

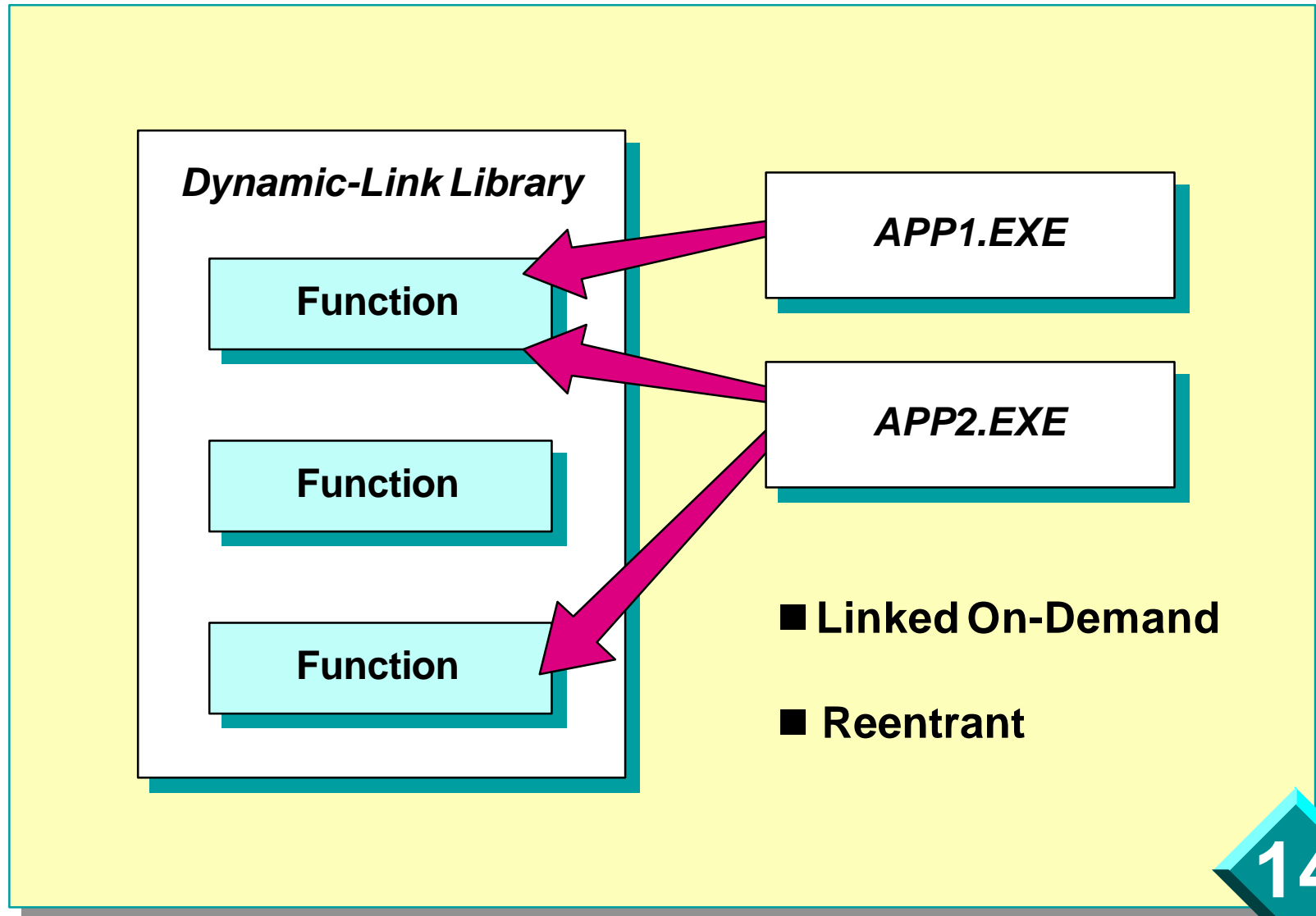
Using Dynamic-Link Libraries

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◆ Overview

- What Are Dynamic-Link Libraries (DLLs)?
- Implementing DLLs in a Visual Basic Application
 - Declaring DLLs
 - Calling DLL functions
- Examples of Using DLLs

What Are DLLs?



What DLL Functions Can I Call?

