back method on its client and attempted to pass a reference to a private object.

- An out-of-process component attempted to pass a reference to a private object as an argument of an event it was raising.

- A client attempted to assign a private object reference to a **ByRef** argument of an event it was handling.

Note that although Visual Basic prevents you from passing references to nonvisual private objects across processes, there are some cases in which Visual Basic can't detect this error and thus can't prevent it. Private objects are not designed to be used outside your project. If you pass them to a client, you may jeopardize program stability and cause incompatibility with future versions of Visual Basic. If you need to pass a private class of your own to a client, set the **Instancing** property to a value other than **Private**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Assignment to constant not permitted

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantAssignToConstS"}

A constant represents a read-only value. This error has the following causes and solutions:

- You tried to assign a new value to a variable declared with **Const**, or to a type library constant.

   If you need to assign a new value, declare an ordinary variable of the type desired and assign your value to that variable. If you need a variable with a restricted set of values, you can declare an enumeration, using the **Enum** statement.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't have paramarrays with optional arguments

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgParamArrayWithOptArgsS"}

You can use a **ParamArray** to define procedures that accept variable-length argument lists. An **Optional** argument is one that the caller can supply or omit without generating an error. This error has the following causes and solutions:

- You used both the **ParamArray** and **Optional** keywords in the same parameter list.

  Remove either the **Optional** or **ParamArray** parameter. You cannot use both keywords in the same parameter list. Either approach can be used for the type of parameter list you want.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# File specified was not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileNotFoundWithNameS"}

Check the message for the name of the file that couldn't be found. This error has the following causes and solutions:

• The file named in the error message could not be found as specified.

  Make sure the drive name and path, as well as the filename, are specified correctly.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid optional parameter type

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadOptParamTypeS"}

Not all Visual Basic types are permitted for **Optional** parameters. This error has the following causes and solutions:

- A parameter is defined with an invalid data type.

   For example, you can't have an **Optional** parameter of user-defined type. You may be able to accomplish your goal using an array of **Variant** type, since the elements of an array of **Variant** can store data of different types.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid Template

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidTemplateS"}

A derived class of a template can't be a template. This error has the following causes and solutions:

- You tried to create an template component, but tried to derive it from a template.

  You can't derive a template class from a template.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Only valid in object module

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgClassModuleOnlyS"}

Some Visual Basic statements or constructs are valid only in object modules (forms, class modules, etc.). This error has the following causes and solutions:

- You tried to use an invalid statement or construct (for example, the **Implements** statement, **WithEvents** keyword, or an event sink) in a non-class module.

   Place statements that generate this error in an object module.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Requested type library or wizard is not a VBA project

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNotAProjectS"}

Not all elements available in Visual Basic are able to be both read from and written to. This error has the following causes and solutions:

- You tried to write to an Addin or a type library from within a Visual Basic project.

  You can't directly write to a prepackaged Addin or a type library as part of a Visual Basic project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This edit requires a Reset

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustResetS"}

In most cases, you can edit code and continue running the code from the point of the edit. This error has the following causes and solutions:

- You made a change to your code that requires you to restart the code from the initialization point.

  This might occur if you broke up the code in a procedure and the current execution line is no longer contained in the same procedural context as it was when execution was suspended.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Translation failed. Please check the trnslate.log file for more information.

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTranslationErrS"}

Current versions of Visual Basic only perform translation for backward compatibility. This error has the following causes and solutions:

- The translation failed unexpectedly.

  This usually occurs because of a broken type library reference. More details should be available in the specified translation log.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Wizards can't reference projects

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWizCantRefProjS"}

A Wizard can reference another Wizard, but cannot reference a project. This error has the following causes and solutions:

- During a **Make Wizard** command, a reference to a project was found.

    Remove the reference to the project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unexpected compile error

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnexpectedCompileErrorS"}

This error has the following causes and solutions:

- This error occurs when an unanticipated error occurs during compilation that cannot be handled by the compiler.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Cannot handle events for the object specified

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCannotHandleEventsForObjectSpecifiedC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCannotHandleEventsForObjectSpecifiedS"}

This error has the following causes and solutions:

- Events for this object could not be handled. The events may be missing from the object, or present and malfunctioning, or intentionally disabled.

  Check the object and its events in the Object Browser to get information on the object and its events.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid use of base class name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadBaseUsageS"}

You cannot use the name of a base class by itself. This error has the following causes and solutions:

- You tried to use the name of a base class by itself without making clear that you were trying to access the base class' default member.

   Place the base-class name within parentheses to indicate you want to access the default member.

- You used the base-class name in an expression but the member you were trying to access was ambiguously specified.

   Use a disambiguator ( for example, an exclamation point) between the base-class name and the member you are interested in.

- You used the base-class name in a **Set** statement as though it contained a reference to the class.

   Use the base-class name to retrieve a reference for example, using GetObject.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid event name

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidEventNameS"}

Since an event procedure names are constructed by joining the object name to the event name with an underscore. This error has the following causes and solutions:

- You used an underscore as part of the event name.

    Remove the underscore from the event name.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Event not found

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEventNotFoundS"}

An event specified in a **RaiseEvent** statement must correspond to a defined event. This error has the following causes and solutions:

- You specified a name in a **RaiseEvent** statement, but the event definition cannot be found.

  Make sure the event name is spelled correctly.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Search string must be specified

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgEmptyObjbrwSearchTextS"}

You have to enter a string when searching in the object browser. This error has the following causes and solutions:

- You initiated a search in the **Object Browser**, but didn't specify text to search for.

  Enter a search string.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Cannot display specified name because it is hidden

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantShowHiddenObjbrwMemS"}

Some names exist in a type library, but are marked as hidden. This error has the following causes and solutions:

- You specified a name that is in the type library, but it is marked as hidden.

  You cannot normally view hidden type library members. Choose **Show Hidden Members** on the object browser context menu to make hidden members visible. You can then view the member information.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Cannot jump to specified type because it is in the specified library, which is not currently referenced

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantShowUnrefedObjbrwMemS"}

This error has the following causes and solutions:

- You tried to specify a type in a library that isn't reference within the project.

  Set a reference to the type library through the **References** dialog.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid inside Enum

{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvInsideEnumS"}

Not all types are valid within an enumeration definition. This error has the following causes and solutions:

- You tried to specify a string or some other invalid type as the value of an **Enum** member.

  The constant expression used to specify an **Enum** member must evaluate to type **Long** or another **Enum** type.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unexpected error

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgUnexpected_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgUnexpected_S"}

This error has the following causes and solutions:

- An unanticipated error occurred.   Try shutting down the system and restarting it.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The current project does not support files of this type

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgFileTypeNotSupported_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgFileTypeNotSupported_S"}

This error has the following causes and solutions:

- The file you tried to open is not a valid project file, or is a project file that contains features not supported by this Visual Basic host application and Visual Basic Environment.

  Make sure the project file you want to open is a valid project file (one you created and saved within the same Visual Basic host application and Visual Basic Environment).

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This VBA project was created while running VBA in a different application. You may only open it from inside the same application in which it was created

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgWrongHostForProj_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWrongHostForProj_S"}

This error has the following causes and solutions:

- The file you tried to open is a project file that was created within another host application.

  Make sure the project file you want to open is one you created and saved within the same Visual Basic host application.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Windowless controls can't have menus

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgNoMenuOnWndless_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgNoMenuOnWndless_S"}

This error has the following causes and solutions:

- You've attempted to place a menu on a windowless control, which is not allowed.

  To place a menu on a control, choose a windowed control.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This control can only be used with 'item' designers

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantUseDesignerCtl_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantUseDesignerCtl_S"}

This error has the following causes and solutions:

- The control you've chosen works only with the indicated designer.

   You must choose another control or a different designer.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This control cannot be used with 'item' designers

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidCtlForDesigner_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidCtlForDesigner_S"}

This error has the following causes and solutions:

- The control you've chosen doesn't work with the indicated designer.

  You must choose another control or a different designer.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This designer cannot be used because it uses features that are not supported in this version of Visual Basic

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgBadDesignerFeatures_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgBadDesignerFeatures_S"}

This error has the following causes and solutions:

- The designer you've chosen is not supported in this version of Visual Basic.

  You must use a different designer, or one designed for the indicated version of Visual Basic.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' cannot be added because it is referenced but not in use by any items in the project. To correct this, uncheck 'Remove information about unused ActiveX Controls' in Project Options.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDynCtlNoRef_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDynCtlNoRef_S"}

This error has the following causes and solutions:

- The indicated component cannot be added because it is not used by any items in the project.

  Clear the "Remove information about unused ActiveX Controls" in the **Project Options** dialog box under the **Project** menu.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Could not start Internet Explorer

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCouldNotStartBrowser_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCouldNotStartBrowser_S"}

This error has the following causes and solutions:

- An unknown problem is preventing Internet Explorer from running.

  Try starting Internet Explorer on its own to make sure it's working correctly.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' designers can only be used in DLL projects

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgItemInProcOnlyDesignerOne_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgItemInProcOnlyDesignerOne_S"}

This error has the following causes and solutions:

- The indicated designer can be used only in ActiveX DLL projects.

  Try the designer in an ActiveX DLL project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' designers cannot be public in ActiveX EXE projects

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInProcOnlyDesignerTwo_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInProcOnlyDesignerTwo_S"}

This error has the following causes and solutions:

• The indicated designer's **Instancing** property cannot be set to **Public** in ActiveX .exe projects.


For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' designers must be public and cannot be used in standard EXE projects

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgMustBePublicDesignerOne_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustBePublicDesignerOne_S"}

This error has the following causes and solutions:

• The indicated designer's **Instancing** property must be set to **Public**.

   The designer cannot be used in standard .exe projects.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' designers cannot be private

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgMustBePublicDesignerTwo_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgMustBePublicDesignerTwo_S"}

This error has the following causes and solutions:

- The indicated designer's **Instancing** property cannot be set to **Private**.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# One or more instances of this object are running. Can't remove it at this time

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgObjInUseNoRemove_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgObjInUseNoRemove_S"}

This error has the following causes and solutions:

- You've attempted to remove an object that is currently running.

  Close all instances of the object before removing it from the project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This project is currently referenced by another project and cannot be closed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgProjRefdNoClose_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProjRefdNoClose_S"}

This error has the following causes and solutions:

- The indicated project that you've attempted to close is being referenced by another project.

   Close it after you remove the reference from the other project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# MDI forms are not allowed in multithreaded projects. Any MDI form will be removed from this project. To keep the MDI form in the project select Cancel and change threading model to Thread Pool with only 1 thread.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgThreadMDINotAllowed_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgThreadMDINotAllowed_S"}

This error has the following causes and solutions:

- You've attempted to add an MDI form to a multi-threaded project.

  If you want to keep the MDI form in your project, change the the threading model to Thread Pool with only one thread.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' has caused an access violation. Remove it from the list of available Add-Ins?

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAddInFault_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAddInFault_S"}

This error has the following causes and solutions:

- The indicated add-in is causing a file access violation.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The selected Add-In has not been confirmed to be 'Command Line Safe,' and may require some user intervention (possible UI)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgAddInCmdLine_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgAddInCmdLine_S"}

This error has the following causes and solutions:

- "Command-line safe" means that the add-in is registered in a way to indicate that it contains no user interfaces that require user input when Visual Basic is invoked through a command-line. A user interface can interfere with the operation of unattended processes (such as build scripts).

  If you don't indicate that an add-in is command-line safe (even if it *is* command-line safe), when a user selects your add-in and then Command Line in the Load Behavior box, they'll receive the warning message. This isn't a serious problem, but merely a warning to the user that the selected add-in might possibly contain UI elements that can pop up unexpectedly and halt their automated scripts by pausing for user input.

  To specify that an add-in is command-line safe, author it that way (you can use the Add-In designer for this), or manually change the value in the registry key.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Illegal parameter. Can't write user-defined type.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantWriteUserDefinedType_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantWriteUserDefinedType_S"}

This error has the following causes and solutions:

• You've attempted to write a user-defined type to a PropertyBag object, which is not supported.

  To work around this, you can write each individual item of the user-defined type to the PropertyBag object.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Illegal parameter. Can't write object because it does not support persistence.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgCantWriteNoPersistitf_C"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgCantWriteNoPersistitf_S"}

This error has the following causes and solutions:

- You attempted to write an object to a PropertyBag object, but the object doesn't support one of the ActiveX persistence interfaces.

  To fix this, you must have access to the code for the object.   It must a Visual Basic-created object and have its Persistable property set to True.   Also, the Class must be either Public or Public Createable and be in an ActiveX Dll, ActiveX Exe, or UserControl project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid property name

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidPropertyName_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidPropertyName_S"}

This error has the following causes and solutions:

- The name you entered for the property is invalid.   That is, it is already in use, reserved for use by the system, or contains invalid characters.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# 'item' is a single-threaded component and cannot be used in multi-threaded projects. Change the threading model for 'item' or contact the component vendor for an updated version.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgSingleThreadControl_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgSingleThreadControl_S"}

This error has the following causes and solutions:

• You're attempting to use a single-threaded component in an multi-threaded project.

  You can change the threading model for the single-threaded component, or contact the component's vendor for an updated version.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Failed to load control 'item1' from 'item2'. Your version of 'item2' may be outdated. Make sure you are using the version of the control that was provided with your application.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLDocXActivateFailed_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLDocXActivateFailed_S"}

This error has the following causes and solutions:

- You are using an outdated version.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Failed to activate control 'item 1'. This control may be incompatible with your application. Make sure you are using the version of the control that was provided with your application.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgLDocXActivateFailed_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLDocXActivateFailed_S"}

This error has the following causes and solutions:

- The application was unable to activate the indicated control since it was incompatible with the application.   This can occur if the version of the control currently on your system is different from that provided with your application.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The ActiveX Designer's Type Information does not match what was saved. Unable to Load.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"mnrefChangingtheTaxOptions"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgLDDesignerTypeInfo_S"}

This error has the following causes and solutions:

- The project could not be loaded because the ActiveX designer's Type information doesn't match what was saved.   This can be due to a corrupt file.

  Attempt to load a backup copy of the project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This interaction between compiled and design environment components is not supported

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgInvalidCtlExecContext_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgInvalidCtlExecContext_S"}

This error has the following causes and solutions:

- This occurs when two components are running together, where one component (such as a form or a UserControl) was previously compiled and is now running using the runtime (msvbvm60.dll), and the other component is being run in the IDE.   For example, a compiled UserControl running on a form in the IDE.

  The problem occurs because the internal memory structure between an item running in the IDE and a compiled object is slightly different and not always compatible.   In general, though, you shouldn't encounter a problem with this unless you are passing an instance of a UserControl (Me) to a host form or other component through a **Property** or **Sub** procedure.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't print minimized form image

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgGFXFormMinimizedError_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgGFXFormMinimizedError_S"}

This error has the following causes and solutions:

- The form image cannot be printed when it's minimized.

  Maximize the image and attempt the print operation again.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unexpected error occurred in code generator or linker

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgMAKEEXETOOLFAIL_C;vbmsgMAKEEXETOOLFAILC;vbproBooksOnlineJumpTopic "}

This error has the following causes and solutions:

- The code generator or linker caused an unexpected error.

  Click **Yes** to display the errors in Notepad.

  This error is most commonly caused by low disk space or other disk-related issues.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Version numbers must be in the range 0 to 9999

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- You tried to assign a negative number, a non-numeric character, or a number greater than 9999, as the Major, Minor, or Revision component of the Version number for a project in the Make tab of the Project Properties dialog box. Use a number between 0 and 9999 inclusive.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Invalid Base Address

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgInvalidBaseAddress_C;vbmsgInvalidBaseAddressC;vbproBooksOnlineJumpTopic"}

You entered an invalid base address. This error has the following cause and solution:

- On the Compile Tab in the **Project Properties** dialog, you specified an invalid Base Address.

  A valid base address must be a multiple of 64K, greater than 64K, and less than &H7FFF0000.

  This error occurs in ActiveX DLL or ActiveX Control projects.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# No creatable public component detected. Press F1 for more information.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgDLLNoPublicClass_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgDLLNoPublicClass_S"}

This error has the following causes and solutions:

• Your project must have at least one public creatable component.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The file 'item' was not registerable as an ActiveX Component.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgNOTANOLESERVER_C;vbmsgTheFileitemWasNotRegisterableAsActiveXServerC;vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- You tried to register a control or dynamic-link library (.dll) that is not a valid ActiveX component. Make sure that you have the correct control or .dll. Contact the ActiveX component's vendor for more information.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The project file 'item1' contains invalid key 'item2'

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgPROJINVALKEY_C;vbmsgTheProjectFileitem1ContainsInvalidKeyitem2TheProjectCantBeLoadedC;vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- The Visual Basic project (.vbp) file contains a key that Visual Basic doesn't recognize. The file may be corrupt.

  Install a backup copy of the specified file or modify the file using a text editor to correct the error.

  **Warning**    Modifying a Visual Basic file in an editor other than Visual Basic may corrupt the file. This is recommended only for advanced users.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Unable to display Help

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- If you're running WinHelp, the Windows Help application isn't available. If Winhelp.exe is on your machine, make sure it is on your path. If it isn't on your machine, run Microsoft Windows 9x or Microsoft Windows NT setup to install it.

- If you're running HTMLHelp, if HH.exe is on your machine, make sure sure it is on your path. If it isn't on your computer, you must install it before you can view Help.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Class not registered. 'item 1'

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgClassNotReg_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgClassNotReg_S"}

This error has the following causes and solutions:

- The indicated class module is not registered.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Programmatic ID string too long 'item'. The Programmatic ID must be 39 characters or less.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- The ProgID string of the ActiveX component can be no longer than 39 characters. The ProgID is created by concatenating the project name with the class module name.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Project <name> has been modified. Do you wish to save the changes now?

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- One of the property settings or a code statement has changed for one or more of the files in the project and the changes have not yet been saved. This is your last chance to save the changes before loading another project.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# The load behavior for 'item' could not be updated because of current registry permissions.

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- Visual Basic can't load the add-in that you tried to select from the Available Add-Ins list in the **Add-In Manager** dialog box, because it was not registered properly or is no longer registered in the system registry.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Component not correctly registered

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgRegBadRegistrationComponent_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgRegBadRegistrationComponent_S"}

This error has the following causes and solutions:

- The indicated component was not correctly registered.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Component not found in registered location

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- The required executable file (.exe) or dynamic-link library (.dll) file can't be found.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Component could not successfully create requested object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

- The ActiveX component's executable (.exe) file failed to run correctly.

  There may be a problem with the information in the registry.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Component 'item' or one of its dependencies not correctly registered: a file is missing or invalid

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vbmsgObjectServeritemNotCorrectlyRegisteredOrNotFoundError339C;vbmsgREGBAD FILE_C;vbproBooksOnlineJumpTopic"}

This error has the following causes and solutions:

• The specified file was moved or deleted.

• The specified file was incorrectly registered.

   Reinstall the specified file to correctly register it. See the object's vendor for more information.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# This feature requires Internet Explorer 'item' or greater.   You can obtain the latest version from www.microsoft.com

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgThisFeatureRequiresInternetExplorerItemOrGreaterYouCanObtainLatestVersion FromWwwmicrosoftcom_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgThisFeatureRequiresInternetExplorerItemOrGrea terYouCanObtainLatestVersionFromWwwmicrosoftcom_S"}

This error has the following causes and solutions:

• You must have the indicated version of Internet Explorer for this feature to work correctly.

  Check http://www.microsoft.com for the latest available version of Internet Explorer.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# A form can't be moved or sized while minimized or maximized

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgPropNoWriteMinMax_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgPropNoWriteMinMax_S"}

This error has the following causes and solutions:

- You've attempted to move or size a form while it's minimized or maximized, and this is not allowed.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't show non-modal form when modal form is displayed

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgModCantShow_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgModCantShow_S"}

This error has the following causes and solutions:

- You've attempted to show a non-modal form before dismissing a modal form.

   Dismiss the modal form first.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Can't ReDim, Erase, or assign to Variant that contains array whose element is With object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgWithVarRefAssign_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgWithVarRefAssign_S"}

This error has the following causes and solutions:

- You've attempted to **ReDim**, **Erase**, or assign to a **Variant** a variable whose element is a With object.

  For example, the following code produces this error:

  Type Test
  Name as Integer
  End Type
  Sub Main()
  Dim c(0) As Test
  Dim e
  e = c
  With e(0)
  ReDim e(1)
  End With
  End Sub

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Project is unviewable

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgProjectIsUnviewable_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgProjectIsUnviewable_S"}

This error has the following causes and solutions:

- The project you are attempting to view is locked.

  Refer to documentation for the host application for Help on how to make the project viewable.

For additional information, select the item in question and press F1 (in Windows) or HELP (on the Macintosh).

# Activate, Deactivate Events Example

The following code uses two **UserForms**: UserForm1 and UserForm2. Copy these procedures into the UserForm1 module, then add UserForm2. UserForm1's caption is created in its Activate event procedure. When the user clicks the client area of UserForm1, UserForm2 is loaded, and shown, triggering UserForm1's Deactivate event, changing their captions.

```
' Activate event for UserForm1
Private Sub UserForm_Activate()
    UserForm1.Caption = "Click my client area"
End Sub


' Click event for UserForm1
Private Sub UserForm_Click()
    Load UserForm2
    UserForm2.StartUpPosition = 3
    UserForm2.Show
End Sub


' Deactivate event for UserForm1
Private Sub UserForm_Deactivate()
    UserForm1.Caption = "I just lost the focus!"
    UserForm2.Caption = "Focus just left UserForm1 and came to me"
End Sub
```

# Initialize Event Example

The following example assumes two **UserForms** in a program. In UserForm1's Initialize event, UserForm2 is loaded and shown. When the user clicks UserForm2, it is hidden and UserForm1 appears. When UserForm1 is clicked, UserForm2 is shown again.

```vba
' This is the Initialize event procedure for UserForm1
Private Sub UserForm_Initialize()
   Load UserForm2
   UserForm2.Show
End Sub
' This is the Click event of UserForm2
Private Sub UserForm_Click()
   UserForm2.Hide
End Sub

' This is the click event for UserForm1
Private Sub UserForm_Click()
   UserForm2.Show
End Sub
```

# QueryClose Event Example

The following code forces the user to click the **UserForm's** client area to close it. If the user tries to use the **Close** box in the title bar, the Cancel parameter is set to a nonzero value, preventing termination. However, if the user has clicked the client area, `CloseMode` has the value 1 and the Unload Me is completed.

```
Private Sub UserForm_Activate()
    UserForm1.Caption = "You must Click me to kill me!"
End Sub


Private Sub UserForm_Click()
  Unload Me
End Sub


Private Sub UserForm_QueryClose(Cancel As Integer, CloseMode As Integer)
    'Prevent user from closing with the Close box in the title bar.
    If CloseMode <> 1 Then Cancel = 1
    UserForm1.Caption = "The Close box won't work! Click me!"
End Sub
```

# Resize Event Example

The following example uses the Activate and Click events to illustrate triggering of the **UserForm**'s Resize event. As the user clicks the client area of the form, it grows or shrinks and the new height is specified in the title bar. Note that the **Tag** property is used to store the **UserForm**'s initial height.

```
' Activate event for UserForm1
Private Sub UserForm_Activate()
   UserForm1.Caption = "Click me to make me taller!"
   Tag = Height   ' Save the initial height.
End Sub


' Click event for UserForm1
Private Sub UserForm_Click()
   Dim NewHeight As Single
   NewHeight = Height
   ' If the form is small, make it tall.
   If NewHeight = Val(Tag) Then
      Height = Val(Tag) * 2
   Else
   ' If the form is tall, make it small.
      Height = Val(Tag)
   End If
End Sub


' Resize event for UserForm1
Private Sub UserForm_Resize()
   UserForm1.Caption = "New Height: " & Height & "  " & "Click to resize me!"
End Sub
```

# Terminate Event Example

The following event procedures cause a **UserForm** to beep for a few seconds after the user clicks the client area to dismiss the form.

```
Private Sub UserForm_Activate()
    UserForm1.Caption = "Click me to kill me!"
End Sub


Private Sub UserForm_Click()
  Unload Me
End Sub


Private Sub UserForm_Terminate()
    Dim Count As Integer
    For Count = 1 To 100
        Beep
    Next
End Sub
```

# Activate, Deactivate Events

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaevtActivateC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaevtActivateX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaevtActivateA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaevtActivateS"}

The Activate event occurs when an object becomes the active window. The Deactivate event occurs when an object is no longer the active window.

**Syntax**

**Private Sub** *object*_**Activate()**

**Private Sub** *object*_**Deactivate()**

The *object* placeholder represents an <u>object expression</u> that evaluates to an object in the Applies To list.

**Remarks**

An object can become active by using the **Show** method in code.

The Activate event can occur only when an object is visible. A **UserForm** loaded with **Load** isn't visible unless you use the **Show** method.

The Activate and Deactivate events occur only when you move the <u>focus</u> within an application. Moving the focus to or from an object in another application doesn't trigger either event.

The Deactivate event doesn't occur when unloading an object.

# Initialize Event

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaevtInitializeC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaevtInitializeX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaevtInitializeA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaevtInitializeS"}

Occurs after an object is loaded, but before it's shown.

**Syntax**

**Private Sub** *object*_**Initialize()**

The *object* placeholder represents an <u>object expression</u> that evaluates to an object in the Applies To list.

**Remarks**

The Initialize event is typically used to prepare an application or **UserForm** for use. <u>Variables</u> are assigned initial values, and controls may be moved or resized to accommodate initialization data.

# QueryClose Event

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaevtQueryCloseC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaevtQueryCloseX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaevtQueryCloseA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaevtQueryCloseS"}

Occurs before a **UserForm** closes.

**Syntax**

**Private Sub UserForm_QueryClose(**_cancel_ **As Integer**, _closemode_ **As Integer)**

The QueryClose event syntax has these parts:

| Part | Description |
|------|-------------|
| _cancel_ | An integer. Setting this <u>argument</u> to any value other than 0 stops the QueryClose event in all loaded user forms and prevents the **UserForm** and application from closing. |
| _closemode_ | A value or <u>constant</u> indicating the cause of the QueryClose event. |

**Return Values**

The _closemode_ argument returns the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbFormControlMenu** | 0 | The user has chosen the **Close** command from the **Control** menu on the **UserForm**. |
| **vbFormCode** | 1 | The **Unload** statement is invoked from code. |
| **vbAppWindows** | 2 | The current Windows operating environment session is ending. |
| **vbAppTaskManager** | 3 | The Windows **Task Manager** is closing the application. |

These constants are listed in the Visual Basic for Applications <u>object library</u> in the <u>Object Browser</u>. Note that **vbFormMDIForm** is also specified in the **Object Browser**, but is not yet supported.

**Remarks**

This event is typically used to make sure there are no unfinished tasks in the user forms included in an application before that application closes. For example, if a user hasn't saved new data in any **UserForm**, the application can prompt the user to save the data.

When an application closes, you can use the QueryClose event procedure to set the **Cancel** property to **True**, stopping the closing process.

# Resize Event

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaevtResizeC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaevtResizeX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaevtResizeA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaevtResizeS"}

Occurs when a user form is resized.

**Syntax**

**Private Sub UserForm_Resize()**

**Remarks**

Use a Resize event procedure to move or resize controls when the parent **UserForm** is resized. You can also use this event procedure to recalculate variables or properties.

# Terminate Event

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaevtTerminateC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaevtTerminateX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaevtTerminateA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaevtTerminateS"}

Occurs when all references to an instance of an object are removed from memory by setting all underline variables that refer to the object to **Nothing** or when the last reference to the object goes out of scope.

**Syntax**

**Private Sub** *object*_**Terminate( )**

The *object* placeholder represents an object expression that evaluates to an object in the Applies To list.

**Remarks**

The Terminate event occurs after the object is unloaded. The Terminate event isn't triggered if the instances of the **UserForm** or class are removed from memory because the application terminated abnormally. For example, if your application invokes the **End** statement before removing all existing instances of the class or **UserForm** from memory, the Terminate event isn't triggered for that class or **UserForm**.

# Hide Method Example

The following example assumes two **UserForms** in a program. In UserForm1's Initialize event, UserForm2 is loaded and shown. When the user clicks UserForm2, it is hidden and UserForm1 appears. When UserForm1 is clicked, UserForm2 is shown again.

```
' This is the Initialize event procedure for UserForm1
Private Sub UserForm_Initialize()
    Load UserForm2
    UserForm2.Show
End Sub
' This is the Click event of UserForm2
Private Sub UserForm_Click()
    UserForm2.Hide
End Sub


' This is the click event for UserForm1
Private Sub UserForm_Click()
    UserForm2.Show
End Sub
```

# Load Statement Example

In the following example, UserForm2 is loaded during UserForm1's Initialize event. Subsequent clicking on UserForm2 reveals UserForm1.

```
' This is the Initialize event procedure for UserForm1
Private Sub UserForm_Initialize()
    Load UserForm2
    UserForm2.Show
End Sub
' This is the Click event of UserForm2
Private Sub UserForm_Click()
    UserForm2.Hide
End Sub


' This is the click event for UserForm1
Private Sub UserForm_Click()
    UserForm2.Show
End Sub
```

# PrintForm Method Example

In the following example, the client area of the form is printed when the user clicks the form.

```
' This is the click event for UserForm1
Private Sub UserForm_Click()
    UserForm1.PrintForm
End Sub
```

# Show Method Example

The following example assumes two **UserForms** in a program. In UserForm1's Initialize event, UserForm2 is loaded and shown. When the user clicks UserForm2, it is hidden and UserForm1 appears. When UserForm1 is clicked, UserForm2 is shown again.

```
' This is the Initialize event procedure for UserForm1
Private Sub UserForm_Initialize()
   Load UserForm2
   UserForm2.Show
End Sub
' This is the Click event for UserForm2
Private Sub UserForm_Click()
   UserForm2.Hide
End Sub


' This is the click event for UserForm1
Private Sub UserForm_Click()
   UserForm2.Show
End Sub
```

# Unload Statement Example

The following example assumes two **UserForms** in a program. In UserForm1's Initialize event, UserForm2 is loaded and shown. When the user clicks UserForm2, it is unloaded and UserForm1 appears. When UserForm1 is clicked, it is unloaded in turn.

```
' This is the Initialize event procedure for UserForm1
Private Sub UserForm_Initialize()
    Load UserForm2
    UserForm2.Show
End Sub
' This is the Click event for UserForm2
Private Sub UserForm_Click()
    Unload UserForm2
End Sub


' This is the Click event for UserForm1
Private Sub UserForm_Click()
    Unload UserForm1
End Sub
```

# WhatsThisMode Method Example

The following example changes the mouse pointer to the **What's This** (question mark) pointer when the user clicks the **UserForm**. If neither the **WhatsThisHelp** or the **WhatsThisButton** property is set to **True** in the **Properties** window, the following invocation has no effect.

```
Private Sub UserForm_Click()
' Turn mouse pointer to What's This question mark.
    WhatsThisMode
End Sub
```

# Hide Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthHideC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthHideX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthHideA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthHideS"}

Hides an object but doesn't unload it.

**Syntax**

*object*.**Hide**

The *object* placeholder represents an object expression that evaluates to an object in the Applies To list. If *object* is omitted, the **UserForm** with the focus is assumed to be *object*.

**Remarks**

When an object is hidden, it's removed from the screen and its **Visible** property is set to **False**. A hidden object's controls aren't accessible to the user, but they are available programmatically to the running application, to other processes that may be communicating with the application through Automation, and in Windows, to **Timer** control events.

When a **UserForm** is hidden, the user can't interact with the application until all code in the event procedure that caused the **UserForm** to be hidden has finished executing.

If the **UserForm** isn't loaded when the **Hide** method is invoked, the **Hide** method loads the **UserForm** but doesn't display it.

