



Huge Fixed and Variable Length Strings

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Demonstration Application

Variable Length Strings

The application will build 8192 string consisting of the text, "Test String", a space, and the number of the element. The length of the strings varies from 13 through 16 bytes. The strings will be stored in a variable length VqString array. The total space occupied by the strings is 129,965 bytes. The amount of free space, left in the VqString array is 1,107 bytes.

Fixed Length Strings

The application will build 8192 string consisting of the text, "Test String", a space, and the number of the element. The length of all of the strings is padded to 16 bytes. The strings will be stored in a variable length VqString array. The total space occupied by the strings is 131,072 bytes.

Scroll



Use the **Scroll Bar** to move through the array. The arrows increment the element by one and the bar increments the element by 100.

Select

You can enter a number, between 1 and 8192 in the **Select Box** and the string stored in that element will be displayed.

Edit

You can edit the strings in the **Edit** box. Pressing the Return key or selecting any other control, with the mouse, stores the edited string in the VqString array. The length of the string is limited to 16 bytes when viewing/editing fixed length strings. Characters must be deleted before characters can be added. A vertical bar, below the string, tracks the end of the string.

Demo DLL

The DLL provided with the demonstration program is limited to 10,000 elements and 131,072 bytes (128K) of memory for the variable length strings and the fixed length VqString arrays are limited to 131,072 bytes (128K) in any combination of elements and string lengths. An 'Illegal Function Call' error code is returned if the dimensions are greater than these limits. The DLL provided with the registered version is not limited in any way.

Quick Start

In order to be able to access huge variable and fixed length strings as quickly as possible, either start with the **VQSHELL** application provided or cut the necessary declarations and functions from the **VQSHELL** application and paste them into your application.

- (1) Enter the VqString declarations and constants into the Global module of your application. Copy these from **VQSHELL.BAS**.
- (2) If you're going to use variable length strings, add the **VqGetVarString** and **VqPutVarString** functions to the 'General' section of your form or module. These functions are not necessary for fixed length strings.
- (3) Use Visual Basic's 'On Error GoTo' to trap errors returned by the VqString functions.
- (4) Use the calls shown in the **VQSHELL** application to initialize, access, and erase the huge VqString arrays.

Fixed Length VqStrings

Fixed length strings are not as flexible as variable length strings but they are slightly faster and somewhat more memory efficient. It isn't necessary to obtain the length of the string before retrieving the data and there is no need for the DLL to keep an array of pointers to the elements.

Calls to VqString fixed length string functions are simple. A Basic string, a handle, an element number, and a Mode variable are passed to the function. The function declaration for variable length strings as follows:

```
Declare Function VqFixLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer,  
ByVal Page As Long, ByVal Mode As Long) As Long
```

The Mode argument can be any one of the following values:

- Global Const VqGetString = -2
- Global Const VqPutString = -3
- Global Const VqUbound = -4
- Global Const VqEraseString = -7

Initialize Fixed Length VqStrings

Declare Function VqFixLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer, ByVal Page As Long, ByVal Mode As Long) As Long

Mode

If the value of **Mode** is a positive value, the function considers the call to be an initialization. In this case, the values of the arguments are interpreted as follows:

Page

The **Page** argument will contain the number of elements that the huge array can access.

Memory

The **Mode** argument will contain the amount of memory to allocate for the array. The arguments both use a long integer so that the values can be large enough to dimension arrays limited only by the amount of memory available to the system. An array of long pointers is allocated to store the address of the elements in the array.

Strng

The **Strng** argument is ignored during initialization.

Handle

The **Handle** argument will be the number of the current array to be initialized. There is a limit of five huge variable length VqString arrays (accessed as 1 through 5).

Note

If an initialization is requested, on an array that has already been initialized, it will be re-initialized and any previous data will be erased.

Demo DLL

The DLL provided with the demonstration program is limited to 10,000 elements and 131,072 bytes (128K) of memory for the variable length strings and the fixed length VqString arrays are limited to 1,000 elements of 131 characters each. An 'Illegal Function Call' error code is returned if the dimensions are greater than these limits. The DLL provided with the registered version is not limited in any way.

Variable Length VqStrings

Advantages

If you're a Basic programmer, you already know that one of the biggest advantages of Basic over other programming languages is variable length string arrays. String lengths don't have to be pre-determined and data doesn't have to be limited to arbitrary lengths. With variable length strings, your programs can be more flexible. Names, addresses, pages of text, and much, much more can be of any length and can change dynamically as needed by your application.

Visual Basic Limitations

Visual Basic provides variable length VqString arrays but they're limited to a total of **64K** of string space. VqStrings are not limited to 64K but can use all memory available to Windows. VqStrings can be dimensioned in multiple **megabytes**, if the memory is available.