- Windows DLLs

- **User** - Manipulates Windows; Interface Devices
- **GDI** - Renders Graphics on Screens, Printers
- **Kernel** - Does O/S Stuff; Tasks, Memory, I/O
- About 800 Functions in Windows 3.1

- *myown*.DLL - FORTRAN, COBOL, C/C++, PASCAL

- Other Applications (DLLs)

- VBRUN300.DLL

Information on Windows API Functions

- WIN31API.HLP
- WIN31WH.HLP
- WIN31EXT.TXT
- WIN30API.TXT

Steps to Implement DLLs in a Visual Basic Application

- 1 Declare the DLL Function
- 2 Write the Call Statement for the DLL Function
- 3 Save Your Work !!!
- 4 Test the Application

Run-Time Properties for DLL's

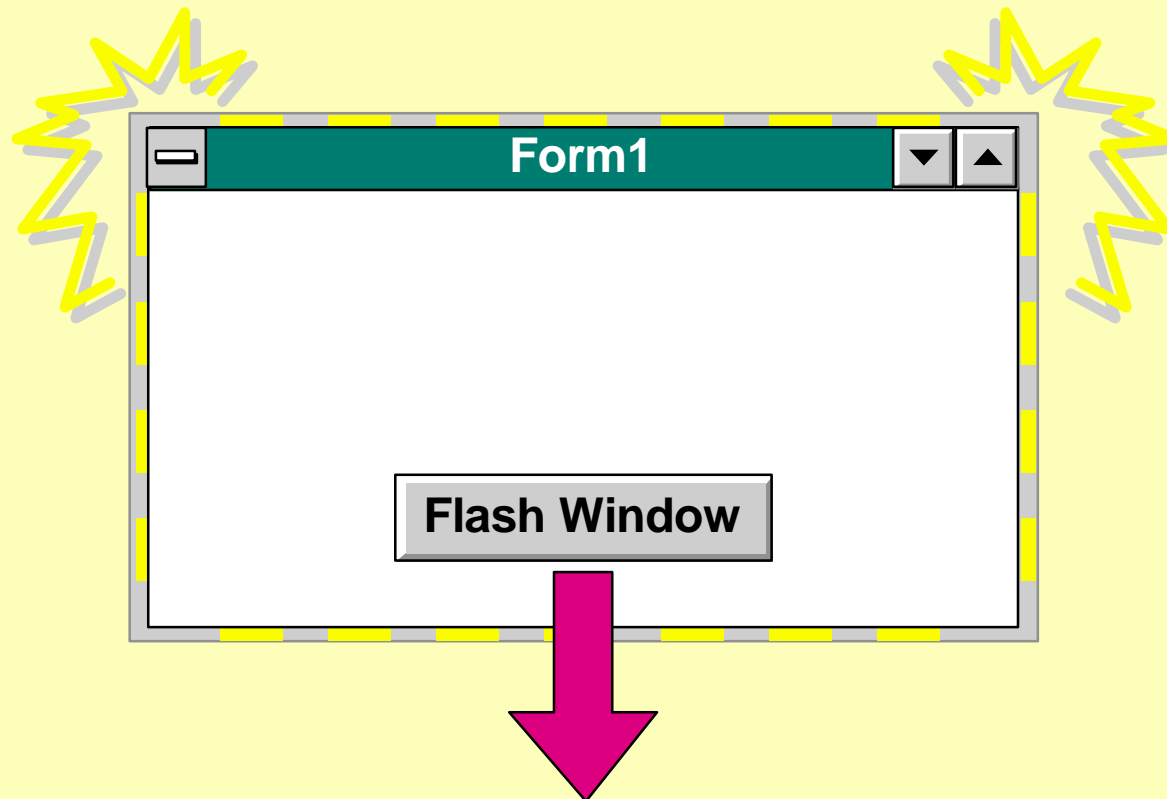
- **hWnd - Window Handle**

- All Objects (Controls and Forms)