# Load Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmLoadC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmLoadX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmLoadS"}

Loads an object but doesn't show it.

**Syntax**

**Load** *object*

The *object* placeholder represents an <u>object expression</u> that evaluates to an object in the
Applies To list.

**Remarks**

When an object is loaded, it is placed in memory, but isn't visible. Use the **Show** method to
make the object visible. Until an object is visible, a user can't interact with it. The object can
be manipulated programmatically in its Initialize event procedure.

# PrintForm Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthPrintFormC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthPrintFormX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthPrintFormA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthPrintFormS"}

Sends a bit-by-bit image of a **UserForm** object to the printer.

**Syntax**

*object*.**PrintForm**

The *object* placeholder represents an <u>object expression</u> that evaluates to an object in the Applies To list. If *object* is omitted, the **UserForm** with the <u>focus</u> is assumed to be *object*.

**Remarks**

**PrintForm** prints all visible objects and <u>bitmaps</u> of the **UserForm** object. **PrintForm** also prints graphics added to a **UserForm** object.

The printer used by **PrintForm** is determined by the operating system's **Control Panel** settings.

# Show Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthShowC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthShowX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthShowA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthShowS"}

Displays a **UserForm** object.

**Syntax**

[*object**.*]**Show** *modal*

The **Show** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Optional. An <u>object expression</u> that evaluates to an object in the Applies To list. If *object* is omitted, the **UserForm** associated with the active **UserForm** <u>module</u> is assumed to be *object.* |
| *modal* | Optional. Boolean value that determines if the **UserForm** is modal or modeless. |

**Settings**

The settings for *modal* are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbModal** | 1 | **UserForm** is modal. Default. |
| **vbModeless** | 0 | **UserForm** is modeless. |

**Remarks**

If the specified object isn't loaded when the **Show** method is invoked, Visual Basic automatically loads it.

> **Note**    In Microsoft Office 97, if a **UserForm** is set to display as modeless, it causes a run-time error; Office 97 **UserForms** are always modal.

When a **UserForm** is modeless, subsequent code is executed as it's encountered. Modeless forms do not appear in the task bar and are not in the window tab order.

> **Note**    You may lose data associated with a modeless **UserForm** if you make a change to the **UserForm** project that causes it to recompile, for example, removing a code module.

When a **UserForm** is modal, the user must respond before using any other part of the application. No subsequent code is executed until the **UserForm** is hidden or unloaded. Although other forms in the application are disabled when a **UserForm** is displayed, other applications are not.

# Unload Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmUnloadC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmUnloadX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmUnloadS"}

Removes an object from memory.

**Syntax**

**Unload** *object*

The required *object* placeholder represents an <u>object expression</u> that evaluates to an object in the Applies To list.

**Remarks**

When an object is unloaded, it's removed from memory and all memory associated with the object is reclaimed. Until it is placed in memory again using the **Load** statement, a user can't interact with an object, and the object can't be manipulated programmatically.

# WhatsThisMode Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthWhatsThisModeC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthWhatsThisModeX":1} {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthWhatsThisModeA"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthWhatsThisModeS"}

Causes the mouse pointer to change to the **What's This** pointer and prepares the application to display Help on a selected object. This method exists on the Macintosh, but there is no pointer functionality.

**Syntax**

*object*.**WhatsThisMode**

The *object* placeholder represents an <u>object expression</u> that evaluates to an object in the Applies To list. If *object* is omitted, the **UserForm** with the <u>focus</u> is assumed to be *object*.

**Remarks**

Executing the **WhatsThisMode** method places the application in the same state as clicking the **What's This** button on the title bar. The mouse pointer changes to the **What's This** pointer. When the user clicks an object, the **WhatsThisHelpID** property of the clicked object is used to invoke the context-sensitive Help.

# UserForm Object, UserForms Collection

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjUserFormC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjUserFormX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjUserFormP"}  {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjUserFormM"}  {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjUserFormE"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjUserFormS"}

A **UserForm** object is a window or dialog box that makes up part of an application's user interface.

The **UserForms** collection is a collection whose elements represent each loaded **UserForm** in an application. The **UserForms** collection has a **Count** property, an **Item** property, and an **Add** method. **Count** specifies the number of elements in the collection; **Item** (the default member) specifies a specific collection member; and **Add** places a new **UserForm** element in the collection.

**Syntax**

**UserForm**

**UserForms**[**.Item**](*index*)

The placeholder *index* represents an integer with a range from 0 to **UserForms.Count** − 1. **Item** is the default member of the **UserForms** collection and need not be specified.

**Remarks**

You can use the **UserForms** collection to iterate through all loaded user forms in an application. It identifies an intrinsic global variable named **UserForms**. You can pass **UserForms(***index***)** to a function whose argument is specified as a **UserForm** class.

User forms have properties that determine appearance such as position, size, and color; and aspects of their behavior.

User forms can also respond to events initiated by a user or triggered by the system. For example, you can write code in the **Initialize** event procedure of the **UserForm** to initialize module-level variables before the **UserForm** is displayed.

In addition to properties and events, you can use methods to manipulate user forms using code. For example, you can use the **Move** method to change the location and size of a **UserForm**.

When designing user forms, set the **BorderStyle** property to define borders, and set the **Caption** property to put text in the title bar. In code, you can use the **Hide** and **Show** methods to make a **UserForm** invisible or visible at run time.

**UserForm** is an Object data type. You can declare variables as type **UserForm** before setting them to an instance of a type of **UserForm** declared at design time. Similarly, you can pass an argument to a procedure as type **UserForm**. You can create multiple instances of user forms in code by using the **New** keyword in **Dim**, **Set**, and **Static** statements.

You can access the collection of controls on a **UserForm** using the **Controls** collection. For example, to hide all the controls on a **UserForm**, use code similar to the following:

```
For Each Control in UserForm1.Controls
    Control.Visible = False
Next Control
```

# StartUpPosition Property Example

The following example uses the **Load** statement and the **Show** method in UserForm1's Click event to load UserForm2 with the **StartUpPosition** property set to 3 (the Windows default position). The **Show** method then makes UserForm2 visible.

```
Private Sub UserForm_Click()
    Load UserForm2
    UserForm2.StartUpPosition = 3
    UserForm2.Show
End Sub
```

# StartUpPosition Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproStartupPositionC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproStartupPositionX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproStartupPositionA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproStartupPositionS"}

Returns or sets a value specifying the position of a **UserForm** when it first appears.

You can use one of four settings for **StartUpPosition**:

| Setting | Value | Description |
|---|---|---|
| **Manual** | 0 | No initial setting specified. |
| **CenterOwner** | 1 | Center on the item to which the **UserForm** belongs. |
| **CenterScreen** | 2 | Center on the whole screen. |
| **WindowsDefault** | 3 | Position in upper-left corner of screen. |

**Remarks**

You can set the **StartUpPosition** property programmatically or from the **Properties** window.

# WhatsThisButton Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproWhatsThisButtonC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproWhatsThisButtonX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproWhatsThisButtonA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproWhatsThisButtonS"}

Returns a <u>Boolean</u> value that determines whether the **What's This** button appears on the title bar of a **UserForm** object. Read-only at <u>run time</u>. This property does not apply to the Macintosh.

**Remarks**

The settings for the **WhatsThisButton** property are:

| Setting | Description |
|---|---|
| **True** | Turns on display of the **What's This Help** button. |
| **False** | (Default) Turns off display of the **What's This Help** button. |

**Remarks**

The **WhatsThisHelp** property must be **True** for the **WhatsThisButton** property to be **True**.

# WhatsThisHelp Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproWhatsThisHelpC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproWhatsThisHelpX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproWhatsThisHelpA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproWhatsThisHelpS"}

Returns a <u>Boolean</u> value that determines whether context-sensitive Help uses the pop-up window provided by Windows 95 Help or the main Help window. Read-only at <u>run time</u>. This property does not apply to the Macintosh.

**Remarks**

The settings for the **WhatsThisHelp** property are:

| Setting | Description |
| --- | --- |
| **True** | The application uses one of the What's This access techniques to start Windows Help and load a topic identified by the **WhatsThisHelpID** property. |
| **False** | (Default) The application uses the F1 key to start Windows Help and load the topic identified by the **HelpContextID** property. |

**Remarks**

There are two access techniques for providing What's This Help in an application. The **WhatsThisHelp** property must be set to **True** for any of these techniques to work.

- Providing a **What's This** button on the title bar of the **UserForm** using the **WhatsThisButton** property. The mouse pointer changes to the What's This state (arrow with question mark). The topic displayed is identified by the **WhatsThisHelpID** property of the control clicked by the user.

- Invoking the **WhatsThisMode** method of a **UserForm**. This produces the same behavior as clicking the **What's This** button without using a button. For example, you can invoke this method from a command on a menu in the menu bar of the application.

# ShowModal Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproShowModalProperty_C"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproShowModalProperty_X":1} {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproShowModalProperty_A"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproShowModalProperty_S"}

Sets a **UserForm** to be modal or modeless in its display. Read-only at <u>run time</u>.

**Remarks**

The settings for the **ShowModal** property are:

| Setting | Description |
| --- | --- |
| **True** | (Default) The **UserForm** is modal. |
| **False** | The **UserForm** is modeless. |

**Remarks**

When a **UserForm** is modal, the user must supply information or close the **UserForm** before using any other part of the application. No subsequent code is executed until the **UserForm** is hidden or unloaded. Although other forms in the application are disabled when a **UserForm** is displayed, other applications are not.

When the **UserForm** is modeless, the user can view other forms or windows without closing the **UserForm**.

Modeless forms do not appear in the task bar and are not in the window tab order.

> **Note**   If you attempt to open a **UserForm** that has a **ShowModal** property in Microsoft Office 97, you get a run-time error because Office 97 only displays modal **UserForms**. Office 97 ignores the **ShowModal** property and displays the **UserForm** modally.

# RightToLeft Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproRightToLeft_C"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproRightToLeft_X":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproRightToLeft_A"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproRightToLeft_S"}

Returns a Boolean value that indicates the text display direction and controls the visual appearance on a bidirectional system.

**Remarks**

The settings for the **RightToLeft** property are:

| Setting | Description |
| --- | --- |
| **True** | The control is running on a bidirectional platform, such as Arabic Windows95 or Hebrew Windows95, and text is running from right to left. The control should modify its behavior, such as putting vertical scroll bars at the left side of a text or list box, putting labels to the right of text boxes, and so forth. |
| **False** | The control should act as though it was running on a non-bidirectional platform, such as English Windows95, and text is running from left to right. If the container does not implement this ambient property, **False** is the default value. |

The **RightToLeft** property holds ambient information from the **Userform** that suggests behavior to controls contained within the **UserForm**. This property is a Boolean that indicates text display direction and controls visual appearance on bidirectional systems. The default is **False**.

# Keyword Not Found

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscKeywordNotFoundC"}

The <u>keyword</u> you selected can't be found in Visual Basic Help. You may have misspelled the keyword, selected too much or too little text, or asked for help on a word that isn't a valid Visual Basic keyword.

The keyword you want help on may be contained within an <u>object library</u> that is not referenced. Make sure references are set to the appropriate object libraries for all objects used in your code.

The easiest way to get help on a specific keyword is to position the insertion point anywhere within the keyword and press F1. You don't have to select the keyword. In fact, if you select only a portion of the keyword, or more than a single word, Help won't find what you're looking for.

The **Value** property topic is displayed when you press F1 with the insertion point between the "a" and the "l" in the **Value** keyword as shown in the following example.

```
Worksheets(1).Range ("A2").value=3.14159
```

To use the built-in Help **Index**, click **Microsoft Visual Basic Help** on the **Help** menu.

# Collection (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscCollectionModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscCollectionModuleS"}

The **Collection** module contains procedures used to perform operations on the **Collection** object. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1. Select the procedure from the **Members of 'Collection'** list.

2. Click the ![button] button.

# ColorConstants (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscColorConstantsBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscColorConstantsBrowserStringS"}

The **ColorConstants** module contains predefined color constants. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'ColorConstants'** list.

2.  Click the ![button] button.

# Constants (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscConstantsModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscConstantsModuleS"}

The **Constants** module contains miscellaneous constants. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'Constants'** list.
2. Click the ![button] button.

# Conversion (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscConversionModuleC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscConversionModuleS"}

The **Conversion** module contains the procedures used to perform various conversion operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1. Select the procedure from the **Members of 'Conversion'** list.

2. Click the ![button] button.

   **Note**   When you use **Variant** variables, explicit data-type conversions are unnecessary.

# DateTime (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscDateTimeModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscDateTimeModuleS"}

The **DateTime** module contains the procedures and properties used in date and time operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure or property**

1.  Select the procedure from the **Members of 'DateTime'** list.

2.  Click the ![help button] button.

# ErrObject (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscErrObjectModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscErrObjectModuleS"}

The **ErrObject** module contains properties and procedures used to identify and handle run-time errors using the **Err** object. These constants can be used anywhere in your code.

**To get Help on a particular property or procedure**

1.  Select the property or procedure from the **Members of 'ErrObject'** list.

2.  Click the  button.

# FileSystem (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscFileSystemModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscFileSystemModuleS"}

The **FileSystem** module contains the procedures used to perform file, directory or folder, and system operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1.  Select the procedure from the **Members of 'FileSystem'** list.

2.  Click the ![button] button.

# Financial (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscFinancialModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscFinancialModuleS"}

The **Financial** module contains procedures used to perform financial operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1.  Select the procedure from the **Members of 'Financial'** list.

2.  Click the ![button] button.

# Global (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscGlobalModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscGlobalModuleS"}

The **Global** module contains procedures and properties used to perform operations on the **UserForm** object. These constants can be used anywhere in your code.

**To get Help on a particular property or procedure**

1.  Select the procedure from the **Members Of 'Global'** list.

2.  Click the ![button] button.

# Information (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscInformationModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscInformationModuleS"}

The **Information** module contains the procedures used to return, test for, or verify information. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1.  Select the procedure from the **Members of 'Information'** list.
2.  Click the [?] button.

# Interaction (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscInteractionModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscInteractionModuleS"}

The **Interaction** module contains procedures used to interact with objects, applications, and systems. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1. Select the procedure from the **Members of 'Interaction'** list.
2. Click the  button.

# KeycodeConstants (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscKeyCodeConstantsBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscKeyCodeConstantsBrowserStringS"}

The **KeyCodeConstants** module contains predefined keycode constants that can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'KeyCodeConstants'** list.

2.  Click the [?] button.

# Math (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscMathModuleC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscMathModuleS"}

The **Math** module contains procedures used to perform mathematical operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1. Select the procedure from the **Members of 'Math'** list.

2. Click the ⬚ button.

# Strings (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscStringModuleC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscStringModuleS"}

The **Strings** module contains procedures used to perform string operations. These constants can be used anywhere in your code.

**To get Help on a particular procedure**

1. Select the procedure from the **Members of 'Strings'** list.
2. Click the ![button] button.

# SystemColorConstants (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscSystemColorConstantsBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscSystemColorConstantsBrowserStringS"}

The **SystemColorConstants** module contains constants that identify various parts of the graphical user interface. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'SystemColorConstants'** list.

2. Click the ![](help button) button.

# VbAppWinStyle (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbAppWinStyleBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbAppWinStyleBrowserStringS"}

The **VbAppWinStyle** enumeration contains constants used by the **Shell** function to control the style of an application window. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbAppWinStyle'** list.

2.  Click the  button.

# VbCalendar (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbCalendarBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbCalendarBrowserStringS"}

The **VbCalendar** enumeration contains constants used to determine the type of calendar used by Visual Basic. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbCalendar'** list.

2. Click the  button.

# VbCompareMethod (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbCompareMethodBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbCompareMethodBrowserStringS"}

The **VbCompareMethod** enumeration contains constants used to determine the way strings are compared when using the **Instr** and **StrComp** functions. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbCompareMethod'** list.

2. Click the ![help button] button.

# VbDayOfWeek (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbDayOfWeekBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbDayOfWeekBrowserStringS"}

The **VbDayOfWeek** enumeration contains constants used to identify specific days of the week when using the **DateDiff**, **DatePart**, and **Weekday** functions. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbDayOfWeek'** list.

2. Click the ![button] button.

# VbFileAttribute (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbFileAttributeBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbFileAttributeBrowserStringS"}

The **VbFileAttribute** enumeration contains constants used to identify file attributes used in the **Dir**, **GetAttr**, and **SetAttr** functions. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbFileAttribute'** list.

2.  Click the ![help button] button.

# VbFirstWeekOfYear (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbFirstWeekOfYearBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbFirstWeekOfYearBrowserStringS"}

The **VbFirstWeekOfYear** enumeration contains constants used to identify how the first week of a year is determined when using the **DateDiff** and **DatePart** functions. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbFirstWeekOfYear'** list.

2. Click the ![?] button.

# VbIMEStatus (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbIMEStatusBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbIMEStatusBrowserStringS"}

Available only in Far East versions, the **VbIMEStatus** enumeration contains constants used to identify the Input Method Editor (IME) when using the **IMEStatus** function. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbIMEStatus'** list.
2. Click the ![?] button.

# VbMsgBoxResult (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbMsgBoxResultBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbMsgBoxResultBrowserStringS"}

The **VbMsgBoxResult** enumeration contains constants used to identify which button was pressed on a message box displayed using the **MsgBox** function. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbMsgBoxResult'** list.

2.  Click the  button.

# VbMsgBoxStyle (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbMsgBoxStyleBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbMsgBoxStyleBrowserStringS"}

The **VbMsgBoxStyle** enumeration contains constants used to specify the behavior of a message box, along with symbols and buttons that appear on it, when displayed using the **MsgBox** function. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbMsgBoxStyle'** list.
2. Click the ![?] button.

# VbQueryClose (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbQueryCloseBrowserStringC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbQueryCloseBrowserStringS"}

The **VbQueryClose** enumeration contains constants used to identify what caused the **QueryClose** event to occur. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbQueryClose'** list.

2.  Click the ![button] button.

# VbStrConv (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbStrConvBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbStrConvBrowserStringS"}

The **VbStrConv** enumeration contains constants used to identify the type of string conversion to be performed by the **StrConv** function. These constants can be used anywhere in your code.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbStrConv'** list.

2.  Click the ![help button] button.

# VbVarType (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbVarTypeBrowserStringC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbVarTypeBrowserStringS"}

The **VbVarType** enumeration contains constants used to identify the various types of data that can be contained in a **Variant**. These constants match the return values of the **VarType** function and can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbVarType'** list.
2. Click the [?] button.

# VbTriState (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbTriStateObjectBrowser_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbTriStateObjectBrowser_S"}

The **VbTriState** enumeration defines constants used to identify one of three possible states.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbTriState'** list.

2.  Click the ![help button] button.

# VbDateTimeFormat (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbDateTimeFormatObjectBrowser_C"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbDateTimeFormatObjectBrowser_S"}

The **VbDateTimeFormat** enumeration defines constants used to identify how the date and time are formatted.

**To get Help on a particular constant**

1.  Select the constant from the **Members of 'VbDateTimeFormat'** list.

2.  Click the ![button] button.

# VbCallType (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscVbCallTypeObjectBrowser_C"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscVbCallTypeObjectBrowser_S"}

The **VbCallType** enumeration defines constants used to identify the call type used by the **CallByName** function.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'VbCallType'** list.

2. Click the  button.

# FormShowConstants (Object Browser)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscFormModule_C"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamscFormModule_S"}

The **FormShowConstants** module contains predefined **UserForm** constants. These
constants can be used anywhere in your code.

**To get Help on a particular constant**

1. Select the constant from the **Members of 'FormShowConstants'** list.

2. Click the  button.

# Collection Object Example

This example creates a **Collection** object (`MyClasses`), and then creates a dialog box in which users can add objects to the collection. To see how this works, choose the **Class Module** command from the **Insert** menu and declare a public variable called `InstanceName` at module level of Class1 (type **Public** `InstanceName`) to hold the names of each instance. Leave the default name as Class1. Copy and paste the following code into the General section of another module, and then start it with the statement `ClassNamer` in another procedure. (This example only works with host applications that support classes.)

```
Sub ClassNamer()
   Dim MyClasses As New Collection  ' Create a Collection object.
   Dim Num  ' Counter for individualizing keys.
   Dim Msg As String ' Variable to hold prompt string.
   Dim TheName, MyObject, NameList  ' Variants to hold information.
   Do
      Dim Inst As New Class1  ' Create a new instance of Class1.
      Num = Num + 1  ' Increment Num, then get a name.
      Msg = "Please enter a name for this object." & Chr(13) _
       & "Press Cancel to see names in collection."
      TheName = InputBox(Msg, "Name the Collection Items")
      Inst.InstanceName = TheName   ' Put name in object instance.
      ' If user entered name, add it to the collection.
      If Inst.InstanceName <> "" Then
         ' Add the named object to the collection.
         MyClasses.Add item := Inst, key := CStr(Num)
      End If
      ' Clear the current reference in preparation for next one.
      Set Inst = Nothing
   Loop Until TheName = ""
   For Each MyObject In MyClasses   ' Create list of names.
      NameList = NameList & MyObject.InstanceName & Chr(13)
   Next MyObject
   ' Display the list of names in a message box.
   MsgBox NameList, , "Instance Names In MyClasses Collection"

   For Num = 1 To MyClasses.Count   ' Remove name from the collection.
      MyClasses.Remove 1   ' Since collections are reindexed
            ' automatically, remove the first
   Next      ' member on each iteration.
End Sub
```

# Err Object Example

This example uses the properties of the **Err** object in constructing an error-message dialog box. Note that if you use the **Clear** method first, when you generate a Visual Basic error with the **Raise** method, Visual Basic's default values become the properties of the **Err** object.

```
Dim Msg
' If an error occurs, construct an error message
On Error Resume Next ' Defer error handling.
Err.Clear
Err.Raise 6 ' Generate an "Overflow" error.
' Check for error, then show message.
If Err.Number <> 0 Then
   Msg = "Error # " & Str(Err.Number) & " was generated by " _
         & Err.Source & Chr(13) & Err.Description
   MsgBox Msg, , "Error", Err.Helpfile, Err.HelpContext
End If
```

# Collection Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjCollectionC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaobjCollectionX":1}  {ewc HLP95EN.DLL,DYNALINK,"Properties":"vaobjCollectionP"}  {ewc HLP95EN.DLL,DYNALINK,"Methods":"vaobjCollectionM"}  {ewc HLP95EN.DLL,DYNALINK,"Events":"vaobjCollectionE"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaobjCollectionS"}

A **Collection** object is an ordered set of items that can be referred to as a unit.

**Remarks**

The **Collection** object provides a convenient way to refer to a related group of items as a single object. The items, or members, in a collection need only be related by the fact that they exist in the collection. Members of a collection don't have to share the same data type.

A collection can be created the same way other objects are created. For example:

```
Dim X As New Collection
```

Once a collection is created, members can be added using the **Add** method and removed using the **Remove** method. Specific members can be returned from the collection using the **Item** method, while the entire collection can be iterated using the **For Each...Next** statement.

# Debug Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjDebugC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaobjDebugX":1}   {ewc HLP95EN.DLL,DYNALINK,"Properties":"vaobjDebugP"}   {ewc HLP95EN.DLL,DYNALINK,"Methods":"vaobjDebugM"}   {ewc HLP95EN.DLL,DYNALINK,"Events":"vaobjDebugE"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaobjDebugS"}

The **Debug** object sends output to the **Immediate** window at <u>run time</u>.

# Err Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjErrC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjErrX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjErrP"}  {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjErrM"}  {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjErrE"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjErrS"}

Contains information about <u>run-time errors</u>.

## Remarks

The <u>properties</u> of the **Err** object are set by the generator of an error — Visual Basic, an object, or the programmer.

The default property of the **Err** object is **Number**. Because the default property can be represented by the object name **Err**, earlier code written using the **Err** function or **Err** statement doesn't have to be modified.

When a run-time error occurs, the properties of the **Err** object are filled with information that uniquely identifies the error and information that can be used to handle it. To generate a run-time error in your code, use the **Raise** method.

The **Err** object's properties are reset to zero or zero-length strings ("") after an **Exit Sub**, **Exit Function**, **Exit Property** or **Resume Next** statement within an error-handling routine. Using any form of the **Resume** statement outside of an error-handling routine will not reset the **Err** object's properties. The **Clear** method can be used to explicitly reset **Err**.

Use the **Raise** method, rather than the **Error** statement, to generate run-time errors for system errors and class modules. Using the **Raise** method in other code depends on the richness of the information you want to return.

The **Err** object is an intrinsic object with global <u>scope</u>. There is no need to create an instance of it in your code.

# ^ Operator Example

This example uses the **^** operator to raise a number to the power of an exponent.

```
Dim MyValue
MyValue = 2 ^ 2    ' Returns 4.
MyValue = 3 ^ 3 ^ 3  ' Returns 19683.
MyValue = (-5) ^ 3    ' Returns -125.
```

# + Operator Example

This example uses the **+** operator to sum numbers. The **+** operator can also be used to concatenate strings. However, to eliminate ambiguity, you should use the **&** operator instead. If the components of an expression created with the **+** operator include both strings and numerics, the arithmetic result is assigned. If the components are exclusively strings, the strings are concatenated.

```
Dim MyNumber, Var1, Var2
MyNumber = 2 + 2  ' Returns 4.
MyNumber = 4257.04 + 98112 ' Returns 102369.04.

Var1 = "34": Var2 = 6   ' Initialize mixed variables.
MyNumber = Var1 + Var2  ' Returns 40.

Var1 = "34": Var2 = "6" ' Initialize variables with strings.
MyNumber = Var1 + Var2  ' Returns "346" (string concatenation).
```

# – Operator Example

This example uses the **-** operator to calculate the difference between two numbers.

```
Dim MyResult
MyResult = 4 - 2  ' Returns 2.
MyResult = 459.35 - 334.90 ' Returns 124.45.
```

# \* Operator Example

This example uses the **\*** operator to multiply two numbers.

```
Dim MyValue
MyValue = 2 * 2   ' Returns 4.
MyValue = 459.35 * 334.90  ' Returns 153836.315.
```

# / Operator Example

This example uses the **/** operator to perform floating-point division.

```
Dim MyValue
MyValue = 10 / 4  ' Returns 2.5.
MyValue = 10 / 3  ' Returns 3.333333.
```

# \ Operator Example

This example uses the **\** operator to perform integer division.

```
Dim MyValue
MyValue = 11 \ 4  ' Returns 2.
MyValue = 9 \ 3   ' Returns 3.
MyValue = 100 \ 3 ' Returns 33.
```

# Mod Operator Example

This example uses the **Mod** operator to divide two numbers and return only the remainder. If either number is a floating-point number, it is first rounded to an integer.

```
Dim MyResult

MyResult = 10 Mod 5  ' Returns 0.

MyResult = 10 Mod 3  ' Returns 1.

MyResult = 12 Mod 4.3   ' Returns 0.

MyResult = 12.6 Mod 5   ' Returns 3.
```

# & Operator Example

This example uses the **&** operator to force string concatenation.

```
Dim MyStr
MyStr = "Hello" & " World" ' Returns "Hello World".
MyStr = "Check " & 123 & " Check"   ' Returns "Check 123 Check".
```

# Comparison Operators Example

This example shows various uses of comparison operators, which you use to compare expressions.

```
Dim MyResult, Var1, Var2

MyResult = (45 < 35) ' Returns False.

MyResult = (45 = 45) ' Returns True.

MyResult = (4 <> 3)  ' Returns True.

MyResult = ("5" > "4")  ' Returns True.


Var1 = "5": Var2 = 4 ' Initialize variables.

MyResult = (Var1 > Var2)   ' Returns True.


Var1 = 5: Var2 = Empty

MyResult = (Var1 > Var2)   ' Returns True.


Var1 = 0: Var2 = Empty

MyResult = (Var1 = Var2)   ' Returns True.
```

# And Operator Example

This example uses the **And** operator to perform a logical conjunction on two expressions.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null      ' Initialize variables.
MyCheck = A > B And B > C  ' Returns True.
MyCheck = B > A And B > C  ' Returns False.
MyCheck = A > B And B > D  ' Returns Null.
MyCheck = A And B ' Returns 8 (bitwise comparison).
```

# Eqv Operator Example

This example uses the **Eqv** operator to perform logical equivalence on two expressions.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null    ' Initialize variables.
MyCheck = A > B Eqv B > C  ' Returns True.
MyCheck = B > A Eqv B > C  ' Returns False.
MyCheck = A > B Eqv B > D  ' Returns Null.
MyCheck = A Eqv B ' Returns -3 (bitwise comparison).
```

# Imp Operator Example

This example uses the **Imp** operator to perform logical implication on two expressions.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null      ' Initialize variables.
MyCheck = A > B Imp B > C  ' Returns True.
MyCheck = A > B Imp C > B  ' Returns False.
MyCheck = B > A Imp C > B  ' Returns True.
MyCheck = B > A Imp C > D  ' Returns True.
MyCheck = C > D Imp B > A  ' Returns Null.
MyCheck = B Imp A ' Returns -1 (bitwise comparison).
```

# Not Operator Example

This example uses the **Not** operator to perform logical negation on an expression.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null     ' Initialize variables.
MyCheck = Not(A > B) ' Returns False.
MyCheck = Not(B > A) ' Returns True.
MyCheck = Not(C > D) ' Returns Null.
MyCheck = Not A   ' Returns -11 (bitwise comparison).
```

# Or Operator Example

This example uses the **Or** operator to perform logical disjunction on two expressions.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null    ' Initialize variables.
MyCheck = A > B Or B > C   ' Returns True.
MyCheck = B > A Or B > C   ' Returns True.
MyCheck = A > B Or B > D   ' Returns True.
MyCheck = B > D Or B > A   ' Returns Null.
MyCheck = A Or B  ' Returns 10 (bitwise comparison).
```

# Xor Operator Example

This example uses the **Xor** operator to perform logical exclusion on two expressions.

```
Dim A, B, C, D, MyCheck
A = 10: B = 8: C = 6: D = Null      ' Initialize variables.
MyCheck = A > B Xor B > C  ' Returns False.
MyCheck = B > A Xor B > C  ' Returns True.
MyCheck = B > A Xor C > B  ' Returns False.
MyCheck = B > D Xor A > B  ' Returns Null.
MyCheck = A Xor B ' Returns 2 (bitwise comparison).
```

# Like Operator Example

This example uses the **Like** operator to compare a string to a pattern.

```
Dim MyCheck

MyCheck = "aBBBa" Like "a*a"  ' Returns True.

MyCheck = "F" Like "[A-Z]" ' Returns True.

MyCheck = "F" Like "[!A-Z]"   ' Returns False.

MyCheck = "a2a" Like "a#a" ' Returns True.

MyCheck = "aM5b" Like "a[L-P]#[!c-e]"     ' Returns True.

MyCheck = "BAT123khg" Like "B?T*"   ' Returns True.

MyCheck = "CAT123khg" Like "B?T*"    ' Returns False.
```

# Is Operator Example

This example uses the **Is** operator to compare two object references. The object variable names are generic and used for illustration purposes only.