Calls to VqStrings

Calls to VqString variable length string functions are simple. A Basic string, a handle, an element number, and a Mode variable are passed to the function. The function declaration for variable length strings as follows:

```
Declare Function VqVarLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer,
ByVal Page As Long, ByVal Mode As Long) As Long
```

The Mode argument can be any one of the following values:

- Global Const VqVarGetSize = -1
- Global Const VqGetString = -2
- Global Const VqPutString = -3
- Global Const VqUbound = -4
- Global Const VqVarMemUsed = -5
- Global Const VqVarMemFree = -6
- Global Const VqEraseString = -7

The constants containing the characters, 'Var' only apply to variable length strings.

Initialize Variable Length VqStrings

Declare Function VqVarLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer, ByVal Page As Long, ByVal Mode As Long) As Long

Mode

If the value of **Mode** is a positive value, the function considers the call to be an initialization. In this case, the values of the arguments are interpreted as follows:

Page

The **Page** argument will contain the number of elements that the huge array can access.

Memory

The **Mode** argument will contain the amount of memory to allocate for the array. The arguments both use a long integer so that the values can be large enough to dimension arrays limited only by the amount of memory available to the system. An array of long pointers is allocated to store the address of the elements in the array.

Strng

The **Strng** argument is ignored during initialization.

Handle

The **Handle** argument will be the number of the current array to be initialized. There is a limit of five huge variable length VqString arrays (accessed as 1 through 5).

Note

If an initialization is requested, on an array that has already been initialized, it will be re-initialized and any previous data will be erased.

Demo DLL

The DLL provided with the demonstration program is limited to 10,000 elements and 131,072 bytes (128K) of memory for the variable length strings and the fixed length VqString arrays are limited to 1,000 elements of 131 characters each. An 'Illegal Function Call' error code is returned if the dimensions are greater than these limits. The DLL provided with the registered version is not limited in any way.

Erasing VqStrings

To erase a VqString array, make a call to the array function with VqEraseString as the Mode argument:

```
x& = VqFixLenStr(Strng, 1, 0, VqEraseString)
x& = VqVarLenStr(Strng, 1, 0, VqEraseString)
```

The Mode argument must be declared in the Global module of your program:

```
Global Const VqEraseString = -7
```


Error Handling

Return Codes

VqString functions return error codes compatible with the Visual Basic **Error\$** function. Errors can be trapped with Visual Basic's 'On Error GoTo' statements or handled individually by the programmer. The source code for the demonstration program is included and a shell, for development of other programs that will use VqString arrays, is also provided to make getting started easier. These can both be used as an example of how to handle errors returned from the VqString functions. A detailed explanation of the error handling as follows:

The following constants can be declared, in the **Global** module of your Visual Basic program, if you prefer to handler errors yourself:

Global Const IllegalFunctionCall = -5

- (1) Returned if an invalid handle is sent to the function. Handles are limited to 1 through 5.
- (2) Returned if an attempt was made to access an array that has not been initialized.
- (3) Returned if an attempt was made to erase a VqString array that was not initialized.

Global Const OutOfMemory = -7

Returned if there is not enough memory available to the system to allocate the VqString array requested.

Global Const SubscriptOutOfRange = -9

- (1) Returned if an attempt was made to access an element of a VqString array that is beyond the number of elements dimensioned during initialization.
- (2) Returned on attempt to access element zero. VqString arrays are 'one origin' and are access from 1 though the number of elements dimensioned.

Global Const OutOfStringSpace = -14

This error pertains only to variable length VqString arrays. It is returned if there is not enough free space in the array to store the element specified.

These error constants need not be declared if you use only Visual Basic's 'On Error GoTo'. The value returned by the VqString function will generate an error message compatible with errors returned by Visual Basic's own string functions.

This Help File

This Help File was created, in less than one hour, with **The Windows Help Magician**. The Help Magician will be available soon from:

Software Interphase, Inc.
82 Cucumber Hill Road
Foster, RI 02825
(401) 397-2340

Look for it in popular software catalogs this Summer or call Software Interphase directly.

Quick Reference

Function declarations:

Declare Function VqVarLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer, ByVal Page As Long, ByVal Mode As Long) As Long

Declare Function VqFixLenStr Lib "VqString.dll" (ByVal Strng As String, ByVal Handle As Integer, ByVal Page As Long, ByVal Mode As Long) As Long

The Constants for the Mode argument:

- Global Const VqVarGetSize = -1
- Global Const VqGetString = -2
- Global Const VqPutString = -3
- Global Const VqUbound = -4
- Global Const VqVarMemUsed = -5
- Global Const VqVarMemFree = -6
- Global Const VqEraseString = -7

Function return error codes:

- Global Const IllegalFunctionCall = -5
- Global Const OutOfMemory = -7
- Global Const SubscriptOutOfRange = -9
- Global Const DuplicateDefinition = -10
- Global Const OutOfStringSpace = -14

Ordering Information

The **VqString DLL** for Visual Basic is available directly from:

Vi Qual Software
28 Hill Drive
Rochester, NY 14626-1810

for \$29.95 ea.

US and Canada	\$2.50 shipping and handling.
European Countries	\$5.00 shipping and handling.
Far East addresses	\$7.50 shipping and handling.

An order form is provided in the VqString.WRI file (a Windows Write file). Please print the file and return the form with your order.