- **hDC - Device Context Handle**

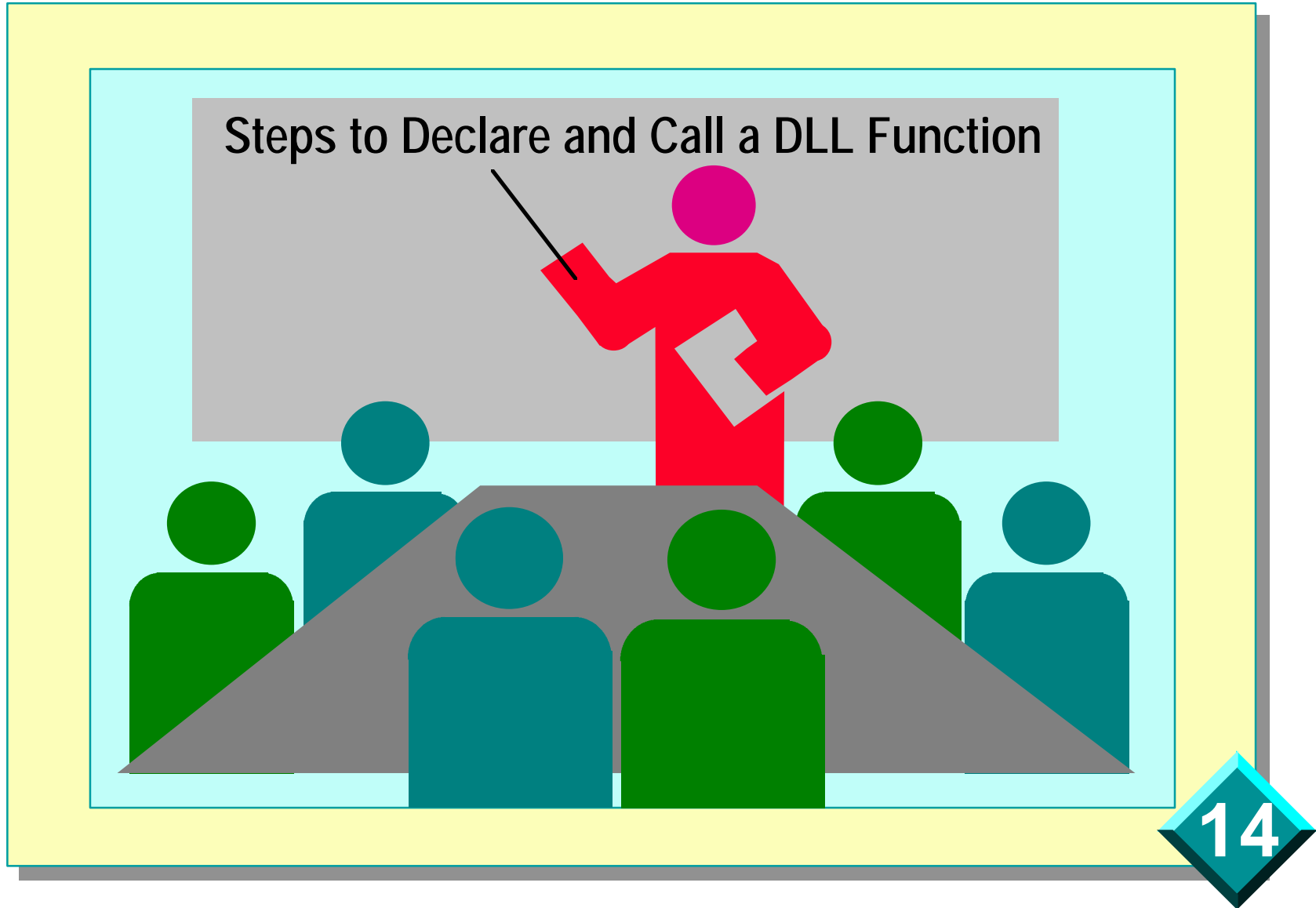
- Forms
- PictureBox
- Printer

A Simple Example

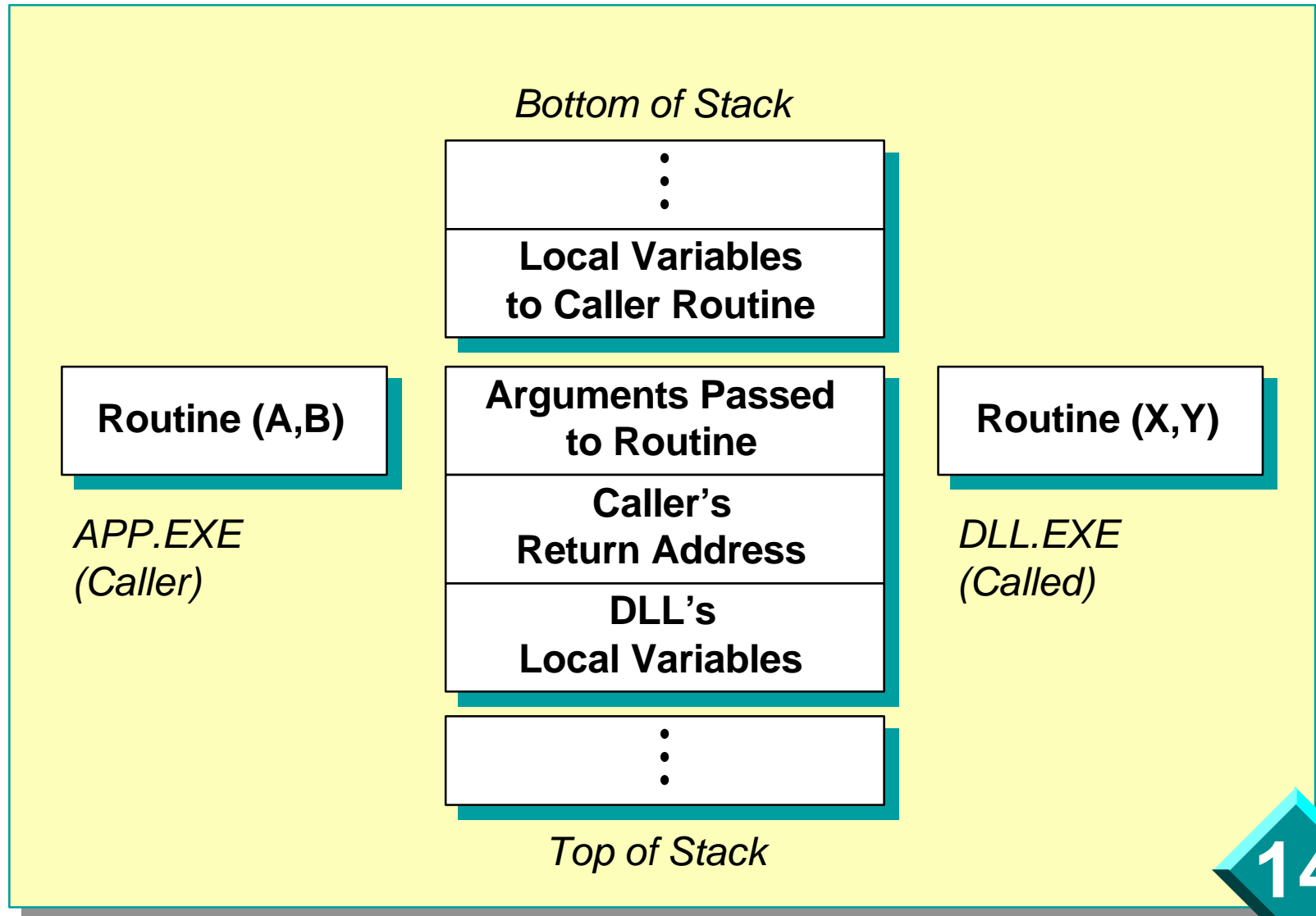


```
result = FlashWindow(Form1.hWnd,1)
```

Using FlashWindow—Walkthrough



What Happens When You Call a Function in a DLL?



Declare the Function

If Function Returns NULL

```
Declare Sub BringWindowToTop Lib "User"  
    (ByVal hWnd As Integer)
```

If Function Returns Value

```
Declare Function IsZoomed Lib "User"  
    (ByVal hWnd As Integer) As Integer
```