```
Dim MyObject, YourObject, ThisObject, OtherObject, ThatObject, MyCheck
Set YourObject = MyObject  ' Assign object references.
Set ThisObject = MyObject
Set ThatObject = OtherObject
MyCheck = YourObject Is ThisObject  ' Returns True.
MyCheck = ThatObject Is ThisObject  ' Returns False.
' Assume MyObject <> OtherObject
MyCheck = MyObject Is ThatObject    ' Returns False.
```

# Operator Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpOperatorSummaryC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpOperatorSummaryS"}

| Operators | Description |
| --- | --- |
| Arithmetic Operators | Operators used to perform mathematical calculations. |
| Comparison Operators | Operators used to perform comparisons. |
| Concatenation Operators | Operators used to combine strings. |
| Logical Operators | Operators used to perform logical operations. |

# Operator Precedence

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpOperatorPrecedenceC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vagrpOperatorPrecedenceX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpOperatorPrecedenceS"}

When several operations occur in an <u>expression</u>, each part is evaluated and resolved in a predetermined order called operator precedence.

When expressions contain operators from more than one category, arithmetic operators are evaluated first, <u>comparison operators</u> are evaluated next, and logical operators are evaluated last. Comparison operators all have equal precedence; that is, they are evaluated in the left-to-right order in which they appear. Arithmetic and logical operators are evaluated in the following order of precedence:

| Arithmetic | Comparison | Logical |
|---|---|---|
| Exponentiation (**^**) | Equality (**=**) | **Not** |
| Negation (−) | Inequality (**<>**) | **And** |
| Multiplication and division (**\***, **/**) | Less than (**<**) | **Or** |
| Integer division (**\\**) | Greater than (**>**) | **Xor** |
| Modulus arithmetic (**Mod**) | Less than or equal to (**<=**) | **Eqv** |
| Addition and subtraction (**+**, −) | Greater than or equal to (**>=**) | **Imp** |
| String concatenation (**&**) | **Like** **Is** | |

When multiplication and division occur together in an expression, each operation is evaluated as it occurs from left to right. When addition and subtraction occur together in an expression, each operation is evaluated in order of appearance from left to right. Parentheses can be used to override the order of precedence and force some parts of an expression to be evaluated before others. Operations within parentheses are always performed before those outside. Within parentheses, however, operator precedence is maintained.

The string concatenation operator (**&**) is not an arithmetic operator, but in precedence, it does follow all arithmetic operators and precede all comparison operators.

The **Like** operator is equal in precedence to all comparison operators, but is actually a pattern-matching operator.

The **Is** operator is an object reference comparison operator. It does not compare objects or their values; it checks only to determine if two object references refer to the same object.

# Arithmetic Operators

[^ Operator](#)

[* Operator](#)

[/ Operator](#)

[\ Operator](#)

[Mod Operator](#)

[+ Operator](#)

[- Operator](#)

# Concatenation Operators

[& Operator](#)

[+ Operator](#)

# Logical Operators

# ^Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprExponentiationC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprExponentiationX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprExponentiationS"}

Used to raise a number to the power of an exponent.

**Syntax**

*result* **=** *number***^***exponent*

The **^** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *number* | Required; any <u>numeric expression</u>. |
| *exponent* | Required; any numeric expression. |

**Remarks**

A *number* can be negative only if *exponent* is an integer value. When more than one exponentiation is performed in a single <u>expression</u>, the **^** operator is evaluated as it is encountered from left to right.

Usually, the <u>data type</u> of *result* is a <u>Double</u> or a <u>Variant</u> containing a **Double**. However, if either *number* or *exponent* is a <u>Null</u> expression, *result* is **Null**.

# + Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprAddC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprAddX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprAddS"}

Used to sum two numbers.

**Syntax**

*result* **=** *expression1+expression2*

The **+** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *expression1* | Required; any <u>expression</u>. |
| *expression2* | Required; any expression. |

**Remarks**

When you use the **+** operator, you may not be able to determine whether addition or string concatenation will occur. Use the **&** operator for concatenation to eliminate ambiguity and provide self-documenting code.

If at least one expression is not a <u>Variant</u>, the following rules apply:

| If | Then |
|------|------|
| Both expressions are <u>numeric data types</u> (<u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Single</u>, <u>Double</u>, <u>Date</u>, <u>Currency</u>, or <u>Decimal</u>) | Add. |
| Both expressions are <u>String</u> | Concatenate. |
| One expression is a numeric data type and the other is any **Variant** except <u>Null</u> | Add. |
| One expression is a **String** and the other is any **Variant** except **Null** | Concatenate. |
| One expression is an <u>Empty</u> **Variant** | Return the remaining expression unchanged as *result*. |
| One expression is a numeric data type and the other is a **String** | A `Type mismatch` error occurs. |
| Either expression is **Null** | *result* is **Null**. |

If both expressions are **Variant** expressions, the following rules apply:

| If | Then |
|------|------|
| Both **Variant** expressions are numeric | Add. |
| Both **Variant** expressions are strings | Concatenate. |
| One **Variant** expression is numeric and the other is a string | Add. |

For simple arithmetic addition involving only expressions of numeric data types, the <u>data type</u> of *result* is usually the same as that of the most precise expression. The order of

precision, from least to most precise, is **Byte**, **Integer**, **Long**, **Single**, **Double**, **Currency**, and **Decimal**. The following are exceptions to this order:

| If | Then *result* is |
|---|---|
| A **Single** and a **Long** are added, | a **Double**. |
| The data type of *result* is a **Long**, **Single**, or **Date** variant that overflows its legal range, | converted to a **Double** variant. |
| The data type of *result* is a **Byte** variant that overflows its legal range, | converted to an **Integer** variant. |
| The data type of *result* is an **Integer** variant that overflows its legal range, | converted to a **Long** variant. |
| A **Date** is added to any data type, | a **Date**. |

If one or both expressions are **Null** expressions, *result* is **Null**. If both expressions are **Empty**, *result* is an **Integer**. However, if only one expression is **Empty**, the other expression is returned unchanged as *result*.

**Note**   The order of precision used by addition and subtraction is not the same as the order of precision used by multiplication.

# – Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprSubtractC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprSubtractX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprSubtractS"}

Used to find the difference between two numbers or to indicate the negative value of a numeric expression.

**Syntax 1**

*result* **=** *number1–number2*

**Syntax 2**

*–number*

The – operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric variable. |
| *number* | Required; any numeric expression. |
| *number1* | Required; any numeric expression. |
| *number2* | Required; any numeric expression. |

**Remarks**

In Syntax 1, the – operator is the arithmetic subtraction operator used to find the difference between two numbers. In Syntax 2, the – operator is used as the unary negation operator to indicate the negative value of an expression.

The data type of *result* is usually the same as that of the most precise expression. The order of precision, from least to most precise, is Byte, Integer, Long, Single, Double, Currency, and Decimal. The following are exceptions to this order:

| If | Then *result* is |
|----|------------------|
| Subtraction involves a **Single** and a **Long**, | converted to a **Double**. |
| The data type of *result* is a **Long**, **Single**, or Date variant that overflows its legal range, | converted to a Variant containing a **Double**. |
| The data type of *result* is a **Byte** variant that overflows its legal range, | converted to an **Integer** variant. |
| The data type of *result* is an **Integer** variant that overflows its legal range, | converted to a **Long** variant. |
| Subtraction involves a **Date** and any other data type, | a **Date**. |
| Subtraction involves two **Date** expressions, | a **Double**. |

One or both expressions are Null expressions, *result* is **Null**. If an expression is Empty, it is treated as 0.

> **Note**   The order of precision used by addition and subtraction is not the same as the order of precision used by multiplication.

# * Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprMultiplyC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprMultiplyX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprMultiplyS"}

Used to multiply two numbers.

**Syntax**

*result* **=** *number1\*number2*

The **\*** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *number1* | Required; any <u>numeric expression</u>. |
| *number2* | Required; any numeric expression. |

**Remarks**

The <u>data type</u> of *result* is usually the same as that of the most precise <u>expression</u>. The order of precision, from least to most precise, is <u>Byte</u>, <u>Integer</u>, <u>Long</u>, <u>Single</u>, <u>Currency</u>, <u>Double</u>, and <u>Decimal</u>. The following are exceptions to this order:

| **If** | **Then *result* is** |
|--------|----------------------|
| Multiplication involves a **Single** and a **Long**, | converted to a **Double**. |
| The data type of *result* is a **Long**, **Single**, or **Date** variant that overflows its legal range, | converted to a **Variant** containing a **Double**. |
| The data type of *result* is a **Byte** variant that overflows its legal range, | converted to an **Integer** variant. |
| the data type of *result* is an **Integer** variant that overflows its legal range, | converted to a **Long** variant. |

If one or both expressions are <u>Null</u> expressions, *result* is **Null**. If an expression is <u>Empty</u>, it is treated as 0.

> **Note**   The order of precision used by multiplication is not the same as the order of precision used by addition and subtraction.

# / Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprDivideC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprDivideX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprDivideS"}

Used to divide two numbers and return a floating-point result.

**Syntax**

*result* **=** *number1***/***number2*

The **/** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *number1* | Required; any <u>numeric expression</u>. |
| *number2* | Required; any numeric expression. |

**Remarks**

The <u>data type</u> of *result* is usually a <u>Double</u> or a **Double** variant. The following are exceptions to this rule:

| If | Then *result* is |
|----|------------------|
| Both <u>expressions</u> are <u>Byte</u>, <u>Integer</u>, or <u>Single</u> expressions, | a **Single** unless it overflows its legal range; in which case, an error occurs. |
| Both expressions are **Byte**, **Integer**, or **Single** variants, | a **Single** variant unless it overflows its legal range; in which case, *result* is a <u>Variant</u> containing a **Double**. |
| Division involves a <u>Decimal</u> and any other data type, | a **Decimal** data type. |

One or both expressions are <u>Null</u> expressions, *result* is **Null**. Any expression that is <u>Empty</u> is treated as 0.

# \ Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprIntegerDivideC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprIntegerDivideX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprIntegerDivideS"}

Used to divide two numbers and return an integer result.

**Syntax**

*result* **=** *number1*\*number2*

The **\** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *number1* | Required; any <u>numeric expression</u>. |
| *number2* | Required; any numeric expression. |

**Remarks**

Before division is performed, the numeric expressions are rounded to <u>Byte</u>, <u>Integer</u>, or <u>Long</u> expressions.

Usually, the <u>data type</u> of *result* is a **Byte**, **Byte** variant, **Integer**, **Integer** variant, **Long**, or **Long** variant, regardless of whether *result* is a whole number. Any fractional portion is truncated. However, if any <u>expression</u> is <u>Null</u>, *result* is **Null**. Any expression that is <u>Empty</u> is treated as 0.

# Mod Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprModC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprModX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprModS"}

Used to divide two numbers and return only the remainder.

**Syntax**

*result* **=** *number1* **Mod** *number2*

The **Mod** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *number1* | Required; any <u>numeric expression</u>. |
| *number2* | Required; any numeric expression. |

**Remarks**

The modulus, or remainder, operator divides *number1* by *number2* (rounding floating-point numbers to integers) and returns only the remainder as *result*. For example, in the following <u>expression</u>, A (*result*) equals 5.

```
A = 19 Mod 6.7
```

Usually, the <u>data type</u> of *result* is a <u>Byte</u>, **Byte** variant, <u>Integer</u>, **Integer** variant, <u>Long</u>, or <u>Variant</u> containing a **Long**, regardless of whether or not *result* is a whole number. Any fractional portion is truncated. However, if any expression is <u>Null</u>, *result* is **Null**. Any expression that is <u>Empty</u> is treated as 0.

# & Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprConcatenationC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprConcatenationX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprConcatenationS"}

Used to force string concatenation of two expressions.

**Syntax**

*result* **=** *expression1* **&** *expression2*

The **&** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any String or Variant variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

If an *expression* is not a string, it is converted to a **String** variant. The data type of *result* is **String** if both expressions are string expressions; otherwise, *result* is a **String** variant. If both expressions are Null, *result* is **Null**. However, if only one *expression* is **Null**, that expression is treated as a zero-length string ("") when concatenated with the other expression. Any expression that is Empty is also treated as a zero-length string.

# Comparison Operators

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vagrpComparisonC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vagrpComparisonX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vagrpComparisonS"}

Used to compare expressions.

**Syntax**

result **=** expression1 comparisonoperator expression2

result **=** object1 **Is** object2

result **=** string **Like** pattern

Comparison operators have these parts:

| Part | Description |
|------|-------------|
| result | Required; any numeric variable. |
| expression | Required; any expression. |
| comparisonoperator | Required; any comparison operator. |
| object | Required; any object name. |
| string | Required; any string expression. |
| pattern | Required; any string expression or range of characters. |

**Remarks**

The following table contains a list of the comparison operators and the conditions that determine whether result is **True**, **False**, or Null:

| Operator | True if | False if | Null if |
|----------|---------|----------|---------|
| **< (**Less than) | expression1 < expression2 | expression1 >= expression2 | expression1 or expression2 = **Null** |
| **<= (**Less than or equal to) | expression1 <= expression2 | expression1 > expression2 | expression1 or expression2 = **Null** |
| **> (**Greater than) | expression1 > expression2 | expression1 <= expression2 | expression1 or expression2 = **Null** |
| **>= (**Greater than or equal to) | expression1 >= expression2 | expression1 < expression2 | expression1 or expression2 = **Null** |
| **= (**Equal to) | expression1 = expression2 | expression1 <> expression2 | expression1 or expression2 = **Null** |
| **<> (**Not equal to) | expression1 <> expression2 | expression1 = expression2 | expression1 or expression2 = **Null** |

**Note**   The **Is** and **Like** operators have specific comparison functionality that differs from the operators in the table.

When comparing two expressions, you may not be able to easily determine whether the expressions are being compared as numbers or as strings. The following table shows how the expressions are compared or the result when either expression is not a Variant:

| If | Then |
|----|------|

| | |
|---|---|
| Both expressions are <u>numeric data types</u> (<u>Byte</u>, <u>Boolean</u>, <u>Integer</u>, <u>Long</u>, <u>Single</u>, <u>Double</u>, <u>Date</u>, <u>Currency</u>, or <u>Decimal</u>) | Perform a numeric comparison. |
| Both expressions are <u>String</u> | Perform a <u>string comparison</u>. |
| One expression is a numeric data type and the other is a **Variant** that is, or can be, a number | Perform a numeric comparison. |
| One expression is a numeric data type and the other is a string **Variant** that can't be converted to a number | A `Type Mismatch` error occurs. |
| One expression is a **String** and the other is any **Variant** except a **Null** | Perform a string comparison. |
| One expression is <u>Empty</u> and the other is a numeric data type | Perform a numeric comparison, using 0 as the **Empty** expression. |
| One expression is **Empty** and the other is a **String** | Perform a string comparison, using a zero-length string ("") as the **Empty** expression. |

If *expression1* and *expression2* are both **Variant** expressions, their underlying type determines how they are compared. The following table shows how the expressions are compared or the result from the comparison, depending on the underlying type of the **Variant**:

| If | Then |
|---|---|
| Both **Variant** expressions are numeric | Perform a numeric comparison. |
| Both **Variant** expressions are strings | Perform a string comparison. |
| One **Variant** expression is numeric and the other is a string | The numeric expression is less than the string expression. |
| One **Variant** expression is **Empty** and the other is numeric | Perform a numeric comparison, using 0 as the **Empty** expression. |
| One **Variant** expression is **Empty** and the other is a string | Perform a string comparison, using a zero-length string ("") as the **Empty** expression. |
| Both **Variant** expressions are **Empty** | The expressions are equal. |

When a **Single** is compared to a **Double**, the **Double** is rounded to the precision of the **Single**.

If a **Currency** is compared with a **Single** or **Double**, the **Single** or **Double** is converted to a **Currency**. Similarly, when a **Decimal** is compared with a **Single** or **Double**, the **Single** or **Double** is converted to a **Decimal**. For **Currency**, any fractional value less than .0001 may be lost; for **Decimal**, any fractional value less than 1E-28 may be lost, or an overflow error can occur. Such fractional value loss may cause two values to compare as equal when they are not.

# And Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprAndC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprAndX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprAndS"}

Used to perform a logical conjunction on two expressions.

**Syntax**

*result* **=** *expression1* **And** *expression2*

The **And** operator syntax has these parts:

| Part | Description |
| --- | --- |
| *result* | Required; any numeric variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

If both expressions evaluate to **True**, *result* is **True**. If either expression evaluates to **False**, *result* is **False.** The following table illustrates how *result* is determined:

| If *expression1* is | And *expression2* is | The *result* is |
| --- | --- | --- |
| **True** | **True** | **True** |
| **True** | **False** | **False** |
| **True** | Null | **Null** |
| **False** | **True** | **False** |
| **False** | **False** | **False** |
| **False** | **Null** | **False** |
| **Null** | **True** | **Null** |
| **Null** | **False** | **False** |
| **Null** | **Null** | **Null** |

The **And** operator also performs a bitwise comparison of identically positioned bits in two numeric expressions and sets the corresponding bit in *result* according to the following table:

| If bit in *expression1* is | And bit in *expression2* is | The *result* is |
| --- | --- | --- |
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

# Eqv Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprEqvC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprEqvX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprEqvS"}

Used to perform a logical equivalence on two underlying expressions.

**Syntax**

*result* **=** *expression1* **Eqv** *expression2*

The **Eqv** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

If either expression is Null, *result* is also **Null**. When neither expression is **Null**, *result* is determined according to the following table:

| If *expression1* is | And *expression2* is | The *result* is |
|---------------------|----------------------|-----------------|
| True | True | True |
| True | False | False |
| False | True | False |
| False | False | True |

The **Eqv** operator performs a bitwise comparison of identically positioned bits in two numeric expressions and sets the corresponding bit in *result* according to the following table:

| If bit in *expression1* is | And bit in *expression2* is | The *result* is |
|----------------------------|-----------------------------|-----------------|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

# Imp Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprImpC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprImpX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprImpS"}

Used to perform a logical implication on two underline expressions.

**Syntax**

*result* **=** *expression1* **Imp** *expression2*

The **Imp** operator syntax has these parts:

| Part | Description |
| --- | --- |
| *result* | Required; any numeric variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

The following table illustrates how *result* is determined:

| If *expression1* is | And *expression2* is | The *result* is |
| --- | --- | --- |
| True | True | True |
| True | False | False |
| True | Null | Null |
| False | True | True |
| False | False | True |
| False | Null | True |
| Null | True | True |
| Null | False | Null |
| Null | Null | Null |

The **Imp** operator performs a bitwise comparison of identically positioned bits in two numeric expressions and sets the corresponding bit in *result* according to the following table:

| If bit in *expression1* is | And bit in *expression2* is | The *result* is |
| --- | --- | --- |
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

# Not Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprNotC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprNotX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprNotS"}

Used to perform logical negation on an <u>expression</u>.

**Syntax**

*result* **= Not** *expression*

The **Not** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *expression* | Required; any expression. |

**Remarks**

The following table illustrates how *result* is determined:

| If *expression* is | Then *result* is |
|--------------------|------------------|
| True | False |
| False | True |
| <u>Null</u> | Null |

In addition, the **Not** operator inverts the bit values of any variable and sets the
corresponding bit in *result* according to the following table:

| If bit in *expression* is | Then bit in *result* is |
|---------------------------|-------------------------|
| o | 1 |
| 1 | 0 |

# Or Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprOrC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprOrX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprOrS"}

Used to perform a logical disjunction on two expressions.

**Syntax**

*result* **=** *expression1* **Or** *expression2*

The **Or** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

If either or both expressions evaluate to **True**, *result* is **True**. The following table illustrates how *result* is determined:

| If *expression1* is | And *expression2* is | Then *result* is |
|---------------------|----------------------|------------------|
| **True** | **True** | **True** |
| **True** | **False** | **True** |
| **True** | Null | **True** |
| **False** | **True** | **True** |
| **False** | **False** | **False** |
| **False** | **Null** | **Null** |
| **Null** | **True** | **True** |
| **Null** | **False** | **Null** |
| **Null** | **Null** | **Null** |

The **Or** operator also performs a bitwise comparison of identically positioned bits in two numeric expressions and sets the corresponding bit in *result* according to the following table:

| If bit in *expression1* is | And bit in *expression2* is | Then *result* is |
|----------------------------|------------------------------|------------------|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

# Xor Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprXorC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprXorX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprXorS"}

Used to perform a logical exclusion on two expressions.

**Syntax**

[*result =*] *expression1* **Xor** *expression2*

The **Xor** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Optional; any numeric variable. |
| *expression1* | Required; any expression. |
| *expression2* | Required; any expression. |

**Remarks**

If one, and only one, of the expressions evaluates to **True**, *result* is **True**. However, if either
expression is Null, *result* is also **Null**. When neither expression is **Null**, *result* is determined
according to the following table:

| If *expression1* is | And *expression2* is | Then *result* is |
|---------------------|----------------------|------------------|
| **True** | **True** | **False** |
| **True** | **False** | **True** |
| **False** | **True** | **True** |
| **False** | **False** | **False** |

The **Xor** operator performs as both a logical and bitwise operator. A bit-wise comparison of
two expressions using exclusive-or logic to form the result, as shown in the following table:

| If bit in *expression1* is | And bit in *expression2* is | Then *result* is |
|----------------------------|------------------------------|------------------|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

# Is Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprIsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprIsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprIsS"}

Used to compare two object reference <u>variables</u>.

**Syntax**

*result* **=** *object1* **Is** *object2*

The **Is** operator syntax has these parts:

| Part | Description |
|---|---|
| *result* | Required; any numeric variable. |
| *object1* | Required; any object name. |
| *object2* | Required; any object name. |

**Remarks**

If *object1* and *object2* both refer to the same object, *result* is **True**; if they do not, *result* is **False**. Two variables can be made to refer to the same object in several ways.

In the following example, A has been set to refer to the same object as B:

```
Set A = B
```

The following example makes A and B refer to the same object as C:

```
Set A = C
Set B = C
```

# Like Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprLikeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaoprLikeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaoprLikeS"}

Used to compare two strings.

**Syntax**

*result* **=** *string* **Like** *pattern*

The **Like** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *result* | Required; any numeric <u>variable</u>. |
| *string* | Required; any <u>string expression</u>. |
| *pattern* | Required; any string expression conforming to the pattern-matching conventions described in Remarks. |

**Remarks**

If *string* matches *pattern*, *result* is **True**; if there is no match, *result* is **False**. If either *string* or *pattern* is <u>Null</u>, *result* is **Null**.

The behavior of the **Like** operator depends on the **Option Compare** statement. The default <u>string-comparison</u> method for each <u>module</u> is **Option Compare Binary**.

**Option Compare Binary** results in string comparisons based on a <u>sort order</u> derived from the internal binary representations of the characters. Sort order is determined by the code page. In the following example, a typical binary sort order is shown:

A < B < E < Z < a < b < e < z < À < Ê < Ø < à < ê < ø

**Option Compare Text** results in string comparisons based on a case-insensitive, textual sort order determined by your system's <u>locale</u>. When you sort The same characters using **Option Compare Text**, the following text sort order is produced:

(A=a) < (À=à) < (B=b) < (E=e) < (Ê=ê) < (Z=z) < (Ø=ø)

Built-in pattern matching provides a versatile tool for string comparisons. The pattern-matching features allow you to use wildcard characters, character lists, or character ranges, in any combination, to match strings. The following table shows the characters allowed in *pattern* and what they match:

| Characters in pattern | Matches in *string* |
|------------------------|---------------------|
| **?** | Any single character. |
| **\*** | Zero or more characters. |
| **#** | Any single digit (0–9). |
| [*charlist*] | Any single character in *charlist*. |
| [**!***charlist*] | Any single character not in *charlist*. |

A group of one or more characters (*charlist*) enclosed in brackets (**[ ]**) can be used to match any single character in *string* and can include almost any <u>character code</u>, including digits.

> **Note**  To match the special characters left bracket (**[**), question mark (**?**), number sign

(**#**), and asterisk (**\***), enclose them in brackets. The right bracket (**]**) can't be used within a group to match itself, but it can be used outside a group as an individual character.

By using a hyphen (–) to separate the upper and lower bounds of the range, *charlist* can specify a range of characters. For example, [A-Z] results in a match if the corresponding character position in *string* contains any uppercase letters in the range A–Z. Multiple ranges are included within the brackets without delimiters.

The meaning of a specified range depends on the character ordering valid at <u>run time</u> (as determined by **Option Compare** and the <u>locale</u> setting of the system the code is running on). Using the **Option Compare Binary** example, the range [A–E] matches A, B and E. With **Option Compare Text**, [A–E] matches A, a, À, à, B, b, E, e. The range does not match Ê or ê because accented characters fall after unaccented characters in the sort order.

Other important rules for pattern matching include the following:

- An exclamation point (**!**) at the beginning of *charlist* means that a match is made if any character except the characters in *charlist* is found in *string*. When used outside brackets, the exclamation point matches itself.

- A hyphen (–) can appear either at the beginning (after an exclamation point if one is used) or at the end of *charlist* to match itself. In any other location, the hyphen is used to identify a range of characters.

- When a range of characters is specified, they must appear in ascending sort order (from lowest to highest). [A–Z] is a valid pattern, but [Z–A] is not.

- The character sequence [] is considered a zero-length string ("").

In some languages, there are special characters in the alphabet that represent two separate characters. For example, several languages use the character "æ" to represent the characters "a" and "e" when they appear together. The **Like** operator recognizes that the single special character and the two individual characters are equivalent.

When a language that uses a special character is specified in the system locale settings, an occurrence of the single special character in either *pattern* or *string* matches the equivalent 2-character sequence in the other string. Similarly, a single special character in *pattern* enclosed in brackets (by itself, in a list, or in a range) matches the equivalent 2-character sequence in *string*.

# Count Property Example

This example uses the **Collection** object's **Count** property to specify how many iterations are required to remove all the elements of the collection called `MyClasses`. When collections are numerically indexed, the base is 1 by default. Since collections are reindexed automatically when a removal is made, the following code removes the first member on each iteration.

```
Dim Num, MyClasses
For Num = 1 To MyClasses.Count        ' Remove name from the collection.
   MyClasses.Remove 1    ' Default collection numeric indexes
Next  ' begin at 1.
```

# Description Property Example

This example assigns a user-defined message to the **Description** property of the **Err** object.

```
Err.Description = "It was not possible to access an object necessary " _
& "for this operation."
```

# HelpContext Property Example

This example uses the **HelpContext** property of the **Err** object to show the Visual Basic Help topic for the Overflow error.

```
Dim Msg
Err.Clear
On Error Resume Next
Err.Raise 6 ' Generate "Overflow" error.
If Err.Number <> 0 Then
   Msg = "Press F1 or HELP to see " & Err.HelpFile & " topic for" & _
   " the following HelpContext: " & Err.HelpContext
   MsgBox Msg, , "Error: " & Err.Description, Err.HelpFile, _
Err.HelpContext
End If
```

# HelpFile Property Example

This example uses the **HelpFile** property of the **Err** object to start the Help system. By default, the **HelpFile** property contains the name of the Visual Basic Help file.

```
Dim Msg
Err.Clear
On Error Resume Next ' Suppress errors for demonstration purposes.
Err.Raise 6 ' Generate "Overflow" error.
Msg = "Press F1 or HELP to see " & Err.HelpFile & _
" topic for this error"
MsgBox Msg, , "Error: " & Err.Description,Err.HelpFile, Err.HelpContext
```

# LastDLLError Property Example

When pasted into a **UserForm** module, the following code causes an attempt to call a DLL function. The call fails because the argument that is passed in (a null pointer) generates an error, and in any event, SQL can't be cancelled if it isn't running. The code following the call checks the return of the call, and then prints at the **LastDLLError** property of the **Err** object to reveal the error code. On systems without DLLs, **LastDLLError** always returns zero.

```
 Private Declare Function SQLCancel Lib "ODBC32.dll" _
 (ByVal hstmt As Long) As Integer

Private Sub UserForm_Click()
   Dim RetVal
   ' Call with invalid argument.
   RetVal = SQLCancel(myhandle&)
   ' Check for SQL error code.
   If RetVal = -2 Then
      'Display the information code.
      MsgBox "Error code is :" & Err.LastDllError
    End If
End Sub
```

# Number Property Example

The first example illustrates a typical use of the **Number** property in an error-handling routine. The second example examines the **Number** property of the **Err** object to determine whether an error returned by an Automation object was defined by the object, or whether it was mapped to an error defined by Visual Basic. Note that the constant **vbObjectError** is a very large negative number that an object adds to its own error code to indicate that the error is defined by the server. Therefore, subtracting it from **Err.Number** strips it out of the result. If the error is object-defined, the base number is left in `MyError`, which is displayed in a message box along with the original source of the error. If **Err.Number** represents a Visual Basic error, then the Visual Basic error number is displayed in the message box.

```
' Typical use of Number property
Sub test()
    On Error GoTo out

    Dim x, y
    x = 1 / y    ' Create division by zero error
    Exit Sub
    out:
    MsgBox Err.Number
    MsgBox Err.Description
    ' Check for division by zero error
    If Err.Number = 11 Then
        y = y + 1
    End If
    Resume
End Sub



' Using Number property with an error from an
' Automation object
Dim MyError, Msg
' First, strip off the constant added by the object to indicate one
' of its own errors.
MyError = Err.Number - vbObjectError
' If you subtract the vbObjectError constant, and the number is still
' in the range 0-65,535, it is an object-defined error code.
If MyError > 0 And MyError < 65535 Then
    Msg = "The object you accessed assigned this number to the error: " _
          & MyError & ". The originator of the error was: " _
          & Err.Source & ". Press F1 to see originator's Help topic."
' Otherwise it is a Visual Basic error number.
Else
    Msg = "This error (# " & Err.Number & ") is a Visual Basic error" & _
```

```vb
            " number. Press Help button or F1 for the Visual Basic Help" _
            & " topic for this error."
End If
    MsgBox Msg, , "Object Error", Err.HelpFile, Err.HelpContext
```

# Source Property Example

This example assigns the Programmatic ID of an Automation object created in Visual Basic to the variable `MyObjectID`, and then assigns that to the **Source** property of the **Err** object when it generates an error with the **Raise** method. When handling errors, you should not use the **Source** property (or any **Err** properties other than **Number**) programmatically. The only valid use of properties other than **Number** is for displaying rich information to an end user in cases where you can't handle an error. The example assumes that `App` and `MyClass` are valid references.

```
Dim MyClass, MyObjectID, MyHelpFile, MyHelpContext
' An object of type MyClass generates an error and fills all Err object
' properties, including Source, which receives MyObjectID, which is a
' combination of the Title property of the App object and the Name
' property of the MyClass object.
MyObjectID = App.Title & "." & MyClass.Name
Err.Raise   Number := vbObjectError + 894, Source := MyObjectID, _
            Description := "Was not able to complete your task", _
            HelpFile := MyHelpFile, HelpContext := MyHelpContext
```

# Calendar Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproCalendarC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproCalendarX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproCalendarA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproCalendarS"}

Returns or sets a value specifying the type of calendar to use with your <u>project</u>.

You can use one of two settings for **Calendar**:

| Setting | Value | Description |
|---------|-------|-------------|
| **vbCalGreg** | 0 | Use Gregorian calendar (default). |
| **vbCalHijri** | 1 | Use Hijri calendar. |

### Remarks

You can only set the **Calendar** property programmatically. For example, to use the Hijri calendar, use:

```
Calendar = vbCalHijri
```

# Count Property

Returns a <u>Long</u> (long integer) containing the number of objects in a <u>collection</u>. Read-only.

# Description Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDescriptionC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproDescriptionX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproDescriptionA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproDescriptionS"}

Returns or sets a <u>string expression</u> containing a descriptive string associated with an object. Read/write.

For the **Err** object, returns or sets a descriptive string associated with an error.

**Remarks**

The **Description** property setting consists of a short description of the error. Use this <u>property</u> to alert the user to an error that you either can't or don't want to handle. When generating a user-defined error, assign a short description of your error to the **Description** property. If **Description** isn't filled in, and the value of **Number** corresponds to a Visual Basic <u>run-time error</u>, the string returned by the **Error** function is placed in **Description** when the error is generated.

# HelpContext Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproHelpContextC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproHelpContextX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproHelpContextA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproHelpContextS"}

Returns or sets a <u>string expression</u> containing the context ID for a topic in a Help file. Read/write.

**Remarks**

The **HelpContext** <u>property</u> is used to automatically display the Help topic specified in the **HelpFile** property. If both **HelpFile** and **HelpContext** are empty, the value of **Number** is checked. If **Number** corresponds to a Visual Basic <u>run-time error</u> value, then the Visual Basic Help context ID for the error is used. If the **Number** value doesn't correspond to a Visual Basic error, the contents screen for the Visual Basic Help file is displayed.

> **Note**   You should write routines in your application to handle typical errors. When programming with an object, you can use the object's Help file to improve the quality of your error handling, or to display a meaningful message to your user if the error isn't recoverable.

# HelpFile Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproHelpFileC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproHelpFileX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproHelpFileA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproHelpFileS"}

Returns or sets a <u>string expression</u> the fully qualified path to a Help file. Read/write.

**Remarks**

If a Help file is specified in **HelpFile**, it is automatically called when the user presses the
**Help** button (or the F1 KEY in Windows or the HELP key on the Macintosh) in the error
message dialog box. If the **HelpContext** property contains a valid context ID for the
specified file, that topic is automatically displayed. If no **HelpFile** is specified, the Visual
Basic Help file is displayed.

> **Note**   You should write routines in your application to handle typical errors. When
> programming with an object, you can use the object's Help file to improve the quality of
> your error handling, or to display a meaningful message to your user if the error isn't
> recoverable.

# LastDLLError Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproLastDLLErrorC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproLastDLLErrorX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproLastDLLErrorA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproLastDLLErrorS"}

Returns a system error code produced by a call to a <u>dynamic-link library</u> (DLL). Read-only. LastDLLError always returns zero on the Macintosh.

**Remarks**

The **LastDLLError** <u>property</u> applies only to DLL calls made from Visual Basic code. When such a call is made, the called function usually returns a code indicating success or failure, and the **LastDLLError** property is filled. Check the documentation for the DLL's functions to determine the return values that indicate success or failure. Whenever the failure code is returned, the Visual Basic application should immediately check the **LastDLLError** property. No exception is raised when the **LastDLLError** property is set.

# Number Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproNumberC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproNumberX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproNumberA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproNumberS"}

Returns or sets a numeric value specifying an error. **Number** is the **Err** object's default property. Read/write.

**Remarks**

When returning a user-defined error from an object, set **Err.Number** by adding the number you selected as an error code to the **vbObjectError** constant. For example, you use the following code to return the number 1051 as an error code:

```
Err.Raise Number := vbObjectError + 1051, Source:= "SomeClass"
```

# Source Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproSourceC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproSourceX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproSourceA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproSourceS"}

Returns or sets a underline string expression specifying the name of the object or application that originally generated the error. Read/write.

**Remarks**

The **Source** property specifies a string expression representing the object that generated the error; the expression is usually the object's class name or programmatic ID. Use **Source** to provide information when your code is unable to handle an error generated in an accessed object. For example, if you access Microsoft Excel and it generates a `Division by zero` error, Microsoft Excel sets **Err.Number** to its error code for that error and sets **Source** to Excel.Application.

When generating an error from code, **Source** is your application's programmatic ID. For class modules, **Source** should contain a name having the form *project.class*. When an unexpected error occurs in your code, the **Source** property is automatically filled in. For errors in a standard module, **Source** contains the project name. For errors in a class module, **Source** contains a name with the *project.class* form.

# DeleteSetting Statement Example

The following example first uses the **SaveSetting** statement to make entries in the Windows registry (or .ini file on 16-bit Windows platforms) for the `MyApp` application, and then uses the **DeleteSetting** statement to remove them. Because no **key** argument is specified, the whole section is deleted, including the section name and all its keys.

```
' Place some settings in the registry.
SaveSetting appname := "MyApp", section := "Startup", _
            key := "Top", setting := 75
SaveSetting "MyApp","Startup", "Left", 50
' Remove section and all its settings from registry.
DeleteSetting "MyApp", "Startup"
```

# GetAllSettings Function Example

This example first uses the **SaveSetting** statement to make entries in the Windows registry for the application specified as *appname*, then uses the **GetAllSettings** function to display the settings. Note that application names and *section* names can't be retrieved with **GetAllSettings**. Finally, the **DeleteSetting** statement removes the application's entries.

```
' Variant to hold 2-dimensional array returned by GetAllSettings
' Integer to hold counter.
Dim MySettings As Variant, intSettings As Integer
' Place some settings in the registry.
SaveSetting appname := "MyApp", section := "Startup", _
key := "Top", setting := 75
SaveSetting "MyApp","Startup", "Left", 50
' Retrieve the settings.
MySettings = GetAllSettings(appname := "MyApp", section := "Startup")
   For intSettings = LBound(MySettings, 1) To UBound(MySettings, 1)
      Debug.Print MySettings(intSettings, 0), MySettings(intSettings, 1)
   Next intSettings
DeleteSetting "MyApp", "Startup"
```

# GetSetting Function Example

This example first uses the **SaveSetting** statement to make entries in the Windows registry (or .ini file on 16-bit Windows platforms) for the application specified as **_appname_**, and then uses the **GetSetting** function to display one of the settings. Because the **_default_** argument is specified, some value is guaranteed to be returned. Note that **_section_** names can't be retrieved with **GetSetting**. Finally, the **DeleteSetting** statement removes all the application's entries.

```
' Variant to hold 2-dimensional array returned by GetSetting.
Dim MySettings As Variant
' Place some settings in the registry.
SaveSetting "MyApp","Startup", "Top", 75
SaveSetting "MyApp","Startup", "Left", 50

Debug.Print GetSetting(appname := "MyApp", section := "Startup", _
                       key := "Left", default := "25")

DeleteSetting "MyApp", "Startup"
```

# SaveSetting Statement Example

The following example first uses the **SaveSetting** statement to make entries in the Windows registry (or .ini file on 16-bit Windows platforms) for the `MyApp` application, and then uses the **DeleteSetting** statement to remove them.

```
' Place some settings in the registry.
SaveSetting appname := "MyApp", section := "Startup", _
            key := "Top", setting := 75
SaveSetting "MyApp","Startup", "Left", 50
' Remove section and all its settings from registry.
DeleteSetting "MyApp", "Startup"
```

# DeleteSetting Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmDeleteSettingC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmDeleteSettingX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmDeleteSettingS"}

Deletes a section or key setting from an application's entry in the Windows registry or (on
the Macintosh) information in the application's initialization file.

**Syntax**

**DeleteSetting** *appname*, *section*[, *key*]

The **DeleteSetting** statement syntax has these named arguments:

| Part | Description |
|---|---|
| *appname* | Required. String expression containing the name of the application or project to which the section or key setting applies. On the Macintosh, this is the filename of the initialization file in the Preferences folder in the System folder. |
| *section* | Required. String expression containing the name of the section where the key setting is being deleted. If only *appname* and *section* are provided, the specified section is deleted along with all related key settings. |
| *key* | Optional. String expression containing the name of the key setting being deleted. |

**Remarks**

If all arguments are provided, the specified setting is deleted. A run-time error occurs if you
attempt to use the **DeleteSetting** statement on a non-existent section or key setting.

# GetAllSettings Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctGetAllSettingsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctGetAllSettingsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctGetAllSettingsS"}

Returns a list of key settings and their respective values (originally created with **SaveSetting**) from an application's entry in the Windows registry or (on the Macintosh) information in the application's initialization file.

**Syntax**

**GetAllSettings(*appname, section*)**

The **GetAllSettings** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| ***appname*** | Required. String expression containing the name of the application or project whose key settings are requested. On the Macintosh, this is the filename of the initialization file in the Preferences folder in the System folder. |
| ***section*** | Required. String e**xpression** containing the name of the section whose key settings are requested. **GetAllSettings** returns a Variant whose contents is a two-dimensional array of strings containing all the key settings in the specified section and their corresponding values. |

**Remarks**

**GetAllSettings** returns an uninitialized **Variant** if either ***appname*** or ***section*** does not exist.

# GetSetting Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctGetSettingC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctGetSettingX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctGetSettingS"}

Returns a key setting value from an application's entry in the Windows registry or (on the
Macintosh) information in the application's initialization file.

**Syntax**

**GetSetting(*appname*, *section*, *key*[*, default*])**

The **GetSetting** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| ***appname*** | Required. String expression containing the name of the application or project whose key setting is requested. On the Macintosh, this is the filename of the initialization file in the Preferences folder in the System folder. |
| ***section*** | Required. String expression containing the name of the section where the key setting is found. |
| ***key*** | Required. String expression containing the name of the key setting to return. |
| ***default*** | Optional. Expression containing the value to return if no value is set in the key setting. If omitted, ***default*** is assumed to be a zero-length string (""). |

**Remarks**

If any of the items named in the **GetSetting** arguments do not exist, **GetSetting** returns
the value of ***default***.

# SaveSetting Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmSaveSettingC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmSaveSettingX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmSaveSettingS"}

Saves or creates an application entry in the application's entry in the Windows registry or
(on the Macintosh) information in the application's initialization file.

**Syntax**

**SaveSetting** *appname*, *section,* *key, setting*

The **SaveSetting** statement syntax has these named arguments:

| Part | Description |
|------|-------------|
| *appname* | Required. String expression containing the name of the application or project to which the setting applies. On the Macintosh, this is the filename of the initialization file in the Preferences folder in the System folder. |
| *section* | Required. String expression containing the name of the section where the key setting is being saved. |
| *key* | Required. String expression containing the name of the key setting being saved. |
| *setting* | Required. Expression containing the value that ***key*** is being set to. |

**Remarks**

An error occurs if the key setting can't be saved for any reason.

# Chr Function Example

This example uses the **Chr** function to return the character associated with the specified character code.

```
Dim MyChar
MyChar = Chr(65)  ' Returns A.
MyChar = Chr(97)  ' Returns a.
MyChar = Chr(62)  ' Returns >.
MyChar = Chr(37)  ' Returns %.
```

# Format Function Example

This example shows various uses of the **Format** function to format values using both named formats and user-defined formats. For the date separator (**/**), time separator (**:**), and AM/PM literal, the actual formatted output displayed by your system depends on the locale settings on which the code is running. When times and dates are displayed in the development environment, the short time format and short date format of the code locale are used. When displayed by running code, the short time format and short date format of the system locale are used, which may differ from the code locale. For this example, English/U.S. is assumed.

`MyTime` and `MyDate` are displayed in the development environment using current system short time setting and short date setting.

```
Dim MyTime, MyDate, MyStr
MyTime = #17:04:23#
MyDate = #January 27, 1993#


' Returns current system time in the system-defined long time format.
MyStr = Format(Time, "Long Time")


' Returns current system date in the system-defined long date format.
MyStr = Format(Date, "Long Date")


MyStr = Format(MyTime, "h:m:s")      ' Returns "17:4:23".
MyStr = Format(MyTime, "hh:mm:ss AMPM")    ' Returns "05:04:23 PM".
MyStr = Format(MyDate, "dddd, mmm d yyyy")      ' Returns "Wednesday,
    ' Jan 27 1993".
' If format is not supplied, a string is returned.
MyStr = Format(23)   ' Returns "23".


' User-defined formats.
MyStr = Format(5459.4, "##,##0.00") ' Returns "5,459.40".
MyStr = Format(334.9, "###0.00")    ' Returns "334.90".
MyStr = Format(5, "0.00%") ' Returns "500.00%".
MyStr = Format("HELLO", "<")  ' Returns "hello".
MyStr = Format("This is it", ">")   ' Returns "THIS IS IT".
```

# Hex Function Example

This example uses the **Hex** function to return the hexadecimal value of a number.

```
Dim MyHex
MyHex = Hex(5) ' Returns 5.
MyHex = Hex(10)   ' Returns A.
MyHex = Hex(459)  ' Returns 1CB.
```

# InStr Function Example

This example uses the **InStr** function to return the position of the first occurrence of one string within another.

```
Dim SearchString, SearchChar, MyPos
SearchString ="XXpXXpXXPXXP"  ' String to search in.
SearchChar = "P"  ' Search for "P".

' A textual comparison starting at position 4. Returns 6.
MyPos = Instr(4, SearchString, SearchChar, 1)

' A binary comparison starting at position 1. Returns 9.
MyPos = Instr(1, SearchString, SearchChar, 0)

' Comparison is binary by default (last argument is omitted).
MyPos = Instr(SearchString, SearchChar)    ' Returns 9.

MyPos = Instr(1, SearchString, "W") ' Returns 0.
```

# LCase Function Example

This example uses the **LCase** function to return a lowercase version of a string.

```
Dim UpperCase, LowerCase
Uppercase = "Hello World 1234"        ' String to convert.
Lowercase = Lcase(UpperCase)  ' Returns "hello world 1234".
```

# Left Function Example

This example uses the **Left** function to return a specified number of characters from the left side of a string.

```
Dim AnyString, MyStr
AnyString = "Hello World"  ' Define string.
MyStr = Left(AnyString, 1) ' Returns "H".
MyStr = Left(AnyString, 7) ' Returns "Hello W".
MyStr = Left(AnyString, 20)   ' Returns "Hello World".
```

# Len Function Example

The first example uses **Len** to return the number of characters in a string or the number of bytes required to store a variable. The **Type…End Type** block defining `CustomerRecord` must be preceded by the keyword **Private** if it appears in a class module. In a standard module, a **Type** statement can be **Public**.

```
Type CustomerRecord  ' Define user-defined type.
   ID As Integer  ' Place this definition in a
   Name As String * 10  ' standard module.
   Address As String * 30
End Type

Dim Customer As CustomerRecord     ' Declare variables.
Dim MyInt As Integer, MyCur As Currency
Dim MyString, MyLen
MyString = "Hello World"   ' Initialize variable.
MyLen = Len(MyInt)    ' Returns 2.
MyLen = Len(Customer)    ' Returns 42.
MyLen = Len(MyString)    ' Returns 11.
MyLen = Len(MyCur)    ' Returns 8.
```

The second example uses **LenB** and a user-defined function (**LenMbcs**) to return the number of byte characters in a string if ANSI is used to represent the string.

```
Function LenMbcs (ByVal str as String)
   LenMbcs = LenB(StrConv(str, vbFromUnicode))
End Function

Dim MyString, MyLen
MyString = "ABc"
' Where "A" and "B" are DBCS and "c" is SBCS.
MyLen = Len(MyString)
' Returns 3 - 3 characters in the string.
MyLen = LenB(MyString)
' Returns 6 - 6 bytes used for Unicode.
MyLen = LenMbcs(MyString)
' Returns 5 - 5 bytes used for ANSI.
```

# LSet Statement Example

This example uses the **LSet** statement to left align a string within a string variable. Although **LSet** can also be used to copy a variable of one user-defined type to another variable of a different, but compatible, user-defined type, this practice is not recommended. Due to the varying implementations of data structures among platforms, such a use of **LSet** can't be guaranteed to be portable.

```
Dim MyString
MyString = "0123456789" ' Initialize string.
Lset MyString = "<-Left"   ' MyString contains "<-Left     ".
```

# LTrim, RTrim, and Trim Functions Example

This example uses the **LTrim** function to strip leading spaces and the **RTrim** function to strip trailing spaces from a string variable. It uses the **Trim** function to strip both types of spaces.

```
Dim MyString, TrimString
MyString = "  <-Trim->  "  ' Initialize string.
TrimString = LTrim(MyString)  ' TrimString = "<-Trim->  ".
TrimString = RTrim(MyString)  ' TrimString = "  <-Trim->".
TrimString = LTrim(RTrim(MyString)) ' TrimString = "<-Trim->".
' Using the Trim function alone achieves the same result.
TrimString = Trim(MyString)   ' TrimString = "<-Trim->".
```

# Mid Function Example

The first example uses the **Mid** function to return a specified number of characters from a string.

```
Dim MyString, FirstWord, LastWord, MidWords
MyString = "Mid Function Demo"      ' Create text string.
FirstWord = Mid(MyString, 1, 3)     ' Returns "Mid".
LastWord = Mid(MyString, 14, 4)     ' Returns "Demo".
MidWords = Mid(MyString, 5)   ' Returns "Function Demo".
```

The second example use **MidB** and a user-defined function (**MidMbcs**) to also return characters from string. The difference here is that the input string is ANSI and the length is in bytes.

```
Function MidMbcs(ByVal str as String, start, length)
   MidMbcs = StrConv(MidB(StrConv(str, vbFromUnicode), start, length),
vbUnicode)
End Function

Dim MyString
MyString = "AbCdEfG"
' Where "A", "C", "E", and "G" are DBCS and "b", "d",
' and "f" are SBCS.
MyNewString = Mid(MyString, 3, 4)
' Returns ""CdEf"
MyNewString = MidB(MyString, 3, 4)
' Returns ""bC"
MyNewString = MidMbcs(MyString, 3, 4)
' Returns "bCd"
```

# Mid Statement Example

This example uses the **Mid** statement to replace a specified number of characters in a string variable with characters from another string.

```
Dim MyString
MyString = "The dog jumps" ' Initialize string.
Mid(MyString, 5, 3) = "fox"    ' MyString = "The fox jumps".
Mid(MyString, 5) = "cow"    ' MyString = "The cow jumps".
Mid(MyString, 5) = "cow jumped over"      ' MyString = "The cow jumpe".
Mid(MyString, 5, 3) = "duck"  ' MyString = "The duc jumpe".
```

# Oct Function Example

This example uses the **Oct** function to return the octal value of a number.

```
Dim MyOct
MyOct = Oct(4)    ' Returns 4.
MyOct = Oct(8) ' Returns 10.
MyOct = Oct(459)   ' Returns 713.
```

# Right Function Example

This example uses the **Right** function to return a specified number of characters from the right side of a string.

```
Dim AnyString, MyStr
AnyString = "Hello World"  ' Define string.
MyStr = Right(AnyString, 1)   ' Returns "d".
MyStr = Right(AnyString, 6)   ' Returns " World".
MyStr = Right(AnyString, 20)  ' Returns "Hello World".
```

# RSet Statement Example

This example uses the **RSet** statement to right align a string within a string variable.

```
Dim MyString
MyString = "0123456789" ' Initialize string.
Rset MyString = "Right->"  ' MyString contains "   Right->".
```

# Space Function Example

This example uses the **Space** function to return a string consisting of a specified number of spaces.

```
Dim MyString
' Returns a string with 10 spaces.
MyString = Space(10)

' Insert 10 spaces between two strings.
MyString = "Hello" & Space(10) & "World"
```

# Str Function Example

This example uses the **Str** function to return a string representation of a number. When a number is converted to a string, a leading space is always reserved for its sign.

```
Dim MyString

MyString = Str(459)    ' Returns " 459".

MyString = Str(-459.65) ' Returns "-459.65".

MyString = Str(459.001) ' Returns " 459.001".
```

# StrComp Function Example

This example uses the **StrComp** function to return the results of a string comparison. If the third argument is 1, a textual comparison is performed; if the third argument is 0 or omitted, a binary comparison is performed.

```
Dim MyStr1, MyStr2, MyComp
MyStr1 = "ABCD": MyStr2 = "abcd"    ' Define variables.
MyComp = StrComp(MyStr1, MyStr2, 1) ' Returns 0.
MyComp = StrComp(MyStr1, MyStr2, 0) ' Returns -1.
MyComp = StrComp(MyStr2, MyStr1)    ' Returns 1.
```

# String Function Example

This example uses the **String** function to return repeating character strings of the length specified.

```
Dim MyString
MyString = String(5, "*")  ' Returns "*****".
MyString = String(5, 42)   ' Returns "*****".
MyString = String(10, "ABC")  ' Returns "AAAAAAAAAA".
```

# UCase Function Example

This example uses the **UCase** function to return an uppercase version of a string.

```
Dim LowerCase, UpperCase
LowerCase = "Hello World 1234"      ' String to convert.
UpperCase = UCase(LowerCase)  ' Returns "HELLO WORLD 1234".
```

# StrConv Function Example

This example uses the **StrConv** function to convert a Unicode string to an ANSI string.

```
Dim i As Long
Dim x() As Byte
x = StrConv("ABCDEFG", vbFromUnicode)      ' Convert string.
For i = 0 To UBound(x)
   Debug.Print x(i)
Next
```

# Chr Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctChrC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctChrX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctChrS"}

Returns a String containing the character associated with the specified character code.

**Syntax**

**Chr(***charcode***)**

The required *charcode* argument is a Long that identifies a character.

**Remarks**

Numbers from 0 – 31 are the same as standard, nonprintable ASCII codes. For example,
**Chr(**10**)** returns a linefeed character. The normal range for *charcode* is 0 – 255. However,
on DBCS systems, the actual range for *charcode* is -32768 to 65535.

> **Note**   The **ChrB** function is used with byte data contained in a **String**. Instead of
> returning a character, which may be one or two bytes, **ChrB** always returns a single
> byte. The **ChrW** function returns a **String** containing the Unicode character except on
> platforms where Unicode is not supported, in which case, the behavior is identical to the
> **Chr** function.

> **Note**   Visual Basic for the Macintosh does not support Unicode strings. Therefore,
> **ChrW**(*n*) cannot return all Unicode characters for n values   in the range of 128 –
> 65,535, as it does in the Windows environment. Instead, **ChrW**(*n*) attempts a "best
> guess" for Unicode values n greater than 127. Therefore, you should not use **ChrW** in
> the Macintosh environment.

# Format Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFormatC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctFormatX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctFormatS"}

Returns a **Variant** (**String**) containing an <u>expression</u> formatted according to instructions contained in a format expression.

**Syntax**

**Format**(*expression*[, *format*[, *firstdayofweek*[, *firstweekofyear*]]])

The **Format** function syntax has these parts:

| Part | Description |
|------|-------------|
| *expression* | Required. Any valid expression. |
| *format* | Optional. A valid named or user-defined format expression. |
| *firstdayofweek* | Optional. A <u>constant</u> that specifies the first day of the week. |
| *firstweekofyear* | Optional. A constant that specifies the first week of the year. |

**Settings**

The *firstdayofweek* <u>argument</u> has these settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseSystem** | 0 | Use NLS API setting. |
| **VbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

The *firstweekofyear* argument has these settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseSystem** | 0 | Use NLS API setting. |
| **vbFirstJan1** | 1 | Start with week in which January 1 occurs (default). |
| **vbFirstFourDays** | 2 | Start with the first week that has at least four days in the year. |
| **vbFirstFullWeek** | 3 | Start with the first full week of the year. |

**Remarks**

| To Format | Do This |
|-----------|---------|

| | |
|---|---|
| Numbers | Use predefined named numeric formats or create user-defined numeric formats. |
| Dates and times | Use predefined named date/time formats or create user-defined date/time formats. |
| Date and time serial numbers | Use date and time formats or numeric formats. |
| Strings | Create your own user-defined string formats. |

If you try to format a number without specifying *format*, **Format** provides functionality similar to the **Str** function, although it is internationally aware. However, positive numbers formatted as strings using **Format** don't include a leading space reserved for the sign of the value; those converted using **Str** retain the leading space.

If you are formatting a non-localized numeric string, you should use a user-defined numeric format to ensure that you get the look you want.

**Note**    If the **Calendar** property setting is Gregorian and *format* specifies date formatting, the supplied *expression* must be Gregorian. If the Visual Basic **Calendar** property setting is Hijri, the supplied *expression* must be Hijri.

If the calendar is Gregorian, the meaning of *format* expression symbols is unchanged. If the calendar is Hijri, all date format symbols (for example, *dddd*, *mmmm*, *yyyy*) have the same meaning but apply to the Hijri calendar. Format symbols remain in English; symbols that result in text display (for example, AM and PM) display the string (English or Arabic) associated with that symbol. The range of certain symbols changes when the calendar is Hijri.

| Symbol | Range |
|---|---|
| *d* | 1-30 |
| *dd* | 1-30 |
| *ww* | 1-51 |
| *mmm* | Displays full month names (Hijri month names have no abbreviations). |
| *y* | 1-355 |
| *yyyy* | 100-9666 |

# Named Numeric Formats (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtNamedNumericFormatsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafmtNamedNumericFormatsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtNamedNumericFormatsS"}

The following table identifies the predefined numeric format names:

| Format name | Description |
| --- | --- |
| **General Number** | Display number with no thousand separator. |
| **Currency** | Display number with thousand separator, if appropriate; display two digits to the right of the decimal separator. Output is based on system <u>locale</u> settings. |
| **Fixed** | Display at least one digit to the left and two digits to the right of the decimal separator. |
| **Standard** | Display number with thousand separator, at least one digit to the left and two digits to the right of the decimal separator. |
| **Percent** | Display number multiplied by 100 with a percent sign (**%**) appended to the right; always display two digits to the right of the decimal separator. |
| **Scientific** | Use standard scientific notation. |
| **Yes/No** | Display No if number is 0; otherwise, display Yes. |
| **True/False** | Display **False** if number is 0; otherwise, display **True**. |
| **On/Off** | Display Off if number is 0; otherwise, display On. |

# User-Defined Numeric Formats (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtUserDefinedNumericFormatsC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vafmtUserDefinedNumericFormatsX":1} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtUserDefinedNumericFormatsS"}

The following table identifies characters you can use to create user-defined number formats:

| Character | Description |
|---|---|
| None | Display the number with no formatting. |
| (**0**) | **Digit placeholder.** Display a digit or a zero. If the <u>expression</u> has a digit in the position where the 0 appears in the format string, display it; otherwise, display a zero in that position. |
| | If the number has fewer digits than there are zeros (on either side of the decimal) in the format expression, display leading or trailing zeros. If the number has more digits to the right of the decimal separator than there are zeros to the right of the decimal separator in the format expression, round the number to as many decimal places as there are zeros. If the number has more digits to the left of the decimal separator than there are zeros to the left of the decimal separator in the format expression, display the extra digits without modification. |
| (**#**) | Digit placeholder. Display a digit or nothing. If the expression has a digit in the position where the # appears in the format string, display it; otherwise, display nothing in that position. |
| | This symbol works like the 0 digit placeholder, except that leading and trailing zeros aren't displayed if the number has the same or fewer digits than there are # characters on either side of the decimal separator in the format expression. |
| (**.**) | Decimal placeholder. In some <u>locales</u>, a comma is used as the decimal separator. The decimal placeholder determines how many digits are displayed to the left and right of the decimal separator. If the format expression contains only number signs to the left of this symbol, numbers smaller than 1 begin with a decimal separator. To display a leading zero displayed with fractional numbers, use 0 as the first digit placeholder to the left of the decimal separator. The actual character used as a decimal placeholder in the formatted output depends on the Number Format recognized by your system. |
| (**%)** | Percentage placeholder. The expression is multiplied by 100. The percent character (**%**) is inserted in the position where it appears in the format string. |
| (**,**) | Thousand separator. In some locales, a period is used as a thousand separator. The thousand separator separates thousands from hundreds within a number that has four or more places to the left of the decimal separator. Standard use of the thousand separator is specified if the format contains a thousand separator surrounded by digit placeholders (**0** or **#**). Two adjacent thousand separators or a thousand separator immediately to the left of the decimal separator (whether or not a decimal is specified) means "scale the number by dividing it by 1000, rounding as needed." For example, you can use |

the format string "##0,," to represent 100 million as 100. Numbers smaller than 1 million are displayed as 0. Two adjacent thousand separators in any position other than immediately to the left of the decimal separator are treated simply as specifying the use of a thousand separator. The actual character used as the thousand separator in the formatted output depends on the Number Format recognized by your system.

**(:)**  Time separator. In some locales, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings.

**(/)**  <u>Date separator</u>. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings.

**(E- E+ e- e+)**  Scientific format. If the format expression contains at least one digit placeholder (**0** or **#**) to the right of E-, E+, e-, or e+, the number is displayed in scientific format and E or e is inserted between the number and its exponent. The number of digit placeholders to the right determines the number of digits in the exponent. Use E- or e- to place a minus sign next to negative exponents. Use E+ or e+ to place a minus sign next to negative exponents and a plus sign next to positive exponents.

**- + $ ( )**  Display a literal character. To display a character other than one of those listed, precede it with a backslash (\) or enclose it in double quotation marks (" ").

**(\)**  Display the next character in the format string. To display a character that has special meaning as a literal character, precede it with a backslash (\). The backslash itself isn't displayed. Using a backslash is the same as enclosing the next character in double quotation marks. To display a backslash, use two backslashes (\\).

Examples of characters that can't be displayed as literal characters are the date-formatting and time-formatting characters (a, c, d, h, m, n, p, q, s, t, w, y, / and :), the numeric-formatting characters (#, 0, %, E, e, comma, and period), and the string-formatting characters (@, &, <, >, and !).

**("ABC")**  Display the string inside the double quotation marks (" "). To include a string in ***format*** from within code, you must use **Chr(**34**)** to enclose the text (34 is the <u>character code</u> for a quotation mark (")).

# Different Formats for Different Numeric Values (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtMultipleNumSectionsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtMultipleNumSectionsS"}

A user-defined format expression for numbers can have from one to four sections separated by semicolons. If the *format* argument contains one of the named numeric formats, only one section is allowed.

| If you use | The result is |
| --- | --- |
| One section only | The format expression applies to all values. |
| Two sections | The first section applies to positive values and zeros, the second to negative values. |
| Three sections | The first section applies to positive values, the second to negative values, and the third to zeros. |
| Four sections | The first section applies to positive values, the second to negative values, the third to zeros, and the fourth to Null values. |

The following example has two sections: the first defines the format for positive values and zeros; the second section defines the format for negative values.

```
"$#,##0;($#,##0)"
```

If you include semicolons with nothing between them, the missing section is printed using the format of the positive value. For example, the following format displays positive and negative values using the format in the first section and displays "Zero" if the value is zero.