If Function has "Illegal" VB Syntax Name

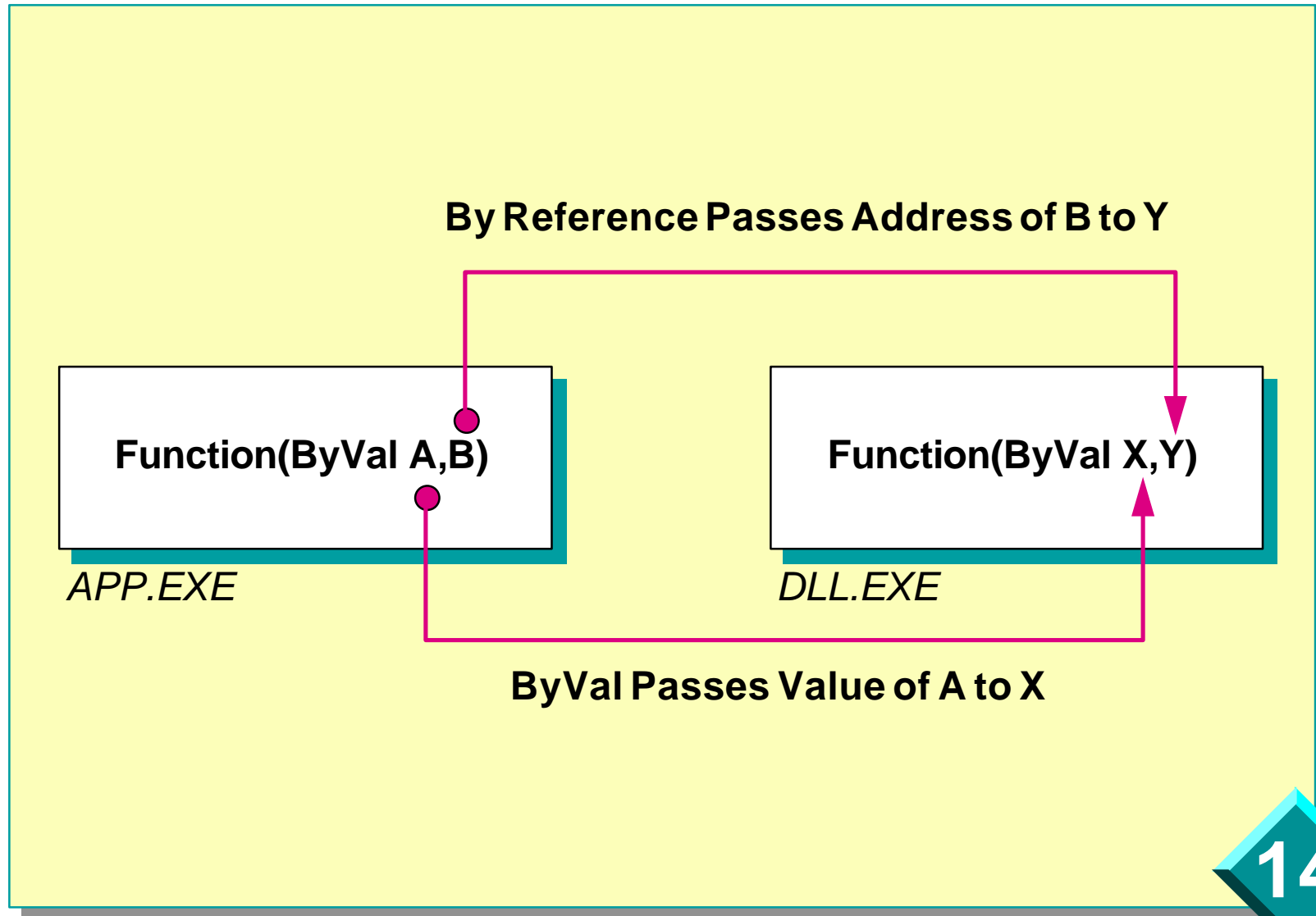
```
Declare Function lopen Lib "Kernel"  
    Alias "_lopen" (ByVal lpPathName As String,  
    ByVal iReadWrite As Integer) As Integer
```