```
"$#,##0;;\Z\e\r\o"
```

# User-Defined Numeric Format Expressions Example

The following table contains some sample format expressionss for numbers. (These examples all assume that your system's locale setting is English-U.S.) The first column contains the format strings; the other columns contain the resulting output if the formatted data has the value given in the column headings.

| Format (*format*) | Positive 5 | Negative 5 | Decimal .5 | Null |
|---|---|---|---|---|
| Zero-length string ("") | 5 | -5 | 0.5 | |
| 0 | 5 | -5 | 1 | |
| 0.00 | 5.00 | -5.00 | 0.50 | |
| #,##0 | 5 | -5 | 1 | |
| #,##0.00;;;Nil | 5.00 | -5.00 | 0.50 | Nil |
| $#,##0;($#,##0) | $5 | ($5) | $1 | |
| $#,##0.00; ($#,##0.00) | $5.00 | ($5.00) | $0.50 | |
| 0% | 500% | -500% | 50% | |
| 0.00% | 500.00% | -500.00% | 50.00% | |
| 0.00E+00 | 5.00E+00 | -5.00E+00 | 5.00E-01 | |
| 0.00E-00 | 5.00E00 | -5.00E00 | 5.00E-01 | |

# Named Date/Time Formats (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtNamedDateFormatsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafmtNamedDateFormatsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtNamedDateFormatsS"}

The following table identifies the predefined date and time format names:

| Format Name | Description |
| --- | --- |
| **General Date** | Display a date and/or time. For real numbers, display a date and time, for example, 4/3/93 05:34 PM.If there is no fractional part, display only a date, for example, 4/3/93. If there is no integer part, display time only, for example, 05:34 PM. Date display is determined by your system settings. |
| **Long Date** | Display a date according to your system's long date format. |
| **Medium Date** | Display a date using the medium date format appropriate for the language version of the <u>host application</u>. |
| **Short Date** | Display a date using your system's short date format. |
| **Long Time** | Display a time using your system's long time format; includes hours, minutes, seconds. |
| **Medium Time** | Display time in 12-hour format using hours and minutes and the AM/PM designator. |
| **Short Time** | Display a time using the 24-hour format, for example, 17:45. |

# User-Defined Date/Time Formats (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtUserDefinedDateFormatsC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vafmtUserDefinedDateFormatsX":1} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtUserDefinedDateFormatsS"}

The following table identifies characters you can use to create user-defined date/time formats:

| Character | Description |
|---|---|
| (**:**) | Time separator. In some <u>locales</u>, other characters may be used to represent the time separator. The time separator separates hours, minutes, and seconds when time values are formatted. The actual character used as the time separator in formatted output is determined by your system settings. |
| (**/**) | <u>Date separator</u>. In some locales, other characters may be used to represent the date separator. The date separator separates the day, month, and year when date values are formatted. The actual character used as the date separator in formatted output is determined by your system settings. |
| c | Display the date as `ddddd` and display the time as `ttttt`, in that order. Display only date information if there is no fractional part to the date serial number; display only time information if there is no integer portion. |
| d | Display the day as a number without a leading zero (1 – 31). |
| dd | Display the day as a number with a leading zero (01 – 31). |
| ddd | Display the day as an abbreviation (Sun – Sat). |
| dddd | Display the day as a full name (Sunday – Saturday). |
| ddddd | Display the date as a complete date (including day, month, and year), formatted according to your system's short date format setting. The default short date format is `m/d/yy`. |
| dddddd | Display a date serial number as a complete date (including day, month, and year) formatted according to the long date setting recognized by your system. The default long date format is `mmmm dd, yyyy`. |
| aaaa | The same as dddd, only it's the localized version of the string. |
| w | Display the day of the week as a number (1 for Sunday through 7 for Saturday). |
| ww | Display the week of the year as a number (1 – 54). |
| m | Display the month as a number without a leading zero (1 – 12). If `m` immediately follows `h` or `hh`, the minute rather than the month is displayed. |
| mm | Display the month as a number with a leading zero (01 – 12). If `m` immediately follows `h` or `hh`, the minute rather than the month is displayed. |
| mmm | Display the month as an abbreviation (Jan – Dec). |

| | |
|---|---|
| mmmm | Display the month as a full month name (January – December). |
| oooo | The same as mmmm, only it's the localized version of the string. |
| q | Display the quarter of the year as a number (1 – 4). |
| y | Display the day of the year as a number (1 – 366). |
| yy | Display the year as a 2-digit number (00 – 99). |
| yyyy | Display the year as a 4-digit number (100 – 9999). |
| h | Display the hour as a number without leading zeros (0 – 23). |
| Hh | Display the hour as a number with leading zeros (00 – 23). |
| N | Display the minute as a number without leading zeros (0 – 59). |
| Nn | Display the minute as a number with leading zeros (00 – 59). |
| S | Display the second as a number without leading zeros (0 – 59). |
| Ss | Display the second as a number with leading zeros (00 – 59). |
| t t t t t | Display a time as a complete time (including hour, minute, and second), formatted using the time separator defined by the time format recognized by your system. A leading zero is displayed if the leading zero option is selected and the time is before 10:00 A.M. or P.M. The default time format is `h:mm:ss`. |
| AM/PM | Use the 12-hour clock and display an uppercase AM with any hour before noon; display an uppercase PM with any hour between noon and 11:59 P.M. |
| am/pm | Use the 12-hour clock and display a lowercase AM with any hour before noon; display a lowercase PM with any hour between noon and 11:59 P.M. |
| A/P | Use the 12-hour clock and display an uppercase A with any hour before noon; display an uppercase P with any hour between noon and 11:59 P.M. |
| a/p | Use the 12-hour clock and display a lowercase A with any hour before noon; display a lowercase P with any hour between noon and 11:59 P.M. |
| AMPM | Use the 12-hour clock and display the AM string literal as defined by your system with any hour before noon; display the PM string literal as defined by your system with any hour between noon and 11:59 P.M. AMPM can be either uppercase or lowercase, but the case of the string displayed matches the string as defined by your system settings. The default format is AM/PM. |

# User-Defined Date/Time Formats Example

The following are examples of user-defined date and time formats for December 7, 1958:

| Format | Display |
|--------|---------|
| `m/d/yy` | 12/7/58 |
| `d-mmm` | 7-Dec |
| `d-mmmm-yy` | 7-December-58 |
| `d mmmm` | 7 December |
| `mmmm yy` | December 58 |
| `hh:mm AM/PM` | 08:50 PM |
| `h:mm:ss a/p` | 8:50:35 p |
| `h:mm` | 20:50 |
| `h:mm:ss` | 20:50:35 |
| `m/d/yy h:mm` | 12/7/58 20:50 |

# User-Defined String Formats (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtStringFormatsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafmtStringFormatsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtStringFormatsS"}

You can use any of the following characters to create a format <u>expression</u> for strings:

| Character | Description |
|---|---|
| **@** | Character placeholder. Display a character or a space. If the string has a character in the position where the at symbol (@) appears in the format string, display it; otherwise, display a space in that position. Placeholders are filled from right to left unless there is an exclamation point character (!) in the format string. |
| **&** | Character placeholder. Display a character or nothing. If the string has a character in the position where the ampersand (&) appears, display it; otherwise, display nothing. Placeholders are filled from right to left unless there is an exclamation point character (!) in the format string. |
| **<** | Force lowercase. Display all characters in lowercase format. |
| **>** | Force uppercase. Display all characters in uppercase format. |
| **!** | Force left to right fill of placeholders. The default is to fill placeholders from right to left. |

# Different Formats for Different String Values (Format Function)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafmtMultipleStringSectionsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafmtMultipleStringSectionsS"}

A format expression for strings can have one section or two sections separated by a semicolon (**;**).

| If you use | The result is |
| --- | --- |
| One section only | The format applies to all string data. |
| Two sections | The first section applies to string data, the second to Null values and zero-length strings (""). |

# Hex Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctHexC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctHexX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctHexS"}

Returns a <u>String</u> representing the hexadecimal value of a number.

**Syntax**

**Hex**(*number*)

The required *number* <u>argument</u> is any valid <u>numeric expression</u> or <u>string expression</u>.

**Remarks**

If *number* is not already a whole number, it is rounded to the nearest whole number before being evaluated.

| If *number* is | Hex returns |
|---|---|
| <u>Null</u> | Null |
| <u>Empty</u> | Zero (0) |
| Any other number | Up to eight hexadecimal characters |

You can represent hexadecimal numbers directly by preceding numbers in the proper range with `&H`. For example, `&H10` represents decimal 16 in hexadecimal notation.

# InStr Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctInstrC"} {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctInStrX":1} {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctInStrS"}

Returns a **Variant** (**Long**) specifying the position of the first occurrence of one string within
another.

**Syntax**

**InStr**([*start*, ]*string1*, *string2*[, *compare*])

The **InStr** function syntax has these <u>arguments</u>:

| Part | Description |
|------|-------------|
| *start* | Optional. <u>Numeric expression</u> that sets the starting position for each search. If omitted, search begins at the first character position. If ***start*** contains <u>Null</u>, an error occurs. The ***start*** argument is required if ***compare*** is specified. |
| *string1* | Required. <u>String expression</u> being searched. |
| *string2* | Required. String expression sought. |
| *compare* | Optional. Specifies the type of <u>string comparison</u>. If ***compare*** is Null, an error occurs. If ***compare*** is omitted, the **Option Compare** setting determines the type of comparison. Specify a valid LCID (LocaleID) to use locale-specific rules in the comparison. |

**Settings**

The *compare* argument settings are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseCompareOption** | -1 | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Return Values**

| If | InStr returns |
|----|---------------|
| ***string1*** is zero-length | 0 |
| ***string1*** is **Null** | Null |
| ***string2*** is zero-length | ***start*** |
| ***string2*** is **Null** | Null |
| ***string2*** is not found | 0 |
| ***string2*** is found within ***string1*** | Position at which match is found |

| | |
|---|---|
| *start* > *string2* | 0 |

## Remarks

The **InStrB** function is used with byte data contained in a string. Instead of returning the character position of the first occurrence of one string within another, **InStrB** returns the byte position.

# LCase Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLCaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctLCaseX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctLCaseS"}

Returns a <u>String</u> that has been converted to lowercase.

**Syntax**

**LCase**(*string*)

The required *string* <u>argument</u> is any valid <u>string expression</u>. If *string* contains <u>Null</u>, Null is returned.

**Remarks**

Only uppercase letters are converted to lowercase; all lowercase letters and nonletter characters remain unchanged.

# Left Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLeftC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLeftX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLeftS"}

Returns a **Variant** (**String**) containing a specified number of characters from the left side of
a string.

**Syntax**

**Left**(*string*, *length*)

The **Left** function syntax has these named arguments:

| Part | Description |
| --- | --- |
| *string* | Required. String expression from which the leftmost characters are returned. If *string* contains Null, Null is returned. |
| *length* | Required; **Variant** (**Long**). Numeric expression indicating how many characters to return. If 0, a zero-length string ("") is returned. If greater than or equal to the number of characters in *string*, the entire string is returned. |

**Remarks**

To determine the number of characters in *string*, use the **Len** function.

   **Note**   Use the **LeftB** function with byte data contained in a string. Instead of specifying
   the number of characters to return, *length* specifies the number of bytes.

# Len Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLenC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLenX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLenS"}

Returns a <u>Long</u> containing the number of characters in a string or the number of bytes required to store a <u>variable</u>.

**Syntax**

**Len**(*string | varname*)

The **Len** function syntax has these parts:

| Part | Description |
|---|---|
| *string* | Any valid <u>string expression</u>. If *string* contains <u>Null</u>, Null is returned. |
| *Varname* | Any valid <u>variable</u> name. If *varname* contains **Null**, **Null** is returned. If *varname* is a <u>Variant</u>, **Len** treats it the same as a **String** and always returns the number of characters it contains. |

**Remarks**

One (and only one) of the two possible <u>arguments</u> must be specified. With <u>user-defined types</u>, **Len** returns the size as it will be written to the file.

**Note**   Use the **LenB** function with byte data contained in a string, as in double-byte character set (DBCS) languages. Instead of returning the number of characters in a string, **LenB** returns the number of bytes used to represent that string. With user-defined types, **LenB** returns the in-memory size, including any padding between elements. For sample code that uses **LenB**, see the second example in the example topic.

**Note**   **Len** may not be able to determine the actual number of storage bytes required when used with variable-length strings in <u>user-defined</u> <u>data types</u>.

# LSet Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmLSetC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vastmLSetX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vastmLSetS"}

Left aligns a string within a string <u>variable</u>, or copies a variable of one <u>user-defined type</u> to
another variable of a different user-defined type.

**Syntax**

**LSet** *stringvar* **=** *string*

**LSet** *varname1* **=** *varname2*

The **LSet** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *stringvar* | Required. Name of string <u>variable</u>. |
| *string* | Required. <u>String expression</u> to be left-aligned within *stringvar.* |
| *varname1* | Required. Variable name of the user-defined type being copied to. |
| *varname2* | Required. Variable name of the user-defined type being copied from. |

**Remarks**

**LSet** replaces any leftover characters in *stringvar* with spaces.

If *string* is longer than *stringvar*, **LSet** places only the leftmost characters, up to the length
of the *stringvar,* in *stringvar*.

**Warning**   Using **LSet** to copy a variable of one user-defined type into a variable of a
different user-defined type is not recommended. Copying data of one <u>data type</u> into
space reserved for a different data type can cause unpredictable results.

When you copy a variable from one user-defined type to another, the binary data from
one variable is copied into the memory space of the other, without regard for the data
types specified for the elements.

# LTrim, RTrim, and Trim Functions

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctLTrimC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctLTrimX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctLTrimS"}

Returns a **Variant** (**String**) containing a copy of a specified string without leading spaces
(**LTrim**), trailing spaces (**RTrim**), or both leading and trailing spaces (**Trim**).

**Syntax**

**LTrim**(*string*)

**RTrim**(*string*)

**Trim**(*string*)

The required *string* argument is any valid string expression. If *string* contains Null, **Null** is
returned.

# Mid Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMidC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctMidX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctMidS"}

Returns a **Variant** (**String**) containing a specified number of characters from a string.

**Syntax**

**Mid**(*string*, *start*[, *length*])

The **Mid** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *string* | Required. String expression from which characters are returned. If *string* contains Null, **Null** is returned. |
| *start* | Required; Long. Character position in *string* at which the part to be taken begins. If *start* is greater than the number of characters in *string*, **Mid** returns a zero-length string (""). |
| *length* | Optional; **Variant** (**Long**). Number of characters to return. If omitted or if there are fewer than *length* characters in the text (including the character at *start*), all characters from the *start* position to the end of the string are returned. |

**Remarks**

To determine the number of characters in *string*, use the **Len** function.

> **Note**   Use the **MidB** function with byte data contained in a string, as in double-byte character set languages. Instead of specifying the number of characters, the arguments specify numbers of bytes. For sample code that uses **MidB**, see the second example in the example topic.

# Mid Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmMidC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmMidX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmMidS"}

Replaces a specified number of characters in a **Variant** (**String**) <u>variable</u> with characters from another string.

### Syntax

**Mid**(*stringvar*, *start*[, *length*]) **=** *string*

The **Mid** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *stringvar* | Required. Name of string variable to modify. |
| *start* | Required; **Variant** (**Long**). Character position in *stringvar* where the replacement of text begins. |
| *length* | Optional; **Variant** (**Long**). Number of characters to replace. If omitted, all of *string* is used. |
| *string* | Required. <u>String expression</u> that replaces part of *stringvar*. |

### Remarks

The number of characters replaced is always less than or equal to the number of characters in *stringvar*.

> **Note**   Use the **MidB** statement with byte data contained in a string. In the **MidB** statement, *start* specifies the byte position within *stringvar* where replacement begins and *length* specifies the numbers of bytes to replace.

# Oct Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctOctC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctOctX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctOctS"}

Returns a **Variant** (**String**) representing the octal value of a number.

**Syntax**

**Oct**(*number*)

The required *number* argument is any valid numeric expression or string expression.

**Remarks**

If *number* is not already a whole number, it is rounded to the nearest whole number before being evaluated.

| If *number* is | Oct returns |
|---|---|
| Null | **Null** |
| Empty | Zero (0) |
| Any other number | Up to 11 octal characters |

You can represent octal numbers directly by preceding numbers in the proper range with `&O`. For example, `&O10` is the octal notation for decimal 8.

# Right Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctRightC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctRightX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctRightS"}

Returns a **Variant** (**String**) containing a specified number of characters from the right side of a string.

**Syntax**

**Right**(*string*, *length*)

The **Right** function syntax has these underlined named arguments:

| Part | Description |
|------|-------------|
| *string* | Required. Underlined String expression from which the rightmost characters are returned. If *string* contains Null, **Null** is returned. |
| *length* | Required; **Variant** (**Long**). Underlined Numeric expression indicating how many characters to return. If 0, a zero-length string ("") is returned. If greater than or equal to the number of characters in *string*, the entire string is returned. |

**Remarks**

To determine the number of characters in *string*, use the **Len** function.

   **Note**   Use the **RightB** function with byte data contained in a string. Instead of specifying the number of characters to return, *length* specifies the number of bytes.

# RSet Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmRSetC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmRSetX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmRSetS"}

Right aligns a string within a string <u>variable</u>.

**Syntax**

**RSet** *stringvar* **=** *string*

The **RSet** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *stringvar* | Required. Name of string variable. |
| *string* | Required. <u>String expression</u> to be right-aligned within *stringvar*. |

**Remarks**

If *stringvar* is longer than *string*, **RSet** replaces any leftover characters in *stringvar* with spaces, back to its beginning.

> **Note**   **RSet** can't be used with <u>user-defined types</u>.

# Space Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSpaceC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSpaceX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSpaceS"}

Returns a **Variant** (**String**) consisting of the specified number of spaces.

**Syntax**

**Space**(*number*)

The required *number* <u>argument</u> is the number of spaces you want in the string.

**Remarks**

The **Space** function is useful for formatting output and clearing data in fixed-length strings.

# Str Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctStrC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctStrX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctStrS"}

Returns a **Variant** (**String**) representation of a number.

**Syntax**

**Str**(*number*)

The required *number* argument is a Long containing any valid numeric expression.

**Remarks**

When numbers are converted to strings, a leading space is always reserved for the sign of *number*. If *number* is positive, the returned string contains a leading space and the plus sign is implied.

Use the **Format** function to convert numeric values you want formatted as dates, times, or currency or in other user-defined formats. Unlike **Str**, the **Format** function doesn't include a leading space for the sign of *number*.

> **Note**   The **Str** function recognizes only the period (**.**) as a valid decimal separator. When different decimal separators may be used (for example, in international applications), use **CStr** to convert a number to a string.

# StrComp Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctStrCompC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctStrCompX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctStrCompS"}

Returns a **Variant** (**Integer**) indicating the result of a <u>string comparison</u>.

**Syntax**

**StrComp**(*string1*, *string2*[, *compare*])

The **StrComp** function syntax has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| *string1* | Required. Any valid <u>string expression</u>. |
| *string2* | Required. Any valid string expression. |
| *compare* | Optional. Specifies the type of string comparison. If the *compare* <u>argument</u> is <u>Null</u>, an error occurs. If *compare* is omitted, the **Option Compare** setting determines the type of comparison. |

**Settings**

The **compare** argument settings are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseCompareOption** | -1 | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Return Values**

The **StrComp** function has the following return values:

| If | StrComp returns |
|----|-----------------|
| *string1* is less than *string2* | -1 |
| *string1* is equal to *string2* | 0 |
| *string1* is greater than *string2* | 1 |
| *string1* or *string2* is **Null** | **Null** |

# StrConv Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctStrConvC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctStrConvX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctStrConvS"}

Returns a **Variant** (**String**) converted as specified.

**Syntax**

**StrConv**(*string, conversion, LCID*)

The **StrConv** function syntax has these named arguments:

| Part | Description |
|------|-------------|
| *string* | Required. String expression to be converted. |
| *conversion* | Required. Integer. The sum of values specifying the type of conversion to perform. |
| *LCID* | Optional. The LocaleID, if different than the system LocaleID. (The system LocaleID is the default.) |

**Settings**

The *conversion* argument settings are:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUpperCase** | 1 | Converts the string to uppercase characters. |
| **vbLowerCase** | 2 | Converts the string to lowercase characters. |
| **vbProperCase** | 3 | Converts the first letter of every word in string to uppercase. |
| **vbWide*** | 4* | Converts narrow (single-byte) characters in string to wide (double-byte) characters. |
| **vbNarrow*** | 8* | Converts wide (double-byte) characters in string to narrow (single-byte) characters. |
| **vbKatakana**** | 16** | Converts Hiragana characters in string to Katakana characters. |
| **vbHiragana**** | 32** | Converts Katakana characters in string to Hiragana characters. |
| **vbUnicode** | 64 | Converts the string to Unicode using the default code page of the system. (Not available on the Macintosh.) |
| **vbFromUnicode** | 128 | Converts the string from Unicode to the default code page of the system. (Not available on the Macintosh.) |

\*    Applies to Far East locales.

\*\*  Applies to Japan only.

> **Note**   These constants are specified by Visual Basic for Applications. As a result, they may be used anywhere in your code in place of the actual values. Most can be combined, for example, **vbUpperCase + vbWide**, except when they are mutually exclusive, for example, **vbUnicode + vbFromUnicode**. The constants **vbWide**, **vbNarrow**, **vbKatakana**, and **vbHiragana** cause run-time errors when used in locales where they do not apply.

The following are valid word separators for proper casing: Null (**Chr$(**0**)**), horizontal tab

(**Chr$(**9**)**), linefeed (**Chr$(**10**)**), vertical tab (**Chr$(**11**)**), form feed (**Chr$(**12**)**), carriage return (**Chr$(**13**)**), space (SBCS) (**Chr$(**32**)**). The actual value for a space varies by country for DBCS.

**Remarks**

When you're converting from a **Byte** array in ANSI format to a string, you should use the **StrConv** function. When you're converting from such an array in Unicode format, use an assignment statement.

# String Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctStringC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctStringX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctStringS"}

Returns a **Variant** (**String**) containing a repeating character string of the length specified.

**Syntax**

**String**(*number*, *character*)

The **String** function syntax has these named arguments:

| Part | Description |
| --- | --- |
| *number* | Required; Long. Length of the returned string. If *number* contains Null, **Null** is returned. |
| *character* | Required; Variant. Character code specifying the character or string expression whose first character is used to build the return string. If *character* contains **Null**, **Null** is returned. |

**Remarks**

If you specify a number for *character* greater than 255, **String** converts the number to a valid character code using the formula:

*character* **Mod** 256

# UCase Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctUCaseC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctUcaseX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctUcaseS"}

Returns a **Variant** (**String**) containing the specified string, converted to uppercase.

**Syntax**

**UCase**(*string*)

The required *string* argument is any valid string expression. If *string* contains Null, **Null** is returned.

**Remarks**

Only lowercase letters are converted to uppercase; all uppercase letters and nonletter characters remain unchanged.

# Keywords by Task

{ewc HLP95EN.DLL,DYNALINK,"See
Also":"vaidxkeywordsbytaskC;vbproBooksOnlineJumpTopic"}

| Category | Description |
| --- | --- |
| Arrays | Creating, defining, and using arrays. |
| Compiler Directives | Controlling compiler behavior. |
| Control Flow | Looping and controlling procedure flow. |
| Conversion | Converting numbers and data types. |
| Data Types | Data types and variant subtypes. |
| Dates and Times | Converting and using date and time expressions. |
| Directories and Files | Controlling the file system and processing files. |
| Errors | Trapping and returning error values. |
| Financial | Performing financial calculations. |
| Input and Output | Receiving input and displaying or printing output. |
| Math | Performing trigonometric and other mathematical calculations. |
| Miscellaneous | Starting other applications and processing events. |
| Operators | Comparing expressions and other operations. |
| String Manipulation | Manipulating strings and string type data. |
| Variables and Constants | Declaring and defining variables and constants. |

# Arrays Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxArraysC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Verify an array. | IsArray |
| Create an array. | Array |
| Change default lower limit. | Option Base |
| Declare and initialize an array. | Dim, Private, Public, ReDim, Static |
| Find the limits of an array. | LBound, UBound |
| Reinitialize an array. | Erase, ReDim |

# Collection Object Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxCollectionObjectKeywordsC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Create a **Collection** object. | Collection |
| Add an object to a collection. | Add |
| Remove an object from a collection. | Remove |
| Reference an item in a collection. | Item |

# Compiler Directive Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxCompilerDirectiveC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Define compiler constant. | #Const |
| Compile selected blocks of code. | #If...Then...#Else |

# Control Flow Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxDecisionStructuresC;vaidxkeywordsbytaskC"}

| Action | Keywords |
| --- | --- |
| Branch. | GoSub...Return, GoTo, On Error, On...GoSub, On...GoTo |
| Exit or pause the program. | DoEvents, End, Exit, Stop |
| Loop. | Do...Loop, For...Next, For Each...Next, While...Wend, With |
| Make decisions. | Choose, If...Then...Else, Select Case, Switch |
| Use procedures. | Call, Function, Property Get, Property Let, Property Set, Sub |

# Conversion Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxConversionKeywordsC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| ANSI value to string. | Chr |
| String to lowercase or uppercase. | Format, LCase, Ucase |
| Date to serial number. | DateSerial, DateValue |
| Decimal number to other bases. | Hex, Oct |
| Number to string. | Format, Str |
| One data type to another. | CBool, CByte, CCur, CDate, CDbl, CDec, CInt, CLng, CSng, CStr, CVar, CVErr, Fix, Int |
| Date to day, month, weekday, or year. | Day, Month, Weekday, Year |
| Time to hour, minute, or second. | Hour, Minute, Second |
| String to ASCII value. | Asc |
| String to number. | Val |
| Time to serial number. | TimeSerial, TimeValue |

# Data Types Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxDataTypesC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Convert between data types. | CBool, CByte, CCur, CDate, CDbl, CDec, CInt, CLng, CSng, CStr, CVar, CVErr, Fix, Int |
| Set intrinsic data types. | Boolean, Byte, Currency, Date, Double, Integer, Long, Object, Single, String, Variant (default) |
| Verify data types. | IsArray, IsDate, IsEmpty, IsError, IsMissing, IsNull, IsNumeric, IsObject |

# Dates and Times Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxDatesTimesC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Get the current date or time. | Date, Now, Time |
| Perform date calculations. | DateAdd, DateDiff, DatePart |
| Return a date. | DateSerial, DateValue |
| Return a time. | TimeSerial, TimeValue |
| Set the date or time. | Date, Time |
| Time a process. | Timer |

# Directories and Files Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxEnvironmentC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Change directory or folder. | ChDir |
| Change the drive. | ChDrive |
| Copy a file. | FileCopy |
| Make directory or folder. | MkDir |
| Remove directory or folder. | RmDir |
| Rename a file, directory, or folder. | Name |
| Return current path. | CurDir |
| Return file date/time stamp. | FileDateTime |
| Return file, directory, label attributes. | GetAttr |
| Return file length. | FileLen |
| Return file name or volume label. | Dir |
| Set attribute information for a file. | SetAttr |

# Errors Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxErrorsC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Generate run-time errors. | Clear, Error, Raise |
| Get error messages. | Error |
| Provide error information. | Err |
| Return **Error** variant. | CVErr |
| Trap errors during run time. | On Error, Resume |
| Type verification. | IsError |

# Financial Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxFinancialC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Calculate depreciation. | DDB, SLN, SYD |
| Calculate future value. | FV |
| Calculate interest rate. | Rate |
| Calculate internal rate of return. | IRR, MIRR |
| Calculate number of periods. | NPer |
| Calculate payments. | IPmt, Pmt, PPmt |
| Calculate present value. | NPV, PV |

# Input and Output Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxInputOutputC;vaidxkeywordsbytaskC"}

| Action | Keywords |
|---|---|
| Access or create a file. | Open |
| Close files. | Close, Reset |
| Control output appearance. | Format, Print, Print #, Spc, Tab, Width # |
| Copy a file. | FileCopy |
| Get information about a file. | EOF, FileAttr, FileDateTime, FileLen, FreeFile, GetAttr, Loc, LOF, Seek |
| Manage files. | Dir, Kill, Lock, Unlock, Name |
| Read from a file. | Get, Input, Input #, Line Input # |
| Return length of a file. | FileLen |
| Set or get file attributes. | FileAttr, GetAttr, SetAttr |
| Set read-write position in a file. | Seek |
| Write to a file. | Print #, Put, Write # |

# Math Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxMathC"}

| Action | Keywords |
|---|---|
| Derive trigonometric functions. | Atn, Cos, Sin, Tan |
| General calculations. | Exp, Log, Sqr |
| Generate random numbers. | Randomize, Rnd |
| Get absolute value. | Abs |
| Get the sign of an expression. | Sgn |
| Perform numeric conversions. | Fix, Int |

# Miscellaneous Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxMiscellaneousC"}

| Action | Keywords |
|---|---|
| Process pending events. | DoEvents |
| Run other programs. | AppActivate, Shell |
| Send keystrokes to an application. | SendKeys |
| Sound a beep from computer. | Beep |
| System. | Environ |
| Provide a command-line string. | Command |
| Automation. | CreateObject, GetObject |
| Color. | QBColor, RGB |

# Operators Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxOperatorsC"}

| Action | Keywords |
|---|---|
| Arithmetic. | ^, −, *, /, \, Mod, +, &, = |
| Comparison. | =, <>, ≤, ≥, <=, >=, Like, Is |
| Logical operations. | Not, And, Or, Xor, Eqv, Imp |

# Registry Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxRegistryC"}

| Action | Keywords |
|---|---|
| Delete program settings. | DeleteSetting |
| Read program settings. | GetSetting, GetAllSettings |
| Save program settings. | SaveSetting |

# String Manipulation Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxStringsC"}

| Action | Keywords |
| --- | --- |
| Compare two strings. | StrComp |
| Convert strings. | StrConv |
| Convert to lowercase or uppercase. | Format, Lcase, Ucase |
| Create string of repeating character. | Space, String |
| Find length of a string. | Len |
| Format a string. | Format |
| Justify a string. | LSet, Rset |
| Manipulate strings. | InStr, Left, LTrim, Mid, Right, RTrim, Trim |
| Set string comparison rules. | Option Compare |
| Work with ASCII and ANSI values. | Asc, Chr |

# Variables and Constants Keyword Summary

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaidxkeywordsbytaskC;vaidxVariablesConstantsC"}

| Action | Keywords |
| --- | --- |
| Assign value. | Let |
| Declare variables or constants. | Const, Dim, Private, Public, New, Static |
| Declare module as private. | Option Private Module |
| Get information about a variant. | IsArray, IsDate, IsEmpty, IsError, IsMissing, IsNull, IsNumeric, IsObject, TypeName, VarType |
| Refer to current object. | Me |
| Require explicit variable declarations. | Option Explicit |
| Set default data type. | Deftype |

# Trappable Errors

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamsgTrappableErrorsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamsgTrappableErrorsS"}

Trappable errors can occur while an application is running. Some trappable errors can also occur during development or <u>compile time</u>. You can test and respond to trappable errors using the **On Error** statement and the **Err** object. Unused <u>error numbers</u> in the range 1 – 1000 are reserved for future use by Visual Basic.

| Code | Message |
|------|---------|
| 3 | <u>Return without GoSub</u> |
| 5 | <u>Invalid procedure call</u> |
| 6 | <u>Overflow</u> |
| 7 | <u>Out of memory</u> |
| 9 | <u>Subscript out of range</u> |
| 10 | <u>This array is fixed or temporarily locked</u> |
| 11 | <u>Division by zero</u> |
| 13 | <u>Type mismatch</u> |
| 14 | <u>Out of string space</u> |
| 16 | <u>Expression too complex</u> |
| 17 | <u>Can't perform requested operation</u> |
| 18 | <u>User interrupt occurred</u> |
| 20 | <u>Resume without error</u> |
| 28 | <u>Out of stack space</u> |
| 35 | <u>Sub, Function, or Property not defined</u> |
| 47 | <u>Too many code resource or DLL application clients</u> |
| 48 | <u>Error in loading code resource or DLL</u> |
| 49 | <u>Bad code resource or DLL calling convention</u> |
| 51 | <u>Internal error</u> |
| 52 | <u>Bad file name or number</u> |
| 53 | <u>File not found</u> |
| 54 | <u>Bad file mode</u> |
| 55 | <u>File already open</u> |
| 57 | <u>Device I/O error</u> |
| 58 | <u>File already exists</u> |
| 59 | <u>Bad record length</u> |
| 61 | <u>Disk full</u> |
| 62 | <u>Input past end of file</u> |
| 63 | <u>Bad record number</u> |
| 67 | <u>Too many files</u> |

| | |
|---|---|
| 68 | Device unavailable |
| 70 | Permission denied |
| 71 | Disk not ready |
| 74 | Can't rename with different drive |
| 75 | Path/File access error |
| 76 | Path not found |
| 91 | Object variable or With block variable not set |
| 92 | For loop not initialized |
| 93 | Invalid pattern string |
| 94 | Invalid use of Null |
| 97 | Can't call Friend procedure on an object that is not an instance of the defining class |
| 98 | A property or method call cannot include a reference to a private object, either as an argument or as a return value |
| 298 | System resource or DLL could not be loaded |
| 320 | Can't use character device names in specified file names |
| 321 | Invalid file format |
| 322 | Can't create necessary temporary file |
| 325 | Invalid format in resource file |
| 327 | Data value named not found |
| 328 | Illegal parameter; can't write arrays |
| 335 | Could not access system registry |
| 336 | Component not correctly registered |
| 337 | Component not found |
| 338 | Component did not run correctly |
| 360 | Object already loaded |
| 361 | Can't load or unload this object |
| 363 | Control specified not found |
| 364 | Object was unloaded |
| 365 | Unable to unload within this context |
| 368 | The specified file is out of date. This program requires a later version |
| 371 | The specified object can't be used as an owner form for Show |
| 380 | Invalid property value |
| 381 | Invalid property-array index |
| 382 | Property Set can't be executed at run time |
| 383 | Property Set can't be used with a read-only property |
| 385 | Need property-array index |
| 387 | Property Set not permitted |

| | |
|---|---|
| 483 | Printer driver does not support specified property |
| 484 | Problem getting printer information from the system. Make sure the printer is set up correctly |
| 485 | Invalid picture type |
| 486 | Can't print form image to this type of printer |
| 520 | Can't empty Clipboard |
| 521 | Can't open Clipboard |
| 735 | Can't save file to TEMP directory |
| 744 | Search text not found |
| 746 | Replacements too long |
| 31001 | Out of memory |
| 31004 | No object |
| 31018 | Class is not set |
| 31027 | Unable to activate object |
| 31032 | Unable to create embedded object |
| 31036 | Error saving to file |
| 31037 | Error loading from file |

# AddressOf Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprAddressOfC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprAddressOfX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprAddressOfS"}

A unary operator that causes the address of the <u>procedure</u> it precedes to be passed to an
API procedure that expects a function pointer at that position in the <u>argument</u> list.

**Syntax**

**AddressOf** *procedurename*

The required *procedurename* specifies the procedure whose address is to be passed. It must
represent a procedure in a <u>standard module</u> module in the <u>project</u> in which the call is made.

**Remarks**

When a procedure name appears in an argument list, usually the procedure is evaluated,
and the address of the procedure's return value is passed. **AddressOf** permits the address
of the procedure to be passed to a Windows API function in a <u>dynamic-link library (DLL)</u>,
rather passing the procedure's return value. The API function can then use the address to
call the Basic procedure, a process known as a callback. The **AddressOf** operator appears
only in the call to the API procedure.

Although you can use **AddressOf** to pass procedure pointers among Basic procedures, you
can't call a function through such a pointer from within Basic. This means, for example, that
a <u>class</u> written in Basic can't make a callback to its controller using such a pointer. When
using **AddressOf** to pass a procedure pointer among procedures within Basic, the
<u>parameter</u> of the called procedure must be typed **As Long**.

> **Warning**   Using **AddressOf** may cause unpredictable results if you don't completely
> understand the concept of function callbacks. You must understand how the Basic
> portion of the callback works, and also the code of the DLL into which you are passing
> your function address. Debugging such interactions is difficult since the program runs in
> the same process as the <u>development environment</u>. In some cases, systematic
> debugging may not be possible.

> **Note**   You can create your own call-back function prototypes in DLLs compiled with
> Microsoft Visual C++ (or similar tools). To work with **AddressOf**, your prototype must
> use the __stdcall calling convention. The default calling convention (__cdecl) will not
> work with **AddressOf**.

Since the caller of a callback is not within your program, it is important that an error in the
callback procedure not be propagated back to the caller. You can accomplish this by placing
the **On Error Resume Next** statement at the beginning of the callback procedure.

# Assert Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthAssertC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthAssertX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthAssertA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthAssertS"}

Conditionally suspends execution at the line on which the method appears.

**Syntax**

*object*.**Assert** *booleanexpression*

The **Assert** method syntax has the following object qualifier and argument:

| Part | Description |
|------|-------------|
| *object* | Required. Always the **Debug** object. |
| *booleanexpression* | Required. An <u>expression</u> that evaluates to either **True** or **False**. |

**Remarks**

**Assert** invocations work only within the <u>development environment</u>. When the <u>module</u> is compiled into an executable, the method calls on the **Debug** object are omitted.

All of *booleanexpression* is always evaluated. For example, even if the first part of an **And** expression evaluates **False**, the entire expression is evaluated.

# Friend

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vakeyFriendC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vakeyFriendX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vakeyFriendS"}

Modifies the definition of a <u>procedure</u> in a form module or <u>class module</u> to make the procedure callable from modules that are outside the <u>class</u>, but part of the <u>project</u> within which the class is defined. **Friend** procedures cannot be used in standard modules.

**Syntax**

[**Private** | **Friend** | **Public**] [**Static**] [**Sub** | **Function** | **Property**] *procedurename*

The required *procedurename* is the name of the procedure to be made visible throughout the project, but not visible to controllers of the class.

**Remarks**

**Public** procedures in a class can be called from anywhere, even by controllers of instances of the class. Declaring a procedure **Private** prevents controllers of the object from calling the procedure, but also prevents the procedure from being called from within the project in which the class itself is defined. **Friend** makes the procedure visible throughout the project, but not to a controller of an instance of the object. **Friend** can appear only in form modules and class modules, and can only modify procedure names, not <u>variables</u> or types. Procedures in a class can access the **Friend** procedures of all other classes in a project. **Friend** procedures don't appear in the <u>type library</u> of their class. A **Friend** procedure can't be late bound.

# RaiseEvent Statement

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vastmRaiseEventC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vastmRaiseEventX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vastmRaiseEventS"}

Fires an event declared at <u>module level</u> within a <u>class</u>, form, or document.

**Syntax**

**RaiseEvent** *eventname* [**(**argumentlis*t***)**]

The required *eventname* is the name of an event declared within the <u>module</u> and follows Basic variable naming conventions.

The **RaiseEvent** statement syntax has these parts:

| Part | Description |
|------|-------------|
| *eventname* | Required. Name of the event to fire. |
| *argumentlist* | Optional. Comma-delimited list of <u>variables</u>, <u>arrays</u>, or <u>expressions</u> The *argumentlist* must be enclosed by parentheses. If there are no <u>arguments</u>, the parentheses must be omitted. |

**Remarks**

If the event has not been declared within the module in which it is raised, an error occurs. The following fragment illustrates an event declaration and a procedure in which the event is raised.