You Must Pass the Correct Data Types

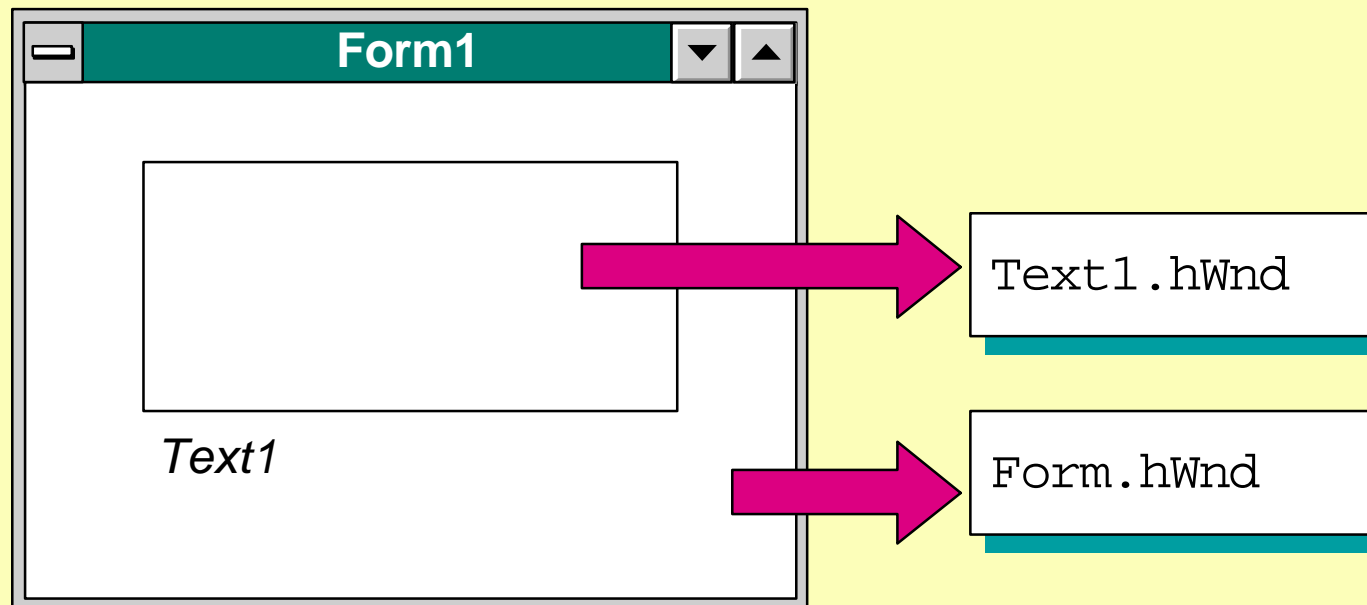
Size	C	Visual Basic	Visual Basic abbreviation
1 byte	char	(notes)	n/a
2 bytes	int	Integer	%
4 bytes	long	Long	&
4 bytes	float	Single	!
8 bytes	double	Double	#
8 bytes	n/a	Currency	@

Note: Arguments Aligned on Word (16 bit) Boundaries

Arguments Can Be Passed by Value or by Reference



Getting the Windows Handle of an Object

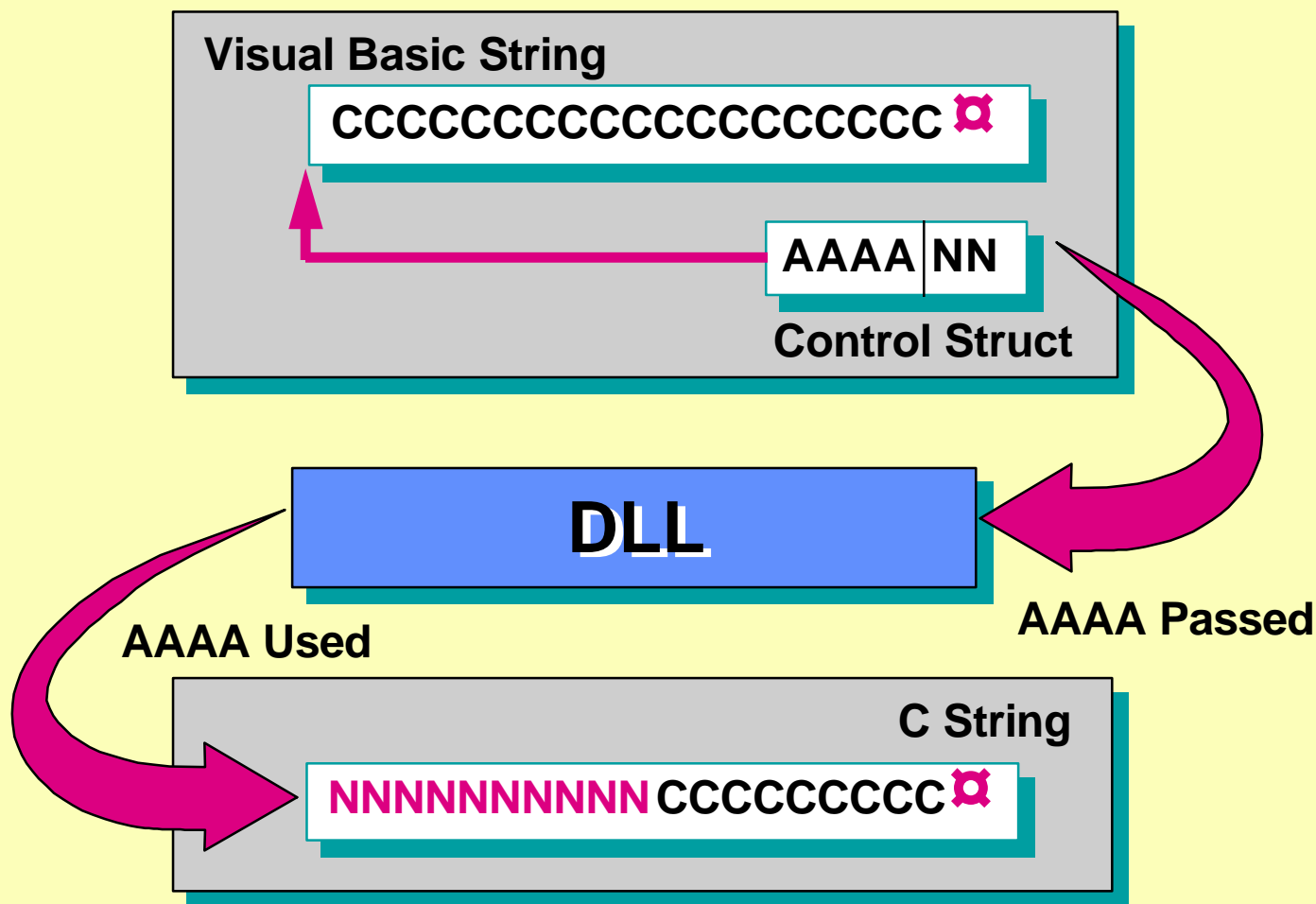


Calling DLL Functions That Pass Properties

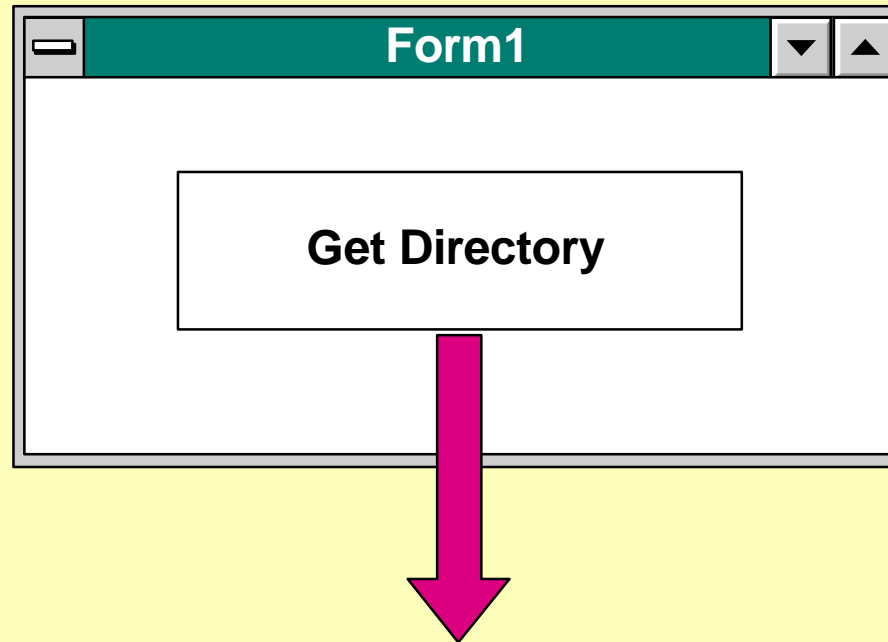
- Always Pass Properties by Value
- This Includes String Variables
- ByVal Strings Auto-Converted by VB to Address