```
' Declare an event at module level of a class module
Event LogonCompleted (UserName as String)


Sub
   ' Raise the event.
   RaiseEvent LogonCompleted ("AntoineJan")
End Sub
```

If the event has no arguments, including empty parentheses, in the **RaiseEvent**, invocation of the event causes an error. You can't use **RaiseEvent** to fire events that are not explicitly declared in the module. For example, if a form has a Click event, you can't fire its Click event using **RaiseEvent**. If you declare a Click event in the <u>form module</u>, it shadows the form's own Click event. You can still invoke the form's Click event using normal syntax for calling the event, but not using the **RaiseEvent** statement.

Event firing is done in the order that the connections are established. Since events can have **ByRef** parameters, a process that connects late may receive parameters that have been changed by an earlier event handler.

# AddressOf Operator Example

The following example creates a form with a list box containing an alphabetically sorted list of the fonts in your system.

To run this example, create a form with a list box on it. The code for the form is as follows:

```
Option Explicit

Private Sub Form_Load()
    Module1.FillListWithFonts List1
End Sub
```

Place the following code in a module. The third argument in the definition of the EnumFontFamilies function is a **Long** that represents a procedure. The argument must contain the address of the procedure, rather than the value that the procedure returns. In the call to EnumFontFamilies, the third argument requires the **AddressOf** operator to return the address of the EnumFontFamProc procedure, which is the name of the callback procedure you supply when calling the Windows API function, **EnumFontFamilies**. Windows calls EnumFontFamProc once for each of the font families on the system when you pass **AddressOf** EnumFontFamProc to **EnumFontFamilies**. The last argument passed to **EnumFontFamilies** specifies the list box in which the information is displayed.

```
'Font enumeration types
Public Const LF_FACESIZE = 32
Public Const LF_FULLFACESIZE = 64

Type LOGFONT
        lfHeight As Long
        lfWidth As Long
        lfEscapement As Long
        lfOrientation As Long
        lfWeight As Long
        lfItalic As Byte
        lfUnderline As Byte
        lfStrikeOut As Byte
        lfCharSet As Byte
        lfOutPrecision As Byte
        lfClipPrecision As Byte
        lfQuality As Byte
        lfPitchAndFamily As Byte
        lfFaceName(LF_FACESIZE) As Byte
End Type

Type NEWTEXTMETRIC
        tmHeight As Long
        tmAscent As Long
        tmDescent As Long
```

```vb
        tmInternalLeading As Long
        tmExternalLeading As Long
        tmAveCharWidth As Long
        tmMaxCharWidth As Long
        tmWeight As Long
        tmOverhang As Long
        tmDigitizedAspectX As Long
        tmDigitizedAspectY As Long
        tmFirstChar As Byte
        tmLastChar As Byte
        tmDefaultChar As Byte
        tmBreakChar As Byte
        tmItalic As Byte
        tmUnderlined As Byte
        tmStruckOut As Byte
        tmPitchAndFamily As Byte
        tmCharSet As Byte
        ntmFlags As Long
        ntmSizeEM As Long
        ntmCellHeight As Long
        ntmAveWidth As Long
End Type

' ntmFlags field flags
Public Const NTM_REGULAR = &H40&
Public Const NTM_BOLD = &H20&
Public Const NTM_ITALIC = &H1&

'  tmPitchAndFamily flags
Public Const TMPF_FIXED_PITCH = &H1
Public Const TMPF_VECTOR = &H2
Public Const TMPF_DEVICE = &H8
Public Const TMPF_TRUETYPE = &H4

Public Const ELF_VERSION = 0
Public Const ELF_CULTURE_LATIN = 0

'  EnumFonts Masks
Public Const RASTER_FONTTYPE = &H1
Public Const DEVICE_FONTTYPE = &H2
Public Const TRUETYPE_FONTTYPE = &H4
```

```
Declare Function EnumFontFamilies Lib "gdi32" Alias _
    "EnumFontFamiliesA" _
    (ByVal hDC As Long, ByVal lpszFamily As String, _
    ByVal lpEnumFontFamProc As Long, LParam As Any) As Long
Declare Function GetDC Lib "user32" (ByVal hWnd As Long) As Long
Declare Function ReleaseDC Lib "user32" (ByVal hWnd As Long, _
    ByVal hDC As Long) As Long


Function EnumFontFamProc(lpNLF As LOGFONT, lpNTM As NEWTEXTMETRIC, _
    ByVal FontType As Long, LParam As ListBox) As Long
Dim FaceName As String
Dim FullName As String
    FaceName = StrConv(lpNLF.lfFaceName, vbUnicode)
    LParam.AddItem Left$(FaceName, InStr(FaceName, vbNullChar) - 1)
    EnumFontFamProc = 1
End Function


Sub FillListWithFonts(LB As ListBox)
Dim hDC As Long
    LB.Clear
    hDC = GetDC(LB.hWnd)
    EnumFontFamilies hDC, vbNullString, AddressOf EnumFontFamProc, LB
    ReleaseDC LB.hWnd, hDC
End Sub
```

# Assert Method Example

The following example shows how to use the **Assert** method. The example requires a form with two button controls on it. The default button names are Command1 and Command2.

When the example runs, clicking the Command1 button toggles the text on the button between 0 and 1. Clicking Command2 either does nothing or causes an assertion, depending on the value displayed on Command1. The assertion stops execution with the last statement executed, the Debug.Assert line, highlighted.

```
Option Explicit
Private blnAssert As Boolean
Private intNumber As Integer


Private Sub Command1_Click()
    blnAssert = Not blnAssert
    intNumber = IIf(intNumber <> 0, 0, 1)
    Command1.Caption = intNumber
End Sub


Private Sub Command2_Click()
    Debug.Assert blnAssert
End Sub


Private Sub Form_Load()
    Command1.Caption = intNumber
    Command2.Caption = "Assert Tester"
End Sub
```

# Friend Example

When placed in a class module, the following code makes the member variable dblBalance accessible to all users of the class within the project. Any user of the class can get the value; only code within the project can assign a value to that variable.

```
Private dblBalance As Double

Public Property Get Balance() As Double
    Balance = dblBalance
End Property

Friend Property Let Balance(dblNewBalance As Double)
    dblBalance = dblNewBalance
End Property
```

# RaiseEvent Statment Example

The following example uses events to count off seconds during a demonstration of the fastest 100 meter race. The code illustrates all of the event-related methods, properties, and statements, including the **RaiseEvent** statement.

The class that raises an event is the event source, and the classes that implement the event are the sinks. An event source can have multiple sinks for the events it generates. When the class raises the event, that event is fired on every class that has elected to sink events for that instance of the object.

The example also uses a form (Form1) with a button (Command1), a label (Label1), and two text boxes (Text1 and Text2). When you click the button, the first text box displays "From Now" and the second starts to count seconds. When the full time (9.84 seconds) has elapsed, the first text box displays "Until Now" and the second displays "9.84"

The code for Form1 specifies the initial and terminal states of the form. It also contains the code executed when events are raised.

```
Option Explicit


Private WithEvents mText As TimerState


Private Sub Command1_Click()
    Text1.Text = "From Now"
    Text1.Refresh
    Text2.Text = "0"
    Text2.Refresh
    Call mText.TimerTask(9.84)
End Sub


Private Sub Form_Load()
    Command1.Caption = "Click to Start Timer"
    Text1.Text = ""
    Text2.Text = ""
    Label1.Caption = "The fastest 100 meters ever run took this long:"
    Set mText = New TimerState
    End Sub


Private Sub mText_ChangeText()
    Text1.Text = "Until Now"
    Text2.Text = "9.84"
End Sub


Private Sub mText_UpdateTime(ByVal dblJump As Double)
    Text2.Text = Str(Format(dblJump, "0"))
    DoEvents
End Sub
```

The remaining code is in a class module named TimerState. Included among the commands in this module are the **Raise Event** statements.

```
Option Explicit
Public Event UpdateTime(ByVal dblJump As Double)
Public Event ChangeText()

Public Sub TimerTask(ByVal Duration As Double)
    Dim dblStart As Double
    Dim dblSecond As Double
    Dim dblSoFar As Double
    dblStart = Timer
    dblSoFar = dblStart

    Do While Timer < dblStart + Duration
        If Timer - dblSoFar >= 1 Then
            dblSoFar = dblSoFar + 1
            RaiseEvent UpdateTime(Timer - dblStart)
        End If
    Loop

    RaiseEvent ChangeText

End Sub
```

# Character Set (128 – 255)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscANSITable2C"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamscANSITable2S"}

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 128 | • | 160 | [space] | 192 | À | 224 | à |
| 129 | • | 161 | ¡ | 193 | Á | 225 | á |
| 130 | • | 162 | ¢ | 194 | Â | 226 | â |
| 131 | • | 163 | £ | 195 | Ã | 227 | ã |
| 132 | • | 164 | ¤ | 196 | Ä | 228 | ä |
| 133 | • | 165 | ¥ | 197 | Å | 229 | å |
| 134 | • | 166 | ¦ | 198 | Æ | 230 | æ |
| 135 | • | 167 | § | 199 | Ç | 231 | ç |
| 136 | • | 168 | ¨ | 200 | È | 232 | è |
| 137 | • | 169 | © | 201 | É | 233 | é |
| 138 | • | 170 | ª | 202 | Ê | 234 | ê |
| 139 | • | 171 | « | 203 | Ë | 235 | ë |
| 140 | • | 172 | ¬ | 204 | Ì | 236 | ì |
| 141 | • | 173 | | 205 | Í | 237 | í |
| 142 | • | 174 | ® | 206 | Î | 238 | î |
| 143 | • | 175 | ¯ | 207 | Ï | 239 | ï |
| 144 | • | 176 | ° | 208 | Ð | 240 | ð |
| 145 | ` | 177 | ± | 209 | Ñ | 241 | ñ |
| 146 | ' | 178 | ² | 210 | Ò | 242 | ò |
| 147 | • | 179 | ³ | 211 | Ó | 243 | ó |
| 148 | • | 180 | ´ | 212 | Ô | 244 | ô |
| 149 | • | 181 | µ | 213 | Õ | 245 | õ |
| 150 | • | 182 | ¶ | 214 | Ö | 246 | ö |
| 151 | • | 183 | · | 215 | × | 247 | ÷ |
| 152 | • | 184 | ¸ | 216 | Ø | 248 | ø |
| 153 | • | 185 | ¹ | 217 | Ù | 249 | ù |
| 154 | • | 186 | º | 218 | Ú | 250 | ú |
| 155 | • | 187 | » | 219 | Û | 251 | û |
| 156 | • | 188 | ¼ | 220 | Ü | 252 | ü |
| 157 | • | 189 | ½ | 221 | Ý | 253 | ý |
| 158 | • | 190 | ¾ | 222 | Þ | 254 | þ |
| 159 | • | 191 | ¿ | 223 | ß | 255 | ÿ |

•   These characters aren't supported by Microsoft Windows.

The values in the table are the Windows default. However, values in the ANSI character set

above 127 are determined by the code page specific to your operating system.

# Date Format Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscDateFormatConstantsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscDateFormatConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
| --- | --- | --- |
| **vbGeneralDate** | 0 | Display a date and/or time. For real numbers, display a data and time. If there is no fractional part, display only a date. If there is no integer part, display time only. Date and time display is determined by your system settings. |
| **vbLongDate** | 1 | Display a date using the long date format specified in your computer's regional settings. |
| **vbShortDate** | 2 | Display a date using the short date format specified in your computer's regional settings. |
| **vbLongTime** | 3 | Display a time using the long time format specified in your computer's regional settings. |
| **vbShortTime** | 4 | Display a time using the short time format specified in your computer's regional settings. |

# DriveType Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscDriveTypeConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscDriveTypeConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
|---|---|---|
| **Unknown** | 0 | Drive type can't be determined. |
| **Removable** | 1 | Drive has removable media. This includes all floppy drives and many other varieties of storage devices. |
| **Fixed** | 2 | Drive has fixed (nonremovable) media. This includes all hard drives, including hard drives that are removable. |
| **Remote** | 3 | Network drives. This includes drives shared anywhere on a network. |
| **CDROM** | 4 | Drive is a CD-ROM. No distinction is made between read-only and read/write CD-ROM drives. |
| **RAMDisk** | 5 | Drive is a block of Random Access Memory (RAM) on the local computer that behaves like a disk drive. |

# File Attribute Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscFileAttributeConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscFileAttributeConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
| --- | --- | --- |
| **Normal** | 0 | Normal file. No attributes are set. |
| **ReadOnly** | 1 | Read-only file. Attribute is read/write. |
| **Hidden** | 2 | Hidden file. Attribute is read/write. |
| **System** | 4 | System file. Attribute is read/write. |
| **Volume** | 8 | Disk drive volume label. Attribute is read-only. |
| **Directory** | 16 | Folder or directory. Attribute is read-only. |
| **Archive** | 32 | File has changed since last backup. Attribute is read/write. |
| **Alias** | 64 | Link or shortcut. Attribute is read-only. |
| **Compressed** | 128 | Compressed file. Attribute is read-only. |

# File Input/Output Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscFileInputOutputConstantsC"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscFileInputOutputConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
|---|---|---|
| **ForReading** | 1 | Open a file for reading only. You can't write to this file. |
| **ForWriting** | 2 | Open a file for writing. If a file with the same name exists, its previous contents are overwritten. |
| **ForAppending** | 8 | Open a file and write to the end of the file. |

# SpecialFolder Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscSpecialFolderConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscSpecialFolderConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
| --- | --- | --- |
| **WindowsFolder** | 0 | The Windows folder contains files installed by the Windows operating system. |
| **SystemFolder** | 1 | The System folder contains libraries, fonts, and device drivers. |
| **TemporaryFolder** | 2 | The Temp folder is used to store temporary files. Its path is found in the TMP environment variable. |

# Tristate Constants

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamscTristateConstantsC"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamscTristateConstantsS"}

These constants are only available when your project has an explicit reference to the appropriate type library containing these constant definitions.

| Constant | Value | Description |
| --- | --- | --- |
| **vbTrue** | −1 | True |
| **vbFalse** | 0 | False |
| **vbUseDefault** | −2 | Use default setting |

# Filter Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFilterC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctFilterX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctFilterS"}

**Description**

Returns a zero-based array containing subset of a string array based on a specified filter criteria.

**Syntax**

**Filter(*sourcesrray, match*[*, include*[*, compare*]])**

The **Filter** function syntax has these named argument:

| Part | Description |
|------|-------------|
| *sourcearray* | Required. One-dimensional array of strings to be searched. |
| *match* | Required. String to search for. |
| *include* | Optional. **Boolean** value indicating whether to return substrings that include or exclude *match*. If *include* is **True**, **Filter** returns the subset of the array that contains *match* as a substring. If *include* is **False**, **Filter** returns the subset of the array that does not contain *match* as a substring. |
| *compare* | Optional. Numeric value indicating the kind of string comparison to use. See Settings section for values. |

**Settings**

The *compare* argument can have the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseCompareOption** | $-1$ | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Remarks**

If no matches of *match* are found within *sourcearray*, **Filter** returns an empty array. An error occurs if *sourcearray* is **Null** or is not a one-dimensional array.

The array returned by the **Filter** function contains only enough elements to contain the number of matched items.

# FormatCurrency Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFormatCurrencyC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFormatCurrencyX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFormatCurrencyS"}

**Description**

Returns an expression formatted as a currency value using the currency symbol defined in the system control panel.

**Syntax**

**FormatCurrency(***Expression*[**,***NumDigitsAfterDecimal* [**,***IncludeLeadingDigit* [**,***UseParensForNegativeNumbers* [**,***GroupDigits*]]]]**)**

The **FormatCurrency** function syntax has these parts:

| Part | Description |
|------|-------------|
| *Expression* | Required. Expression to be formatted. |
| *NumDigitsAfterDecimal* | Optional. Numeric value indicating how many places to the right of the decimal are displayed. Default value is −1, which indicates that the computer's regional settings are used. |
| *IncludeLeadingDigit* | Optional. Tristate constant that indicates whether or not a leading zero is displayed for fractional values. See Settings section for values. |
| *UseParensForNegativeNumbers* | Optional. Tristate constant that indicates whether or not to place negative values within parentheses. See Settings section for values. |
| *GroupDigits* | Optional. Tristate constant that indicates whether or not numbers are grouped using the group delimiter specified in the computer's regional settings. See Settings section for values. |

**Settings**

The *IncludeLeadingDigit*, *UseParensForNegativeNumbers*, and *GroupDigits* arguments have the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbTrue** | −1 | True |
| **vbFalse** | 0 | False |
| **vbUseDefault** | −2 | Use the setting from the computer's regional settings. |

**Remarks**

When one or more optional arguments are omitted, the values for omitted arguments are provided by the computer's regional settings.

The position of the currency symbol relative to the currency value is determined by the system's regional settings.

**Note** All settings information comes from the **Regional Settings Currency** tab, except leading zero which comes from the **Number** tab.

# FormatDateTime Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFormatDateTimeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFormatDateTimeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFormatDateTimeS"}

**Description**

Returns an expression formatted as a date or time.

**Syntax**

**FormatDateTime(**_Date_[**,**_NamedFormat_]**)**

The **FormatDateTime** function syntax has these parts:

| Part | Description |
|------|-------------|
| _Date_ | Required. Date expression to be formatted. |
| _NamedFormat_ | Optional. Numeric value that indicates the date/time format used. If omitted, **vbGeneralDate** is used. |

**Settings**

The _NamedFormat_ argument has the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbGeneralDate** | 0 | Display a date and/or time. If there is a date part, display it as a short date. If there is a time part, display it as a long time. If present, both parts are displayed. |
| **vbLongDate** | 1 | Display a date using the long date format specified in your computer's regional settings. |
| **vbShortDate** | 2 | Display a date using the short date format specified in your computer's regional settings. |
| **vbLongTime** | 3 | Display a time using the time format specified in your computer's regional settings. |
| **vbShortTime** | 4 | Display a time using the 24-hour format (hh:mm). |

# FormatNumber Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFormatNumberC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctFormatNumberX":1} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctFormatNumberS"}

**Description**

Returns an expression formatted as a number.

**Syntax**

**FormatNumber(**_Expression_[**,**_NumDigitsAfterDecimal_ [**,**_IncludeLeadingDigit_ [**,**_UseParensForNegativeNumbers_ [**,**_GroupDigits_]]]]**)**

The **FormatNumber** function syntax has these parts:

| Part | Description |
|------|-------------|
| _Expression_ | Required. Expression to be formatted. |
| _NumDigitsAfterDecimal_ | Optional. Numeric value indicating how many places to the right of the decimal are displayed. Default value is −1, which indicates that the computer's regional settings are used. |
| _IncludeLeadingDigit_ | Optional. Tristate constant that indicates whether or not a leading zero is displayed for fractional values. See Settings section for values. |
| _UseParensForNegativeNumbers_ | Optional. Tristate constant that indicates whether or not to place negative values within parentheses. See Settings section for values. |
| _GroupDigits_ | Optional. Tristate constant that indicates whether or not numbers are grouped using the group delimiter specified in the computer's regional settings. See Settings section for values. |

**Settings**

The _IncludeLeadingDigit_, _UseParensForNegativeNumbers_, and _GroupDigits_ arguments have the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbTrue** | −1 | True |
| **vbFalse** | 0 | False |
| **vbUseDefault** | −2 | Use the setting from the computer's regional settings. |

**Remarks**

When one or more optional arguments are omitted, the values for omitted arguments are provided by the computer's regional settings.

   **Note**   All settings information comes from the **Regional Settings Number** tab.

# FormatPercent Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctFormatPercentC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctFormatPercentX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctFormatPercentS"}

**Description**

Returns an expression formatted as a percentage (multipled by 100) with a trailing %
character.

**Syntax**

**FormatPercent(***Expression*[**,***NumDigitsAfterDecimal* [**,***IncludeLeadingDigit*
[**,***UseParensForNegativeNumbers* [**,***GroupDigits*]]]]**)**

The **FormatPercent** function syntax has these parts:

| Part | Description |
|------|-------------|
| *Expression* | Required. Expression to be formatted. |
| *NumDigitsAfterDecimal* | Optional. Numeric value indicating how many places to the right of the decimal are displayed. Default value is –1, which indicates that the computer's regional settings are used. |
| *IncludeLeadingDigit* | Optional. Tristate constant that indicates whether or not a leading zero is displayed for fractional values. See Settings section for values. |
| *UseParensForNegativeNumbers* | Optional. Tristate constant that indicates whether or not to place negative values within parentheses. See Settings section for values. |
| *GroupDigits* | Optional. Tristate constant that indicates whether or not numbers are grouped using the group delimiter specified in the computer's regional settings. See Settings section for values. |

**Settings**

The *IncludeLeadingDigit*, *UseParensForNegativeNumbers*, and *GroupDigits* arguments have
the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbTrue** | –1 | True |
| **vbFalse** | 0 | False |
| **vbUseDefault** | –2 | Use the setting from the computer's regional settings. |

**Remarks**

When one or more optional arguments are omitted, the values for omitted arguments are
provided by the computer's regional settings.

   **Note**   All settings information comes from the **Regional Settings Number** tab.

# InStrRev Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctInStrRevC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctInStrRevX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctInStrRevS"}

**Description**

Returns the position of an occurrence of one string within another, from the end of string.

**Syntax**

**InstrRev(*stringcheck*, *stringmatch*[, *start*[, *compare*]])**

The **InstrRev** function syntax has these named arguments:

| Part | Description |
|---|---|
| ***stringcheck*** | Required. String expression being searched. |
| ***stringmatch*** | Required. String expression being searched for. |
| ***start*** | Optional. Numeric expression that sets the starting position for each search. If omitted, −1 is used, which means that the search begins at the last character position. If ***start*** contains |
| | Null, an error occurs. |
| ***compare*** | Optional. Numeric value indicating the kind of comparison to use when evaluating substrings. If omitted, a binary comparison is performed. See Settings section for values. |

**Settings**

The ***compare*** argument can have the following values:

| Constant | Value | Description |
|---|---|---|
| **vbUseCompareOption** | −1 | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Return Values**

**InStrRev** returns the following values:

| If | InStrRev returns |
|---|---|
| ***stringcheck*** is zero-length | 0 |
| ***stringcheck*** is **Null** | **Null** |
| ***stringmatch*** is zero-length | *start* |
| ***stringmatch*** is **Null** | **Null** |
| ***stringmatch*** is not found | 0 |
| ***stringmatch*** is found within | Position at which match is found |

*stringcheck*

*start* > **Len(***stringmatch***)**          0

## Remarks

Note that the syntax for the **InstrRev** function is not the same as the syntax for the **Instr** function.

# Join Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctJoinC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctJoinX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctJoinS"}

**Description**

Returns a string created by joining a number of substrings contained in an <u>array</u>.

**Syntax**

**Join(*sourcearray*[, *delimiter*])**

The **Join** function syntax has these <u>named arguments</u>:

| Part | Description |
|---|---|
| *sourcearray* | Required. One-dimensional array containing substrings to be joined. |
| *delimiter* | Optional. String character used to separate the substrings in the returned string. If omitted, the space character (" ") is used. If *delimiter* is a zero-length string (""), all items in the list are concatenated with no delimiters. |

# MonthName Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctMonthNameC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctMonthNameX":1}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctMonthNameS"}

**Description**

Returns a string indicating the specified month.

**Syntax**

**MonthName(**_month_[**,** _abbreviate_]**)**

The **MonthName** function syntax has these parts:

| Part | Description |
| --- | --- |
| _month_ | Required. The numeric designation of the month. For example, January is 1, February is 2, and so on. |
| _abbreviate_ | Optional. **Boolean** value that indicates if the month name is to be abbreviated. If omitted, the default is **False**, which means that the month name is not abbreviated. |

# Replace Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctReplaceC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctReplaceX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctReplaceS"}

**Description**

Returns a string in which a specified substring has been replaced with another substring a specified number of times.

**Syntax**

**Replace(*expression*, *find*, *replace*[, *start*[, *count*[, *compare*]]])**

The **Replace** function syntax has these named arguments:

| Part | Description |
|---|---|
| *expression* | Required. String expression containing substring to replace. |
| *find* | Required. Substring being searched for. |
| *replace* | Required. Replacement substring. |
| *start* | Optional. Position within *expression* where substring search is to begin. If omitted, 1 is assumed. |
| *count* | Optional. Number of substring substitutions to perform. If omitted, the default value is −1, which means make all possible substitutions. |
| *compare* | Optional. Numeric value indicating the kind of comparison to use when evaluating substrings. See Settings section for values. |

**Settings**

The **compare** argument can have the following values:

| Constant | Value | Description |
|---|---|---|
| **vbUseCompareOption** | −1 | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Return Values**

**Replace** returns the following values:

| If | Replace returns |
|---|---|
| *expression* is zero-length | Zero-length string ("") |
| *expression* is **Null** | An error. |
| *find* is zero-length | Copy of *expression*. |
| *replace* is zero-length | Copy of *expression* with all occurences of *find* |

|                              |                        |
| ---------------------------- | ---------------------- |
|                              | removed.               |
| *start* > **Len(*expression*)** | Zero-length string. |
| *count* is 0                 | Copy of *expression*.  |

**Remarks**

The return value of the **Replace** function is a string, with substitutions made, that begins at the position specified by *start* and and concludes at the end of the *expression* string. It is not a copy of the original string from start to finish.

# Round Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctRoundC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctRoundX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctRoundS"}

**Description**

Returns a number rounded to a specified number of decimal places.

**Syntax**

**Round(**expression [**,**numdecimalplaces]**)**

The **Round** function syntax has these parts:

| Part | Description |
|------|-------------|
| *expression* | Required. <u>Numeric expression</u> being rounded. |
| *numdecimalplaces* | Optional. Number indicating how many places to the right of the decimal are included in the rounding. If omitted, integers are returned by the **Round** function. |

# Split Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctSplitC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctSplitX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctSplitS"}

**Description**

Returns a zero-based, one-dimensional <u>array</u> containing a specified number of substrings.

**Syntax**

**Split(*expression*[, *delimiter*[, *limit*[, *compare*]]])**

The **Split** function syntax has these <u>named arguments</u>:

| Part | Description |
|------|-------------|
| ***expression*** | Required. <u>String expression</u> containing substrings and delimiters. If *expression* is a zero-length string(""), **Split** returns an empty array, that is, an array with no elements and no data. |
| ***delimiter*** | Optional. String character used to identify substring limits. If omitted, the space character (" ") is assumed to be the delimiter. If ***delimiter*** is a zero-length string, a single-element array containing the entire ***expression*** string is returned. |
| ***limit*** | Optional. Number of substrings to be returned; $-1$ indicates that all substrings are returned. |
| ***compare*** | Optional. Numeric value indicating the kind of comparison to use when evaluating substrings. See Settings section for values. |

**Settings**

The ***compare*** argument can have the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseCompareOption** | $-1$ | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

# StrReverse Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctStrReverseC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vafctStrReverseX":1}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vafctStrReverseS"}

**Description**

Returns a string in which the character order of a specified string is reversed.

**Syntax**

**StrReverse(*expression*)**

The ***expression*** argument is the string whose characters are to be reversed. If ***expression*** is a zero-length string (""), a zero-length string is returned. If ***expression*** is **Null**, an error occurs.

# WeekdayName Function

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vafctWeekDayNameC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vafctWeekDayNameX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vafctWeekDayNameS"}

**Description**

Returns a string indicating the specified day of the week.

**Syntax**

**WeekdayName(**_weekday_**,** _abbreviate_**,** _firstdayofweek_**)**

The **WeekdayName** function syntax has these parts:

| Part | Description |
|------|-------------|
| _weekday_ | Required. The numeric designation for the day of the week. Numeric value of each day depends on setting of the _firstdayofweek_ setting. |
| _abbreviate_ | Optional. **Boolean** value that indicates if the weekday name is to be abbreviated. If omitted, the default is **False**, which means that the weekday name is not abbreviated. |
| _firstdayofweek_ | Optional. Numeric value indicating the first day of the week. See Settings section for values. |

**Settings**

The _firstdayofweek_ argument can have the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseSystem** | 0 | Use National Language Support (NLS) API setting. |
| **vbSunday** | 1 | Sunday (default) |
| **vbMonday** | 2 | Monday |
| **vbTuesday** | 3 | Tuesday |
| **vbWednesday** | 4 | Wednesday |
| **vbThursday** | 5 | Thursday |
| **vbFriday** | 6 | Friday |
| **vbSaturday** | 7 | Saturday |

# Add Method (Dictionary)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthFSOAddC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthFSOAddX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthFSOAddA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthFSOAddS"}

**Description**

Adds a key and item pair to a **Dictionary** object.

**Syntax**

*object*.**Add** *key*, *item*

The **Add** method has the following parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Dictionary** object. |
| *key* | Required. The key associated with the item being added. |
| *item* | Required. The item associated with the key being added. |

**Remarks**

An error occurs if the *key* already exists.

# Add Method (Folders)

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthAddFoldersC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthAddFoldersX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthAddFoldersA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthAddFoldersS"}

**Description**

Adds a new **Folder** to a **Folders** collection.

**Syntax**

*object*.**Add** *folderName*

The **Add** method has the following parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Folders** collection. |
| *folderName* | Required. The name of the new **Folder** being added. |

**Remarks**

An error occurs if the *folderName* already exists.

# BuildPath Method

**Description**

Appends a name to an existing path.

**Syntax**

*object*.**BuildPath(***path*, *name***)**

The **BuildPath** method syntax has these parts:

| Part | Description |
| --- | --- |
| *object* | Required. Always the name of a **FileSystemObject**. |
| *path* | Required. Existing path to which *name* is appended. Path can be absolute or relative and need not specify an existing folder. |
| *name* | Required. Name being appended to the existing *path*. |

**Remarks**

The **BuildPath** method inserts an additional path separator between the existing path and the name, only if necessary.

# Close Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthFSOCloseC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthFSOCloseX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthFSOCloseA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthFSOCloseS"}

**Description**

Closes an open **TextStream** file.

**Syntax**

*object*.**Close**

The *object* is always the name of a **TextStream** object.

# Copy Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthCopyC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthCopyX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthCopyA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthCopyS"}

**Description**

Copies a specified file or folder from one location to another.

**Syntax**

*object*.**Copy** *destination*[, *overwrite*]

The **Copy** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **File** or **Folder** object. |
| *destination* | Required. Destination where the file or folder is to be copied. Wildcard characters are not allowed. |
| *overwrite* | Optional. **Boolean** value that is **True** (default) if existing files or folders are to be overwritten; **False** if they are not. |

**Remarks**

The results of the **Copy** method on a **File** or **Folder** are identical to operations performed using **FileSystemObject.CopyFile** or **FileSystemObject.CopyFolder** where the file or folder referred to by *object* is passed as an argument. You should note, however, that the alternative methods are capable of copying multiple files or folders.

# CopyFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthCopyFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthCopyFileX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthCopyFileA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthCopyFileS"}

**Description**

Copies one or more files from one location to another.

**Syntax**

*object*.**CopyFile** *source*, *destination*[, *overwrite*]

The **CopyFile** method syntax has these parts:

| Part | Description |
|---|---|
| *object* | Required. The *object* is always the name of a **FileSystemObject**. |
| *source* | Required. Character string file specification, which can include wildcard characters, for one or more files to be copied. |
| *destination* | Required. Character string destination where the file or files from *source* are to be copied. Wildcard characters are not allowed. |
| *overwrite* | Optional. **Boolean** value that indicates if existing files are to be overwritten. If **True**, files are overwritten; if **False**, they are not. The default is **True**. Note that **CopyFile** will fail if *destination* has the read-only attribute set, regardless of the value of *overwrite*. |

**Remarks**

Wildcard characters can only be used in the last path component of the *source* argument. For example, you can use:

```
FileSystemObject.CopyFile "c:\mydocuments\letters\*.doc", "c:\tempfolder\"
```

But you can't use:

```
FileSystemObject.CopyFile "c:\mydocuments\*\R1???97.xls", "c:\tempfolder"
```

If *source* contains wildcard characters or *destination* ends with a path separator (**\**), it is assumed that *destination* is an existing folder in which to copy matching files. Otherwise, *destination* is assumed to be the name of a file to create. In either case, three things can happen when an individual file is copied.

- If *destination* does not exist, *source* gets copied. This is the usual case.

- If *destination* is an existing file, an error occurs if *overwrite* is **False**. Otherwise, an attempt is made to copy *source* over the existing file.

- If *destination* is a directory, an error occurs.

An error also occurs if a *source* using wildcard characters doesn't match any files. The **CopyFile** method stops on the first error it encounters. No attempt is made to roll back or undo any changes made before an error occurs.

# CopyFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthCopyFolderC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthCopyFolderX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthCopyFolderA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthCopyFolderS"}

**Description**

Recursively copies a folder from one location to another.

**Syntax**

*object*.**CopyFolder** *source*, *destination*[, *overwrite*]

The **CopyFolder** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *source* | Required. Character string folder specification, which can include wildcard characters, for one or more folders to be copied. |
| *destination* | Required. Character string destination where the folder and subfolders from *source* are to be copied. Wildcard characters are not allowed. |
| *overwrite* | Optional. **Boolean** value that indicates if existing folders are to be overwritten. If **True**, files are overwritten; if **False**, they are not. The default is **True**. |

**Remarks**

Wildcard characters can only be used in the last path component of the *source* argument. For example, you can use:

```
FileSystemObject.CopyFolder "c:\mydocuments\letters\*", "c:\tempfolder\"
```

But you can't use:

```
FileSystemObject.CopyFolder "c:\mydocuments\*\*", "c:\tempfolder\"
```

If *source* contains wildcard characters or *destination* ends with a path separator (\), it is assumed that *destination* is an existing folder in which to copy matching folders and subfolders. Otherwise, *destination* is assumed to be the name of a folder to create. In either case, four things can happen when an individual folder is copied.

- If *destination* does not exist, the *source* folder and all its contents gets copied. This is the usual case.

- If *destination* is an existing file, an error occurs.

- If *destination* is a directory, an attempt is made to copy the folder and all its contents. If a file contained in *source* already exists in *destination*, an error occurs if *overwrite* is **False**. Otherwise, it will attempt to copy the file over the existing file.

- If *destination* is a read-only directory, an error occurs if an attempt is made to copy an existing read-only file into that directory and *overwrite* is **False**.

An error also occurs if a *source* using wildcard characters doesn't match any folders.

The **CopyFolder** method stops on the first error it encounters. No attempt is made to roll

back any changes made before an error occurs.

# CreateFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthCreateFolderC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthCreateFolderX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthCreateFolderA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthCreateFolderS"}

**Description**

Creates a folder.

**Syntax**

*object*.**CreateFolder(***foldername***)**

The **CreateFolder** method has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *foldername* | Required. <u>String expression</u> that identifies the folder to create. |

**Remarks**

An error occurs if the specified folder already exists.

# CreateTextFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthCreateTextFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthCreateTextFileX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthCreateTextFileA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthCreateTextFileS"}

**Description**

Creates a specified file name and returns a **TextStream** object that can be used to read from or write to the file.

**Syntax**

*object*.**CreateTextFile(***filename*[**,** *overwrite*[**,** *unicode*]]**)**

The **CreateTextFile** method has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject** or **Folder** object. |
| *filename* | Required. String expression that identifies the file to create. |
| *overwrite* | Optional. **Boolean** value that indicates if an existing file can be overwritten. The value is **True** if the file can be overwritten; **False** if it can't be overwritten. If omitted, existing files are not overwritten. |
| *unicode* | Optional. **Boolean** value that indicates whether the file is created as a Unicode or ASCII file. The value is **True** if the file is created as a Unicode file; **False** if it's created as an ASCII file. If omitted, an ASCII file is assumed. |

**Remarks**

The following code illustrates how to use the **CreateTextFile** method to create and open a text file:

```
Sub CreateAfile
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set a = fs.CreateTextFile("c:\testfile.txt", True)
    a.WriteLine("This is a test.")
    a.Close
End Sub
```

If the *overwrite* argument is **False**, or is not provided, for a *filename* that already exists, an error occurs.

# Delete Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthDeleteC"}　{ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthDeleteX":1}　{ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthDeleteA"}　{ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthDeleteS"}

**Description**

Deletes a specified file or folder.

**Syntax**

*object*.**Delete** *force*

The **Delete** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **File** or **Folder** object. |
| *force* | Optional. **Boolean** value that is **True** if files or folders with the read-only attribute set are to be deleted; **False** (default) if they are not. |

**Remarks**

An error occurs if the specified file or folder does not exist.

The results of the **Delete** method on a **File** or **Folder** are identical to operations performed using **FileSystemObject.DeleteFile** or **FileSystemObject.DeleteFolder**.

The **Delete** method does not distinguish between folders that have contents and those that do not. The specified folder is deleted regardless of whether or not it has contents.

# DeleteFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthDeleteFileC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthDeleteFileX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthDeleteFileA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthDeleteFileS"}

**Description**

Deletes a specified file.

**Syntax**

*object*.**DeleteFile** *filespec*[, *force*]

The **DeleteFile** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *filespec* | Required. The name of the file to delete. The *filespec* can contain wildcard characters in the last path component. |
| *force* | Optional. **Boolean** value that is **True** if files with the read-only attribute set are to be deleted; **False** (default) if they are not. |

**Remarks**

An error occurs if no matching files are found. The **DeleteFile** method stops on the first error it encounters. No attempt is made to roll back or undo any changes that were made before an error occurred.

# DeleteFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthDeleteFolderC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthDeleteFolderX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthDeleteFolderA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthDeleteFolderS"}

**Description**

Deletes a specified folder and its contents.

**Syntax**

*object*.**DeleteFolder** *folderspec*[, *force*]

The **DeleteFolder** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *folderspec* | Required. The name of the folder to delete. The *folderspec* can contain wildcard characters in the last path component. |
| *force* | Optional. **Boolean** value that is **True** if folders with the read-only attribute set are to be deleted; **False** (default) if they are not. |

**Remarks**

The **DeleteFolder** method does not distinguish between folders that have contents and those that do not. The specified folder is deleted regardless of whether or not it has contents.

An error occurs if no matching folders are found. The **DeleteFolder** method stops on the first error it encounters. No attempt is made to roll back or undo any changes that were made before an error occurred.

# DriveExists Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthDriveExistsC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthDriveExistsX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthDriveExistsA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthDriveExistsS"}

**Description**

Returns **True** if the specified drive exists; **False** if it does not.

**Syntax**

*object*.**DriveExists(***drivespec***)**

The **DriveExists** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *drivespec* | Required. A drive letter or a complete path specification. |

**Remarks**

For drives with removable media, the **DriveExists** method returns **True** even if there are no media present. Use the **IsReady** property of the **Drive** object to determine if a drive is ready.

# Exists Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthExistsC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthExistsX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthExistsA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthExistsS"}

**Description**

Returns **True** if a specified key exists in the **Dictionary** object; **False** if it does not.

**Syntax**

*object*.**Exists(**_key_**)**

The **Exists** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Dictionary** object. |
| *key* | Required. *Key* value being searched for in the **Dictionary** object. |

# FileExists Method

**Description**

Returns **True** if a specified file exists; **False** if it does not.

**Syntax**

*object*.**FileExists(***filespec***)**

The **FileExists** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *filespec* | Required. The name of the file whose existence is to be determined. A complete path specification (either absolute or relative) must be provided if the file isn't expected to exist in the current folder. |

# FolderExists Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthFolderExistsC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthFolderExistsX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthFolderExistsA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthFolderExistsS"}

**Description**

Returns **True** if a specified folder exists; **False** if it does not.

**Syntax**

*object*.**FolderExists(***folderspec*)

The **FolderExists** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *folderspec* | Required. The name of the folder whose existence is to be determined. A complete path specification (either absolute or relative) must be provided if the folder isn't expected to exist in the current folder. |

# GetAbsolutePathName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetAbsolutePathNameC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetAbsolutePathNameX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetAbsolutePathNameA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetAbsolutePathNameS"}

**Description**

Returns a complete and unambiguous path from a provided path specification.

**Syntax**

*object*.**GetAbsolutePathName(***pathspec***)**

The **GetAbsolutePathName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *pathspec* | Required. Path specification to change to a complete and unambiguous path. |

**Remarks**

A path is complete and unambiguous if it provides a complete reference from the root of the specified drive. A complete path can only end with a path separator character (**\**) if it specifies the root folder of a mapped drive.

Assuming the current directory is c:\mydocuments\reports, the following table illustrates the behavior of the **GetAbsolutePathName** method.

| *pathspec* | **Returned path** |
|------------|-------------------|
| "c:" | "c:\mydocuments\reports" |
| "c:.." | "c:\mydocuments" |
| "c:\\\" | "c:\" |
| "c:*.*\may97" | "c:\mydocuments\reports\*.*\may97" |
| "region1" | "c:\mydocuments\reports\region1" |
| "c:\..\..\mydocuments" | "c:\mydocuments" |

# GetBaseName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetBaseNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetBaseNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetBaseNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetBaseNameS"}

**Description**

Returns a string containing the base name of the last component, less any file extension, in a path.

**Syntax**

*object*.**GetBaseName(**path**)**

The **GetBaseName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *path* | Required. The path specification for the component whose base name is to be returned. |

**Remarks**

The **GetBaseName** method returns a zero-length string ("") if no component matches the *path* argument.

> **Note**   The **GetBaseName** method works only on the provided *path* string. It does not attempt to resolve the path, nor does it check for the existence of the specified path.

# GetDrive Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetDriveC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetDriveX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetDriveA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetDriveS"}

**Description**

Returns a **Drive** object corresponding to the drive in a specified path.

**Syntax**

*object*.**GetDrive** *drivespec*

The **GetDrive** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *drivespec* | Required. The *drivespec* argument can be a drive letter (c), a drive letter with a colon appended (c:), a drive letter with a colon and path separator appended (c:\), or any network share specification (\\computer2\share1). |

**Remarks**

For network shares, a check is made to ensure that the share exists.

An error occurs if *drivespec* does not conform to one of the accepted forms or does not exist.

To call the **GetDrive** method on a normal path string, use the following sequence to get a string that is suitable for use as *drivespec*:

```
DriveSpec = GetDriveName(GetAbsolutePathName(Path))
```

# GetDriveName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetDriveNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetDriveNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetDriveNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetDriveNameS"}

**Description**

Returns a string containing the name of the drive for a specified path.

**Syntax**

*object*.**GetDriveName(***path***)**

The **GetDriveName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *path* | Required. The path specification for the component whose drive name is to be returned. |

**Remarks**

The **GetDriveName** method returns a zero-length string ("") if the drive can't be determined.

> **Note**   The **GetDriveName** method works only on the provided *path* string. It does not attempt to resolve the path, nor does it check for the existence of the specified path.

# GetExtensionName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetExtensionNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetExtensionNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetExtensionNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetExtensionNameS"}

**Description**

Returns a string containing the extension name for the last component in a path.

**Syntax**

*object*.**GetExtensionName(***path***)**

The **GetExtensionName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *path* | Required. The path specification for the component whose extension name is to be returned. |

**Remarks**

For network drives, the root directory (**\**) is considered to be a component.

The **GetExtensionName** method returns a zero-length string ("") if no component matches the *path* argument.

# GetFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetFileC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthGetFileX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetFileA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetFileS"}

**Description**

Returns a **File** object corresponding to the file in a specified path.

**Syntax**

*object*.**GetFile(***filespec***)**

The **GetFile** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *filespec* | Required. The *filespec* is the path (absolute or relative) to a specific file. |

**Remarks**

An error occurs if the specified file does not exist.

# GetFileName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetFileNameC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthGetFileNameX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetFileNameA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetFileNameS"}

**Description**

Returns the last component of specified path that is not part of the drive specification.

**Syntax**

*object*.**GetFileName(***pathspec***)**

The **GetFileName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *pathspec* | Required. The path (absolute or relative) to a specific file. |

**Remarks**

The **GetFileName** method returns a zero-length string ("") if *pathspec* does not end with the named component.

> **Note**   The **GetFileName** method works only on the provided path string. It does not attempt to resolve the path, nor does it check for the existence of the specified path.

# GetFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetFolderC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetFolderX":1}　{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetFolderA"}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetFolderS"}

**Description**

Returns a **Folder** object corresponding to the folder in a specified path.

**Syntax**

*object*.**GetFolder(***folderspec***)**

The **GetFolder** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *folderspec* | Required. The *folderspec* is the path (absolute or relative) to a specific folder. |

**Remarks**

An error occurs if the specified folder does not exist.

# GetParentFolderName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetParentFolderNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetParentFolderNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetParentFolderNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetParentFolderNameS"}

**Description**

Returns a string containing the name of the parent folder of the last component in a specified path.

**Syntax**

*object*.**GetParentFolderName(***path***)**

The **GetParentFolderName** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *path* | Required. The path specification for the component whose parent folder name is to be returned. |

**Remarks**

The **GetParentFolderName** method returns a zero-length string ("") if there is no parent folder for the component specified in the *path* argument.

> **Note**  The **GetParentFolderName** method works only on the provided *path* string. It does not attempt to resolve the path, nor does it check for the existence of the specified path.

# GetSpecialFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetSpecialFolderC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetSpecialFolderX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetSpecialFolderA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetSpecialFolderS"}

**Description**

Returns the special folder specified.

**Syntax**

*object***.GetSpecialFolder(***folderspec***)**

The **GetSpecialFolder** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *folderspec* | Required. The name of the special folder to be returned. Can be any of the constants shown in the Settings section. |

**Settings**

The *folderspec* argument can have any of the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **WindowsFolder** | 0 | The Windows folder contains files installed by the Windows operating system. |
| **SystemFolder** | 1 | The System folder contains libraries, fonts, and device drivers. |
| **TemporaryFolder** | 2 | The Temp folder is used to store temporary files. Its path is found in the TMP environment variable. |

# GetTempName Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthGetTempNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthGetTempNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthGetTempNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthGetTempNameS"}

**Description**

Returns a randomly generated temporary file or folder name that is useful for performing operations that require a temporary file or folder.

**Syntax**

*object*.**GetTempName**

The optional *object* is always the name of a **FileSystemObject**.

**Remarks**

The **GetTempName** method does not create a file. It provides only a temporary file name that can be used with **CreateTextFile** to create a file.

# Items Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthItemsC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthItemsX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthItemsA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthItems_S"}

**Description**

Returns an array containing all the items in a **Dictionary** object.

**Syntax**

*object*.**Items**

The *object* is always the name of a **Dictionary** object.

**Remarks**

The following code illustrates use of the **Items** method:

```
Dim a, d, i              'Create some variables
Set d = CreateObject("Scripting.Dictionary")
d.Add "a", "Athens"      'Add some keys and items
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
a = d.Items              'Get the items
For i = 0 To d.Count -1 'Iterate the array
    Print a(i)           'Print item
Next
...
```

# Keys Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthKeysC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthKeysX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthKeysA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthKeysS"}

**Description**

Returns an array containing all existing keys in a **Dictionary** object.

**Syntax**

*object*.**Keys**

The *object* is always the name of a **Dictionary** object.

**Remarks**

The following code illustrates use of the **Keys** method:

```
Dim a, d, i              'Create some variables
Set d = CreateObject("Scripting.Dictionary")
d.Add "a", "Athens"      'Add some keys and items.
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
a = d.keys               'Get the keys
For i = 0 To d.Count -1 'Iterate the array
    Print a(i)           'Print key
Next
...
```

# Move Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthFSOMoveC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthFSOMoveX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthFSOMoveA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthFSOMoveS"}

**Description**

Moves a specified file or folder from one location to another.

**Syntax**

*object*.**Move** *destination*

The **Move** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **File** or **Folder** object. |
| *destination* | Required. Destination where the file or folder is to be moved. Wildcard characters are not allowed. |

**Remarks**

The results of the **Move** method on a **File** or **Folder** are identical to operations performed using **FileSystemObject.MoveFile** or **FileSystemObject.MoveFolder**. You should note, however, that the alternative methods are capable of moving multiple files or folders.

# MoveFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthMoveFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthMoveFileX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthMoveFileA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthMoveFileS"}

**Description**

Moves one or more files from one location to another.

**Syntax**

*object*.**MoveFile** *source*, *destination*

The **MoveFile** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *source* | Required. The path to the file or files to be moved. The *source* argument string can contain wildcard characters in the last path component only. |
| *destination* | Required. The path where the file or files are to be moved. The *destination* argument can't contain wildcard characters. |

**Remarks**

If *source* contains wildcards or *destination* ends with a path separator (**\\**), it is assumed that *destination* specifies an existing folder in which to move the matching files. Otherwise, *destination* is assumed to be the name of a destination file to create. In either case, three things can happen when an individual file is moved:

- If *destination* does not exist, the file gets moved. This is the usual case.

- If *destination* is an existing file, an error occurs.

- If desti*n*ation is a directory, an error occurs.

An error also occurs if a wildcard character that is used in *source* doesn't match any files. The **MoveFile** method stops on the first error it encounters. No attempt is made to roll back any changes made before the error occurs.

  **Important**  This method allows moving files between volumes only if supported by the operating system.

# MoveFolder Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthMoveFolderC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthMoveFolderX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthMoveFolderA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthMoveFolderS"}

**Description**

Moves one or more folders from one location to another.

**Syntax**

*object*.**MoveFolder** *source*, *destination*

The **MoveFolder** method syntax has these parts:

| Part | Description |
|---|---|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *source* | Required. The path to the folder or folders to be moved. The *source* argument string can contain wildcard characters in the last path component only. |
| *destination* | Required. The path where the folder or folders are to be moved. The *destination* argument can't contain wildcard characters. |

**Remarks**

If *source* contains wildcards or *destination* ends with a path separator (**\\**), it is assumed that *destination* specifies an existing folder in which to move the matching files. Otherwise, *destination* is assumed to be the name of a destination folder to create. In either case, three things can happen when an individual folder is moved:

- If *destination* does not exist, the folder gets moved. This is the usual case.

- If *destination* is an existing file, an error occurs.

- If *destination* is a directory, an error occurs.

An error also occurs if a wildcard character that is used in *source* doesn't match any folders. The **MoveFolder** method stops on the first error it encounters. No attempt is made to roll back any changes made before the error occurs.

> **Important**  This method allows moving folders between volumes only if supported by the operating system.

# OpenAsTextStream Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthOpenAsTextStreamC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthOpenAsTextStreamX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthOpenAsTextStreamA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthOpenAsTextStreamS"}

**Description**

Opens a specified file and returns a **TextStream** object that can be used to read from, write to, or append to the file.

**Syntax**

*object*.**OpenAsTextStream(**[*iomode*, [*format*]]**)**

The **OpenAsTextStream** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **File** object. |
| *iomode* | Optional. Indicates input/output mode. Can be one of three constants: **ForReading**, **ForWriting**, or **ForAppending**. |
| *format* | Optional. One of three **Tristate** values used to indicate the format of the opened file. If omitted, the file is opened as ASCII. |

**Settings**

The *iomode* argument can have any of the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **ForReading** | 1 | Open a file for reading only. You can't write to this file. |
| **ForWriting** | 2 | Open a file for writing. If a file with the same name exists, its previous contents are overwritten. |
| **ForAppending** | 8 | Open a file and write to the end of the file. |

The *format* argument can have any of the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **TristateUseDefault** | −2 | Opens the file using the system default. |
| **TristateTrue** | −1 | Opens the file as Unicode. |
| **TristateFalse** | 0 | Opens the file as ASCII. |

**Remarks**

The **OpenAsTextStream** method provides the same functionality as the **OpenTextFile** method of the **FileSystemObject**. In addition, the **OpenAsTextStream** method can be used to write to a file.

The following code illustrates the use of the **OpenAsTextStream** method:

```
Sub TextStreamTest
    Const ForReading = 1, ForWriting = 2, ForAppending = 3
```

```
    Const TristateUseDefault = -2, TristateTrue = -1, TristateFalse = 0
    Dim fs, f, ts, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    fs.CreateTextFile "test1.txt"              'Create a file
    Set f = fs.GetFile("test1.txt")
    Set ts = f.OpenAsTextStream(ForWriting, TristateUseDefault)
    ts.Write "Hello World"
    ts.Close
    Set ts = f.OpenAsTextStream(ForReading, TristateUseDefault)
    s = ts.ReadLine
    MsgBox s
    ts.Close
End Sub
```

# OpenTextFile Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthOpenTextFileC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthOpenTextFileX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthOpenTextFileA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthOpenTextFileS"}

**Description**

Opens a specified file and returns a **TextStream** object that can be used to read from or append to the file.

**Syntax**

*object*.**OpenTextFile(**filename[**,** iomode[**,** create[**,** format]]]**)**

The **OpenTextFile** method has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **FileSystemObject**. |
| *filename* | Required. <u>String expression</u> that identifies the file to open. |
| *iomode* | Optional. Indicates input/output mode. Can be one of two constants, either **ForReading** or **ForAppending**. |
| *create* | Optional. **Boolean** value that indicates whether a new file can be created if the specified *filename* doesn't exist. The value is **True** if a new file is created; **False** if it isn't created. The default is **False**. |
| *format* | Optional. One of three **Tristate** values used to indicate the format of the opened file. If omitted, the file is opened as ASCII. |

**Settings**

The *iomode* argument can have either of the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **ForReading** | 1 | Open a file for reading only. You can't write to this file. |
| **ForAppending** | 8 | Open a file and write to the end of the file. |

The *format* argument can have any of the following settings:

| Constant | Value | Description |
|----------|-------|-------------|
| **TristateUseDefault** | $-2$ | Opens the file using the system default. |
| **TristateTrue** | $-1$ | Opens the file as Unicode. |
| **TristateFalse** | 0 | Opens the file as ASCII. |

**Remarks**

The following code illustrates the use of the **OpenTextFile** method to open a file for appending text:

```
Sub OpenTextFileTest
    Const ForReading = 1, ForWriting = 2, ForAppending = 3
```

```
    Dim fs, f
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.OpenTextFile("c:\testfile.txt", ForAppending,TristateFalse)
    f.Write "Hello world!"
    f.Close
End Sub
```

# Read Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthReadC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthReadX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthReadA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthReadS"}

**Description**

Reads a specified number of characters from a **TextStream** file and returns the resulting string.

**Syntax**

*object*.**Read(***characters***)**

The **Read** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **TextStream**object. |
| *characters* | Required. Number of characters you want to read from the file. |

# ReadAll Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthReadAllC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthReadAllX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthReadAllA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthReadAllS"}

**Description**

Reads an entire **TextStream** file and returns the resulting string.

**Syntax**

*object*.**ReadAll**

The *object* is always the name of a **TextStream** object.

**Remarks**

For large files, using the **ReadAll** method wastes memory resources. Other techniques should be used to input a file, such as reading a file line by line.

# ReadLine Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthReadLineC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthReadLineX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthReadLineA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthReadLineS"}

**Description**

Reads an entire line (up to, but not including, the newline character) from a **TextStream**
file and returns the resulting string.

**Syntax**

*object*.**ReadLine**

The *object* argument is always the name of a **TextStream** object.

# Remove Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthFSORemoveC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthFSORemoveX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthFSORemoveA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthFSORemoveS"}

**Description**

Removes a key, item pair from a **Dictionary** object.

**Syntax**

*object*.**Remove(***key***)**

The **Remove** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Dictionary** object. |
| *key* | Required. *Key* associated with the key, item pair you want to remove from the **Dictionary** object. |

**Remarks**

An error occurs if the specified key, item pair does not exist.

The following code illustrates use of the **Remove** method:

```
Dim a, d, i              'Create some variables
Set d = CreateObject("Scripting.Dictionary")
d.Add "a", "Athens"      'Add some keys and items
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
...
a = d.Remove()           'Remove second pair
```

# RemoveAll Method

**Description**

The **RemoveAll** method removes all key, item pairs from a **Dictionary** object.

**Syntax**

*object*.**RemoveAll**

The *object* is always the name of a **Dictionary** object.

**Remarks**

The following code illustrates use of the **RemoveAll** method:

```
Dim a, d, i              'Create some variables
Set d = CreateObject("Scripting.Dictionary")
d.Add "a", "Athens"      'Add some keys and items
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
...
a = d.RemoveAll          'Clear the dictionary
```

# Skip Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthSkipC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthSkipX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthSkipA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthSkipS"}

**Description**

Skips a specified number of characters when reading a **TextStream** file.

**Syntax**

*object*.**Skip(***characters***)**

The **Skip** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **TextStream** object. |
| *characters* | Required. Number of characters to skip when reading a file. |

**Remarks**

Skipped characters are discarded.

# SkipLine Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthSkipLineC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthSkipLineX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthSkipLineA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthSkipLineS"}

**Description**

Skips the next line when reading a **TextStream** file.

**Syntax**

*object*.**SkipLine**

The *object* is always the name of a **TextStream** object.

**Remarks**

Skipping a line means reading and discarding all characters in a line up to and including the next newline character.

An error occurs if the file is not open for reading.

# Write Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthWriteC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthWriteX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthWriteA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthWriteS"}

**Description**

Writes a specified string to a **TextStream** file.

**Syntax**

*object*.**Write(***string***)**

The **Write** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **TextStream** object. |
| *string* | Required. The text you want to write to the file. |

**Remarks**

Specified strings are written to the file with no intervening spaces or characters between each string. Use the **WriteLine** method to write a newline character or a string that ends with a newline character.

# WriteBlankLines Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthWriteBlankLinesC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vamthWriteBlankLinesX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vamthWriteBlankLinesA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vamthWriteBlankLinesS"}

**Description**

Writes a specified number of newline characters to a **TextStream** file.

**Syntax**

*object*.**WriteBlankLines(***lines***)**

The **WriteBlankLines** method syntax has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **TextStream** object. |
| *lines* | Required. Number of newline characters you want to write to the file. |

# WriteLine Method

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vamthWriteLineC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vamthWriteLineX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vamthWriteLineA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vamthWriteLineS"}

**Description**

Writes a specified string and newline character to a **TextStream** file.

**Syntax**

*object*.**WriteLine(**[*string*]**)**

The **WriteLine** method syntax has these parts:

| Part | Description |
| --- | --- |
| *object* | Required. Always the name of a **TextStream** object. |
| *string* | Optional. The text you want to write to the file. If omitted, a newline character is written to the file. |

# Dictionary Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjDictionaryC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjDictionaryX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjDictionaryP"}  {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjDictionaryM"}  {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjDictionaryE"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjDictionaryS"}

**Description**

Object that stores data key, item pairs.

**Syntax**

**Scripting.Dictionary**

**Remarks**

A **Dictionary** object is the equivalent of a PERL associative array. Items, which can be any
form of data, are stored in the array. Each item is associated with a unique key. The key is
used to retrieve an individual item and is usually a integer or a string, but can be anything
except an array.

The following code illustrates how to create a **Dictionary** object:

```
Dim d                     'Create a variable
Set d = CreateObject(Scripting.Dictionary)
d.Add "a", "Athens"       'Add some keys and items
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
...
```

# Drive Object

**Description**

Provides access to the properties of a particular disk drive or network share.

**Remarks**

The following code illustrates the use of the **Drive** object to access drive properties:

```
Sub ShowFreeSpace(drvPath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(drvPath))
    s = "Drive " & UCase(drvPath) & " - "
    s = s & d.VolumeName  & vbCrLf
    s = s & "Free Space: " & FormatNumber(d.FreeSpace/1024, 0)
    s = s & " Kbytes"
    MsgBox s
End Sub
```

# Drives Collection

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjDrivesC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaobjDrivesX":1}  {ewc HLP95EN.DLL,DYNALINK,"Properties":"vaobjDrivesP"}  {ewc HLP95EN.DLL,DYNALINK,"Methods":"vaobjDrivesM"}  {ewc HLP95EN.DLL,DYNALINK,"Events":"vaobjDrivesE"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaobjDrives_S"}

**Description**

Read-only collection of all available drives.

**Remarks**

Removable-media drives need not have media inserted for them to appear in the **Drives** collection.

The following code illustrates how to get the **Drives** collection and iterate the collection using the **For Each...Next** statement:

```
Sub ShowDriveList
    Dim fs, d, dc, s, n
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set dc = fs.Drives
    For Each d in dc
        s = s & d.DriveLetter & " - "
        If d.DriveType = Remote Then
            n = d.ShareName
        Else
            n = d.VolumeName
        End If
        s = s & n & vbCrLf
    Next
    MsgBox s
End Sub
```

# File Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjFileC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjFileX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjFileP"}  {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjFileM"}  {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjFileE"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjFile_S"}

**Description**

Provides access to all the properties of a file.

**Remarks**

The following code illustrates how to obtain a **File** object and how to view one of its
properties.

```
Sub ShowFileInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = f.DateCreated
    MsgBox s
End Sub
```

# Files Collection

**Description**

Collection of all **File** objects within a folder.

**Remarks**

The following code illustrates how to get a **Files** collection and iterate the collection using the **For Each…Next** statement:

```
Sub ShowFolderList(folderspec)
    Dim fs, f, f1, fc, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(folderspec)
    Set fc = f.Files
    For Each f1 in fc
        s = s & f1.name
        s = s & vbCrLf
    Next
    MsgBox s
End Sub
```

# FileSystemObject Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjFileSystemObjectC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaobjFileSystemObjectX":1}  {ewc HLP95EN.DLL,DYNALINK,"Properties":"vaobjFileSystemObjectP"}  {ewc HLP95EN.DLL,DYNALINK,"Methods":"vaobjFileSystemObjectM"}  {ewc HLP95EN.DLL,DYNALINK,"Events":"vaobjFileSystemObjectE"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaobjFileSystemObjectS"}

**Description**

Provides access to a computer's file system.

**Syntax**

**Scripting.FileSystemObject**

**Remarks**

The following code illustrates how the **FileSystemObject** is used to return a **TextStream** object that can be read from or written to:

```
Set fs = CreateObject("Scripting.FileSystemObject")
Set a = fs.CreateTextFile("c:\testfile.txt", True)
a.WriteLine("This is a test.")
a.Close
```

In the code shown above, the **CreateObject** function returns the **FileSystemObject** (fs). The **CreateTextFile** method then creates the file as a **TextStream** object (a), and the **WriteLine** method writes a line of text to the created text file. The **Close** method flushes the buffer and closes the file.

# Folder Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjFolderC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjFolderX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjFolderP"}  {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjFolderM"}  {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjFolderE"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjFolder_S"}

**Description**

Provides access to all the properties of a folder.

**Remarks**

The following code illustrates how to obtain a **Folder** object and how to return one of its
properties:

```
Sub ShowFolderInfo(folderspec)
    Dim fs, f, s,
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(folderspec)
    s = f.DateCreated
    MsgBox s
End Sub
```

# Folders Collection

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjFoldersC"} {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaobjFoldersX":1} {ewc
HLP95EN.DLL,DYNALINK,"Properties":"vaobjFoldersP"} {ewc
HLP95EN.DLL,DYNALINK,"Methods":"vaobjFoldersM"} {ewc
HLP95EN.DLL,DYNALINK,"Events":"vaobjFoldersE"} {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaobjFolders_S"}

**Description**

Collection of all **Folder** objects contained within a **Folder** object.

**Remarks**

The following code illustrates how to get a **Folders** collection and how to iterate the
collection using the **For Each...Next** statement:

```
Sub ShowFolderList(folderspec)
    Dim fs, f, f1, fc, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(folderspec)
    Set fc = f.SubFolders
    For Each f1 in fc
        s = s & f1.name
        s = s &  vbCrLf
    Next
    MsgBox s
End Sub
```

# TextStream Object

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaobjTextStreamC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vaobjTextStreamX":1} {ewc HLP95EN.DLL,DYNALINK,"Properties":"vaobjTextStreamP"} {ewc HLP95EN.DLL,DYNALINK,"Methods":"vaobjTextStreamM"} {ewc HLP95EN.DLL,DYNALINK,"Events":"vaobjTextStreamE"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaobjTextStreamS"}

**Description**

Facilitates sequential access to file.

**Syntax**

**TextStream.**{*property* | *method*}

The *property* and *method* arguments can be any of the properties and methods associated with the **TextStream** object. Note that in actual usage **TextStream** is replaced by a variable placeholder representing the **TextStream** object returned from the **FileSystemObject**.

**Remarks**

In the following code, a is the **TextStream** object returned by the **CreateTextFile** method on the **FileSystemObject**:

```
Set fs = CreateObject("Scripting.FileSystemObject")

Set a = fs.CreateTextFile("c:\testfile.txt", True)

a.WriteLine("This is a test.")

a.Close
```

**WriteLine** and **Close** are two methods of the **TextStream** Object.

# = Operator

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaoprAssignC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaoprAssignX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaoprAssignS"}

**Description**

Used to assign a value to a <u>variable</u> or <u>property</u>.

**Syntax**

*variable* **=** *value*

The **=** operator syntax has these parts:

| Part | Description |
|------|-------------|
| *variable* | Any variable or any writable property. |
| *value* | Any numeric or string literal, <u>constant</u>, or <u>expression</u>. |

**Remarks**

The name on the left side of the equal sign can be a simple scalar variable or an element of an <u>array</u>. Properties on the left side of the equal sign can only be those properties that are writable at <u>run time</u>.

# AtEndOfLine Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproAtEndOfLineC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vaproAtEndOfLineX":1}　{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproAtEndOfLineA"}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproAtEndOfLineS"}

**Description**

Read-only property that returns **True** if the file pointer immediately precedes the end-of-line marker in a **TextStream** file; **False** if it does not.

**Syntax**

*object*.**AtEndOfLine**

The *object* is always the name of a **TextStream** object.

**Remarks**

The **AtEndOfLine** property applies only to **TextStream** files that are open for reading; otherwise, an error occurs.

The following code illustrates the use of the **AtEndOfLine** property:

```
Dim fs, a, retstring
Set fs = CreateObject("Scripting.FileSystemObject")
Set a = fs.OpenTextFile("c:\testfile.txt", ForReading, False)
Do While a.AtEndOfLine <> True
    retstring = a.Read(1)
    ...
Loop
a.Close
```

# AtEndOfStream Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproAtEndOfStreamC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproAtEndOfStreamX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproAtEndOfStreamA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproAtEndOfStreamS"}

**Description**

Read-only property that returns **True** if the file pointer is at the end of a **TextStream** file;
**False** if it is not.

**Syntax**

*object*.**AtEndOfStream**

The *object* is always the name of a **TextStream** object.

**Remarks**

The **AtEndOfStream** property applies only to **TextStream** files that are open for reading;
otherwise, an error occurs.

The following code illustrates the use of the **AtEndOfStream** property:

```
Dim fs, a, retstring
Set fs = CreateObject("Scripting.FileSystemObject")
Set a = fs.OpenTextFile("c:\testfile.txt", ForReading, False)
Do While a.AtEndOfStream <> True
    retstring = a.ReadLine
    ...
Loop
a.Close
```

# Attributes Property

**Description**

Sets or returns the attributes of files or folders. Read/write or read-only, depending on the attribute.

**Syntax**

*object*.**Attributes** [= *newattributes*]

The **Attributes** property has these parts:

| Part | Description |
|---|---|
| *object* | Required. Always the name of a **File** or **Folder** object. |
| *newattributes* | Optional. If provided, *newattributes* is the new value for the attributes of the specified *object*. |

**Settings**

The *newattributes* argument can have any of the following values or any logical combination of the following values:

| Constant | Value | Description |
|---|---|---|
| **Normal** | 0 | Normal file. No attributes are set. |
| **ReadOnly** | 1 | Read-only file. Attribute is read/write. |
| **Hidden** | 2 | Hidden file. Attribute is read/write. |
| **System** | 4 | System file. Attribute is read/write. |
| **Volume** | 8 | Disk drive volume label. Attribute is read-only. |
| **Directory** | 16 | Folder or directory. Attribute is read-only. |
| **Archive** | 32 | File has changed since last backup. Attribute is read/write. |
| **Alias** | 64 | Link or shortcut. Attribute is read-only. |
| **Compressed** | 128 | Compressed file. Attribute is read-only. |

**Remarks**

The following code illustrates the use of the **Attributes** property with a file:

```
Sub SetClearArchiveBit(filespec)
    Dim fs, f, r
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(fs.GetFileName(filespec))
    If f.attributes and 32 Then
        r = MsgBox("The Archive bit is set, do you want to clear it?",
vbYesNo, "Set/Clear Archive Bit")
        If r = vbYes Then
```

```
        f.attributes = f.attributes - 32
            MsgBox "Archive bit is cleared."
        Else
            MsgBox "Archive bit remains set."
        End If
    Else
        r = MsgBox("The Archive bit is not set. Do you want to set it?",
vbYesNo, "Set/Clear Archive Bit")
        If r = vbYes Then
            f.attributes = f.attributes + 32
            MsgBox "Archive bit is set."
        Else
            MsgBox "Archive bit remains clear."
        End If
    End If
End Sub
```

# AvailableSpace Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproAvailableSpaceC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproAvailableSpaceX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproAvailableSpaceA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproAvailableSpaceS"}

**Description**

Returns the amount of space available to a user on the specified drive or network share.

**Syntax**

*object*.**AvailableSpace**

The *object* is always a **Drive** object.

**Remarks**

The value returned by the **AvailableSpace** property is typically the same as that returned by the **FreeSpace** property. Differences may occur between the two values for computer systems that support quotas.

The following code illustrates the use of the **AvailableSpace** property:

```
Sub ShowAvailableSpace(drvPath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(drvPath))
    s = "Drive " & UCase(drvPath) & " - "
    s = s & d.VolumeName  & vbCrLf
    s = s & "Available Space: " & FormatNumber(d.AvailableSpace/1024, 0)
    s = s & " Kbytes"
    MsgBox s
End Sub
```

# Column Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproColumnC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproColumnX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproColumnA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproColumnS"}

**Description**

Read-only property that returns the column number of the current character position in a **TextStream** file.

**Syntax**

*object*.**Column**

The *object* is always the name of a **TextStream** object.

**Remarks**

After a newline character has been written, but before any other character is written, **Column** is equal to 1.

# CompareMode Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproCompareModeC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproCompareModeX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproCompareModeA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproCompareModeS"}

**Description**

Sets and returns the comparison mode for comparing string keys in a **Dictionary** object.

**Syntax**

*object*.**CompareMode**[ = *compare*]

The **CompareMode** property has the following parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Dictionary** object. |
| *compare* | Optional. If provided, *compare* is a value representing the comparison mode used by functions such as **StrComp**. |

**Settings**

The *compare* argument can have the following values:

| Constant | Value | Description |
|----------|-------|-------------|
| **vbUseCompareOption** | $-1$ | Performs a comparison using the setting of the **Option Compare** statement. |
| **vbBinaryCompare** | 0 | Performs a binary comparison. |
| **vbTextCompare** | 1 | Performs a textual comparison. |
| **vbDatabaseCompare** | 2 | Microsoft Access only. Performs a comparison based on information in your database. |

**Remarks**

An error occurs if you try to change the comparison mode of a **Dictionary** object that already contains data.

The **CompareMode** property uses the same values as the *compare* argument for the **StrComp** function. Values greater than 2 can be used to refer to comparisons using specific Locale IDs (LCID).

# Count Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproFSOCountC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproFSOCountX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproFSOCountA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproFSOCountS"}

**Description**

Returns the number of items in a collection or **Dictionary** object. Read-only.

**Syntax**

*object*.**Count**

The *object* is always the name of one of the items in the Applies To list.

**Remarks**

The following code illustrates use of the **Count** property:

```
Dim a, d, i              'Create some variables
Set d = CreateObject("Scripting.Dictionary")
d.Add "a", "Athens"      'Add some keys and items.
d.Add "b", "Belgrade"
d.Add "c", "Cairo"
a = d.Keys               'Get the keys
For i = 0 To d.Count -1  'Iterate the array
    Print a(i)           'Print key
Next
...
```

# DateCreated Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDateCreatedC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDateCreatedX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDateCreatedA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDateCreatedS"}

**Description**

Returns the date and time that the specified file or folder was created. Read-only.

**Syntax**

*object*.**DateCreated**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **DateCreated** property with a file:

```
Sub ShowFileInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = "Created: " & f.DateCreated
    MsgBox s
End Sub
```

# DateLastAccessed Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDateLastAccessedC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDateLastAccessedX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDateLastAccessedA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDateLastAccessedS"}

**Description**

Returns the date and time that the specified file or folder was last accessed. Read-only.

**Syntax**

*object*.**DateLastAccessed**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **DateLastAccessed** property with a file:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = UCase(filespec) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

> **Important**   This method depends on the underlying operating system for its behavior. If the operating system does not support providing time information, none will be returned.

# DateLastModified Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDateLastModifiedC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDateLastModifiedX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDateLastModifiedA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDateLastModifiedS"}

**Description**

Returns the date and time that the specified file or folder was last modified. Read-only.

**Syntax**

*object*.**DateLastModified**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **DateLastModified** property with a file:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = UCase(filespec) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

# Drive Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDriveC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDriveX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDriveA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDrive_S"}

**Description**

Returns the drive letter of the drive on which the specified file or folder resides. Read-only.

**Syntax**

*object*.**Drive**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **Drive** property:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = f.Name & " on Drive " & UCase(f.Drive) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

# DriveLetter Property

**Description**

Returns the drive letter of a physical local drive or a network share. Read-only.

**Syntax**

*object*.**DriveLetter**

The *object* is always a **Drive** object.

**Remarks**

The **DriveLetter** property returns a zero-length string ("") if the specified drive is not associated with a drive letter, for example, a network share that has not been mapped to a drive letter.

The following code illustrates the use of the **DriveLetter** property:

```
Sub ShowDriveLetter(drvPath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(drvPath))
    s = "Drive " & d.DriveLetter & ": - "
    s = s & d.VolumeName  & vbCrLf
    s = s & "Free Space: " & FormatNumber(d.FreeSpace/1024, 0)
    s = s & " Kbytes"
    MsgBox s
End Sub
```

# Drives Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDrivesC"} {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDrivesX":1} {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDrivesA"} {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDrives_S"}

**Description**

Returns a **Drives** collection consisting of all **Drive** objects available on the local machine.

**Syntax**

*object*.**Drives**

The *object* is always a **FileSystemObject**.

**Remarks**

Removable-media drives need not have media inserted for them to appear in the **Drives** collection.

You can iterate the members of the **Drives** collection using a **For Each...Next** construct as illustrated in the following code:

```
Sub ShowDriveList
    Dim fs, d, dc, s, n
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set dc = fs.Drives
    For Each d in dc
        s = s & d.DriveLetter & " - "
        If d.DriveType = 3 Then
            n = d.ShareName
        Else
            n = d.VolumeName
        End If
        s = s & n & vbCrLf
    Next
    MsgBox s
End Sub
```

# DriveType Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproDriveTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproDriveTypeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproDriveTypeA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproDriveTypeS"}

**Description**

Returns a value indicating the type of a specified drive.

**Syntax**

*object*.**DriveType**

The *object* is always a **Drive** object.

**Remarks**

The following code illustrates the use of the **DriveType** property:

```
Sub ShowDriveType(drvpath)
    Dim fs, d, s, t
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(drvpath)
    Select Case d.DriveType
        Case 0: t = "Unknown"
        Case 1: t = "Removable"
        Case 2: t = "Fixed"
        Case 3: t = "Network"
        Case 4: t = "CD-ROM"
        Case 5: t = "RAM Disk"
    End Select
    s = "Drive " & d.DriveLetter & ": - " & t
    MsgBox s
End Sub
```

# Files Property

**Description**

Returns a **Files** collection consisting of all **File** objects contained in the specified folder, including those with hidden and system file attributes set.

**Syntax**

*object*.**Files**

The *object* is always a **Folder** object.

**Remarks**

The following code illustrates the use of the **Files** property:

```
Sub ShowFileList(folderspec)
    Dim fs, f, f1, fc, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(folderspec)
    Set fc = f.Files
    For Each f1 in fc
        s = s & f1.name
        s = s &  vbCrLf
    Next
    MsgBox s
End Sub
```

# FileSystem Property

**Description**

Returns the type of file system in use for the specified drive.

**Syntax**

*object*.**FileSystem**

The *object* is always a **Drive** object.

**Remarks**

Available return types include FAT, NTFS, and CDFS.

The following code illustrates the use of the **FileSystem** property:

```
Sub ShowFileSystemType
    Dim fs,d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive("e:")
    s = d.FileSystem
    MsgBox s
End Sub
```

# FreeSpace Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproFreeSpaceC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproFreeSpaceX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproFreeSpaceA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproFreeSpaceS"}

**Description**

Returns the amount of free space available to a user on the specified drive or network share. Read-only.

**Syntax**

*object*.**FreeSpace**

The *object* is always a **Drive** object.

**Remarks**

The value returned by the **FreeSpace** property is typically the same as that returned by the **AvailableSpace** property. Differences may occur between the two for computer systems that support quotas.

The following code illustrates the use of the **FreeSpace** property:

```
Sub ShowFreeSpace(drvPath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(drvPath))
    s = "Drive " & UCase(drvPath) & " - "
    s = s & d.VolumeName  & vbCrLf
    s = s & "Free Space: " & FormatNumber(d.FreeSpace/1024, 0)
    s = s & " Kbytes"
    MsgBox s
End Sub
```

# IsReady Property

**Description**

Returns **True** if the specified drive is ready; **False** if it is not.

**Syntax**

object.**IsReady**

The object is always a **Drive** object.

**Remarks**

For removable-media drives and CD-ROM drives, **IsReady** returns **True** only when the appropriate media is inserted and ready for access.

The following code illustrates the use of the **IsReady** property:

```
Sub ShowDriveInfo(drvpath)
    Dim fs, d, s, t
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(drvpath)
    Select Case d.DriveType
        Case 0: t = "Unknown"
        Case 1: t = "Removable"
        Case 2: t = "Fixed"
        Case 3: t = "Network"
        Case 4: t = "CD-ROM"
        Case 5: t = "RAM Disk"
    End Select
    s = "Drive " & d.DriveLetter & ": - " & t
    If d.IsReady Then
        s = s & vbCrLf & "Drive is Ready."
    Else
        s = s & vbCrLf & "Drive is not Ready."
    End If
    MsgBox s
End Sub
```

# IsRootFolder Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproIsRootFolderC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproIsRootFolderX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproIsRootFolderA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproIsRootFolderS"}

**Description**

Returns **True** if the specified folder is the root folder; **False** if it is not.

**Syntax**

*object*.**IsRootFolder**

The *object* is always a **Folder** object.

**Remarks**

The following code illustrates the use of the **IsRootFolder** property:

```
Dim fs
Set fs = CreateObject("Scripting.FileSystemObject")
Sub DisplayLevelDepth(pathspec)
    Dim f, n
    Set f = fs.GetFolder(pathspec)
    If f.IsRootFolder Then
        MsgBox "The specified folder is the root folder."
    Else
        Do Until f.IsRootFolder
            Set f = f.ParentFolder
            n = n + 1
        Loop
        MsgBox "The specified folder is nested " & n & " levels deep."
    End If
End Sub
```

# Item Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproFSOItemC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproFSOItemX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproFSOItemA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproFSOItemS"}

## Description

Sets or returns an *item* for a specified *key* in a **Dictionary** object. For collections, returns an *item* based on the specified *key*. Read/write.

## Syntax

*object*.**Item(***key***)** [= *newitem*]

The **Item** property has the following parts:

| Part | Description |
|---|---|
| *object* | Required. Always the name of a collection or **Dictionary** object. |
| *key* | Required. *Key* associated with the item being retrieved or added. |
| *newitem* | Optional. Used for **Dictionary** object only; no application for collections. If provided, *newitem* is the new value associated with the specified *key*. |

## Remarks

If *key* is not found when changing an *item*, a new *key* is created with the specified *newitem*. If *key* is not found when attempting to return an existing item, a new *key* is created and its corresponding item is left empty.

# Key Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproKeyC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproKeyX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproKeyA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproKeyS"}

**Description**

Sets a *key* in a **Dictionary** object.

**Syntax**

*object*.**Key(**key**)** = *newkey*

The **Key** property has the following parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Dictionary** object. |
| *key* | Required. *Key* value being changed. |
| *newkey* | Required. New value that replaces the specified *key*. |

**Remarks**

If *key* is not found when changing a *key*, a <u>run-time error</u> will occur.

# Line Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproLineC"}　{ewc HLP95EN.DLL,DYNALINK,"Example":"vaproLineX":1}　{ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproLineA"}　{ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproLineS"}

**Description**

Read-only property that returns the current line number in a **TextStream** file.

**Syntax**

*object*.**Line**

The *object* is always the name of a **TextStream** object.

**Remarks**

After a file is initially opened and before anything is written, **Line** is equal to 1.

# Name Property

**Description**

Sets or returns the name of a specified file or folder. Read/write.

**Syntax**

*object*.**Name** [= *newname*]

The **Name** property has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **File** or **Folder** object. |
| *newname* | Optional. If provided, *newname* is the new name of the specified *object*. |

**Remarks**

The following code illustrates the use of the **Name** property:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = f.Name & " on Drive " & UCase(f.Drive) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

# ParentFolder Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproParentFolderC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproParentFolderX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproParentFolderA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproParentFolderS"}

**Description**

Returns the folder object for the parent of the specified file or folder. Read-only.

**Syntax**

*object*.**ParentFolder**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **ParentFolder** property with a file:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = UCase(f.Name) & " in " & UCase(f.ParentFolder) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

# Path Property

**Description**

Returns the path for a specified file, folder, or drive.

**Syntax**

*object*.**Path**

The *object* is always a **File**, **Folder**, or **Drive** object.

**Remarks**

For drive letters, the root drive is not included. For example, the path for the C drive is C:, not C:\.

The following code illustrates the use of the **Path** property with a **File** object:

```
Sub ShowFileAccessInfo(filespec)
    Dim fs, d, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = UCase(f.Path) & vbCrLf
    s = s & "Created: " & f.DateCreated & vbCrLf
    s = s & "Last Accessed: " & f.DateLastAccessed & vbCrLf
    s = s & "Last Modified: " & f.DateLastModified
    MsgBox s, 0, "File Access Info"
End Sub
```

# RootFolder Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproRootFolderC"}   {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproRootFolderX":1}   {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproRootFolderA"}   {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproRootFolderS"}

**Description**

Returns a **Folder** object representing the root folder of a specified drive. Read-only.

**Syntax**

*object*.**RootFolder**

The *object* is always a **Drive** object.

**Remarks**

All the files and folders contained on the drive can be accessed using the returned **Folder** object.

# SerialNumber Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproSerialNumberC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproSerialNumberX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproSerialNumberA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproSerialNumberS"}

**Description**

Returns the decimal serial number used to uniquely identify a disk volume.

**Syntax**

*object*.**SerialNumber**

The *object* is always a **Drive** object.

**Remarks**

You can use the **SerialNumber** property to ensure that the correct disk is inserted in a drive with removable media.

The following code illustrates the use of the **SerialNumber** property:

```
Sub ShowDriveInfo(drvpath)
    Dim fs, d, s, t
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(fs.GetAbsolutePathName(drvpath)))
    Select Case d.DriveType
        Case 0: t = "Unknown"
        Case 1: t = "Removable"
        Case 2: t = "Fixed"
        Case 3: t = "Network"
        Case 4: t = "CD-ROM"
        Case 5: t = "RAM Disk"
    End Select
    s = "Drive " & d.DriveLetter & ": - " & t
    s = s & vbCrLf & "SN: " & d.SerialNumber
    MsgBox s
End Sub
```

# ShareName Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproShareNameC"}   {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproShareNameX":1}   {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproShareNameA"}   {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproShareNameS"}

**Description**

Returns the network share name for a specified drive.

**Syntax**

*object*.**ShareName**

The *object* is always a **Drive** object.

**Remarks**

If *object* is not a network drive, the **ShareName** property returns a zero-length string ("").

The following code illustrates the use of the **ShareName** property:

```
Sub ShowDriveInfo(drvpath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(fs.GetAbsolutePathName(drvpath)))
    s = "Drive " & d.DriveLetter & ": - " & d.ShareName
    MsgBox s
End Sub
```

# ShortName Property

**Description**

Returns the short name used by programs that require the earlier 8.3 naming convention.

**Syntax**

*object*.**ShortName**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **ShortName** property with a **File** object:

```
Sub ShowShortName(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = "The short name for " & "" & UCase(f.Name)
    s = s & "" & vbCrLf
    s = s & "is: " & "" & f.ShortName & ""
    MsgBox s, 0, "Short Name Info"
End Sub
```

# ShortPath Property

**Description**

Returns the short path used by programs that require the earlier 8.3 file naming convention.

**Syntax**

*object*.**ShortPath**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **ShortName** property with a **File** object:

```
Sub ShowShortPath(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFile(filespec)
    s = "The short path for " & "" & UCase(f.Name)
    s = s & "" & vbCrLf
    s = s & "is: " & "" & f.ShortPath & ""
    MsgBox s, 0, "Short Path Info"
End Sub
```

# Size Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproFSOSizeC"}  {ewc
HLP95EN.DLL,DYNALINK,"Example":"vaproFSOSizeX":1}  {ewc
HLP95EN.DLL,DYNALINK,"Applies To":"vaproFSOSizeA"}  {ewc
HLP95EN.DLL,DYNALINK,"Specifics":"vaproFSOSizeS"}

**Description**

For files, returns the size, in bytes, of the specified file. For folders, returns the size, in bytes, of all files and subfolders contained in the folder.

**Syntax**

*object*.**Size**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **Size** property with a **Folder** object:

```
Sub ShowFolderSize(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(filespec)
    s = UCase(f.Name) & " uses " & f.size & " bytes."
    MsgBox s, 0, "Folder Size Info"
End Sub
```

# SubFolders Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproSubFoldersC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproSubFoldersX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproSubFoldersA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproSubFoldersS"}

**Description**

Returns a **Folders** collection consisting of all folders contained in a specified folder, including those with Hidden and System file attributes set.

**Syntax**

*object*.**SubFolders**

The *object* is always a **Folder** object.

**Remarks**

The following code illustrates the use of the **SubFolders** property:

```
Sub ShowFolderList(folderspec)
    Dim fs, f, f1, s, sf
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(folderspec)
    Set sf = f.SubFolders
    For Each f1 in sf
        s = s & f1.name
        s = s &  vbCrLf
    Next
    MsgBox s
End Sub
```

# TotalSize Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproTotalSizeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproTotalSizeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproTotalSizeA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproTotalSizeS"}

**Description**

Returns the total space, in bytes, of a drive or network share.

**Syntax**

*object*.**TotalSize**

The *object* is always a **Drive** object.

**Remarks**

The following code illustrates the use of the **TotalSize** property:

```
Sub ShowSpaceInfo(drvpath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(fs.GetAbsolutePathName(drvpath)))
    s = "Drive " & d.DriveLetter & ":"
    s = s & vbCrLf
    s = s & "Total Size: " & FormatNumber(d.TotalSize/1024, 0) & " Kbytes"
    s = s & vbCrLf
    s = s & "Available: " & FormatNumber(d.AvailableSpace/1024, 0) & " 
Kbytes"
    MsgBox s
End Sub
```

# Type Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproFSOTypeC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproFSOTypeX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproFSOTypeA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproFSOTypeS"}

**Description**

Returns information about the type of a file or folder. For example, for files ending in .TXT, "Text Document" is returned.

**Syntax**

*object*.**Type**

The *object* is always a **File** or **Folder** object.

**Remarks**

The following code illustrates the use of the **Type** property to return a folder type. In this example, try providing the path of the Recycle Bin or other unique folder to the procedure.

```
Sub ShowFileSize(filespec)
    Dim fs, f, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set f = fs.GetFolder(filespec)
    s = UCase(f.Name) & " is a " & f.Type
    MsgBox s, 0, "File Size Info"
End Sub
```

# VolumeName Property

{ewc HLP95EN.DLL,DYNALINK,"See Also":"vaproVolumeNameC"}  {ewc HLP95EN.DLL,DYNALINK,"Example":"vaproVolumeNameX":1}  {ewc HLP95EN.DLL,DYNALINK,"Applies To":"vaproVolumeNameA"}  {ewc HLP95EN.DLL,DYNALINK,"Specifics":"vaproVolumeNameS"}

**Description**

Sets or returns the volume name of the specified drive. Read/write.

**Syntax**

*object*.**VolumeName** [= *newname*]

The VolumeName property has these parts:

| Part | Description |
|------|-------------|
| *object* | Required. Always the name of a **Drive** object. |
| *newname* | Optional. If provided, *newname* is the new name of the specified *object*. |

**Remarks**

The following code illustrates the use of the **VolumeName** property:

```
Sub ShowVolumeInfo(drvpath)
    Dim fs, d, s
    Set fs = CreateObject("Scripting.FileSystemObject")
    Set d = fs.GetDrive(fs.GetDriveName(fs.GetAbsolutePathName(drvpath)))
    s = "Drive " & d.DriveLetter & ": - " & d.VolumeName
    MsgBox s
End Sub
```

# Ambiguous selection

Either you have not selected a keyword or you have requested Help on a component of the integrated development environment (IDE). If you were trying to select a keyword, try reselecting a single keyword. If you were trying to get information on the IDE, click one of the following:

Code or Module Window

Immediate Window or Pane

Locals Windows or Pane

Object Browser

Watch Window or Pane