How Strings Are Passed

Declaration or Call - Pass ByVal



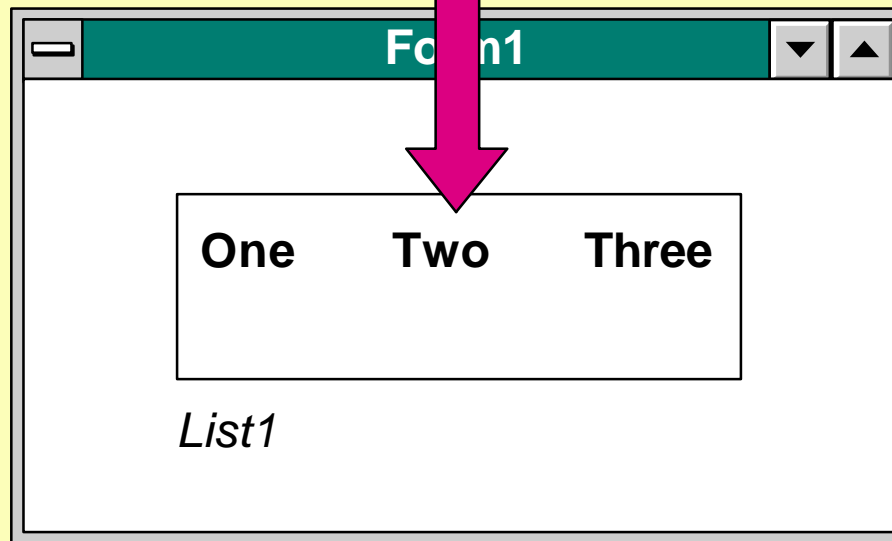
Passing Strings - Have Enough Space



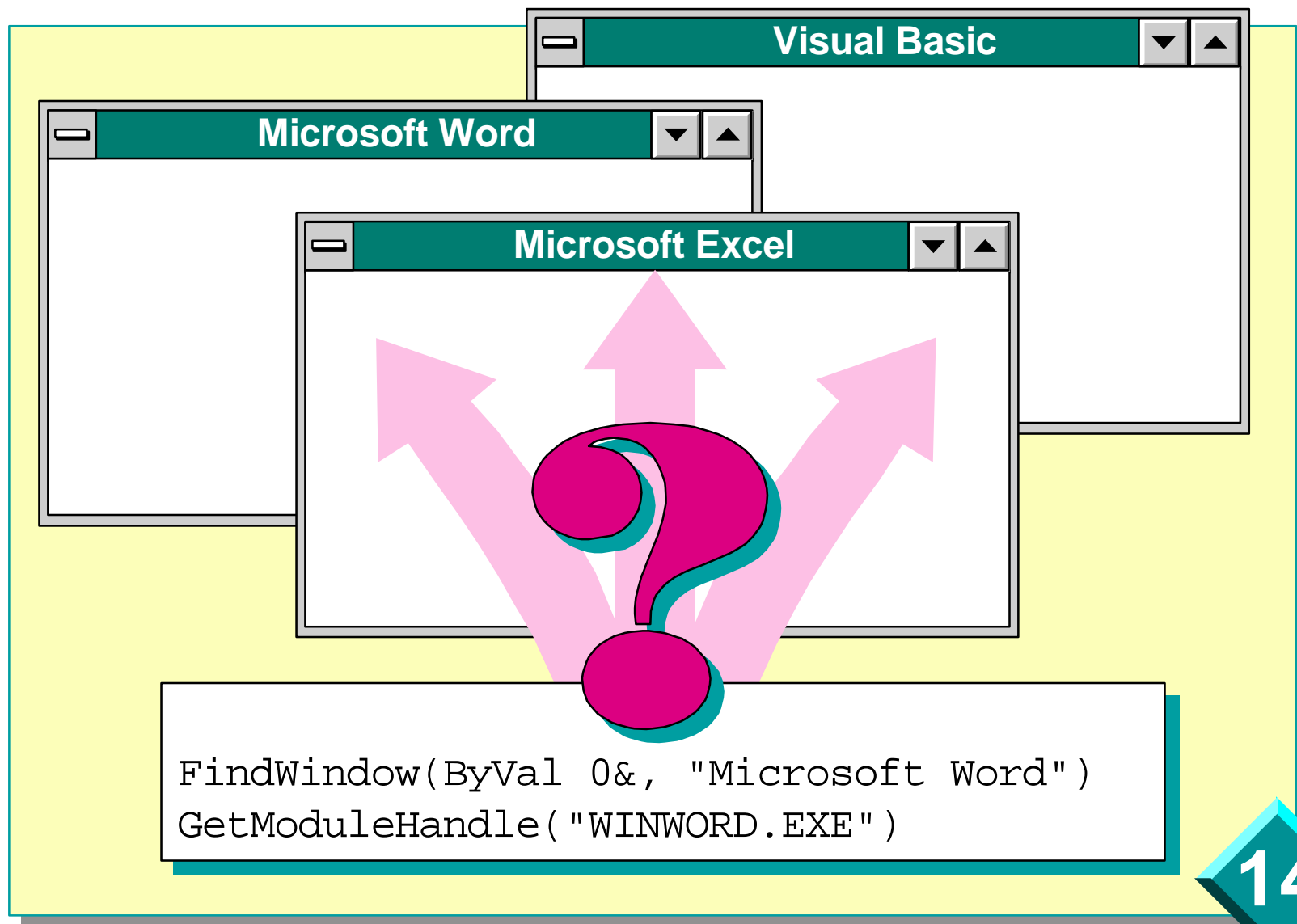
```
Dim FilePath As String *255  
GetWindowsDirectory (FilePath$...)
```

Set Tab Stops in a List Box - SendMessage

```
...LB_SETTABSTOPS, 3, tabs(1)
```



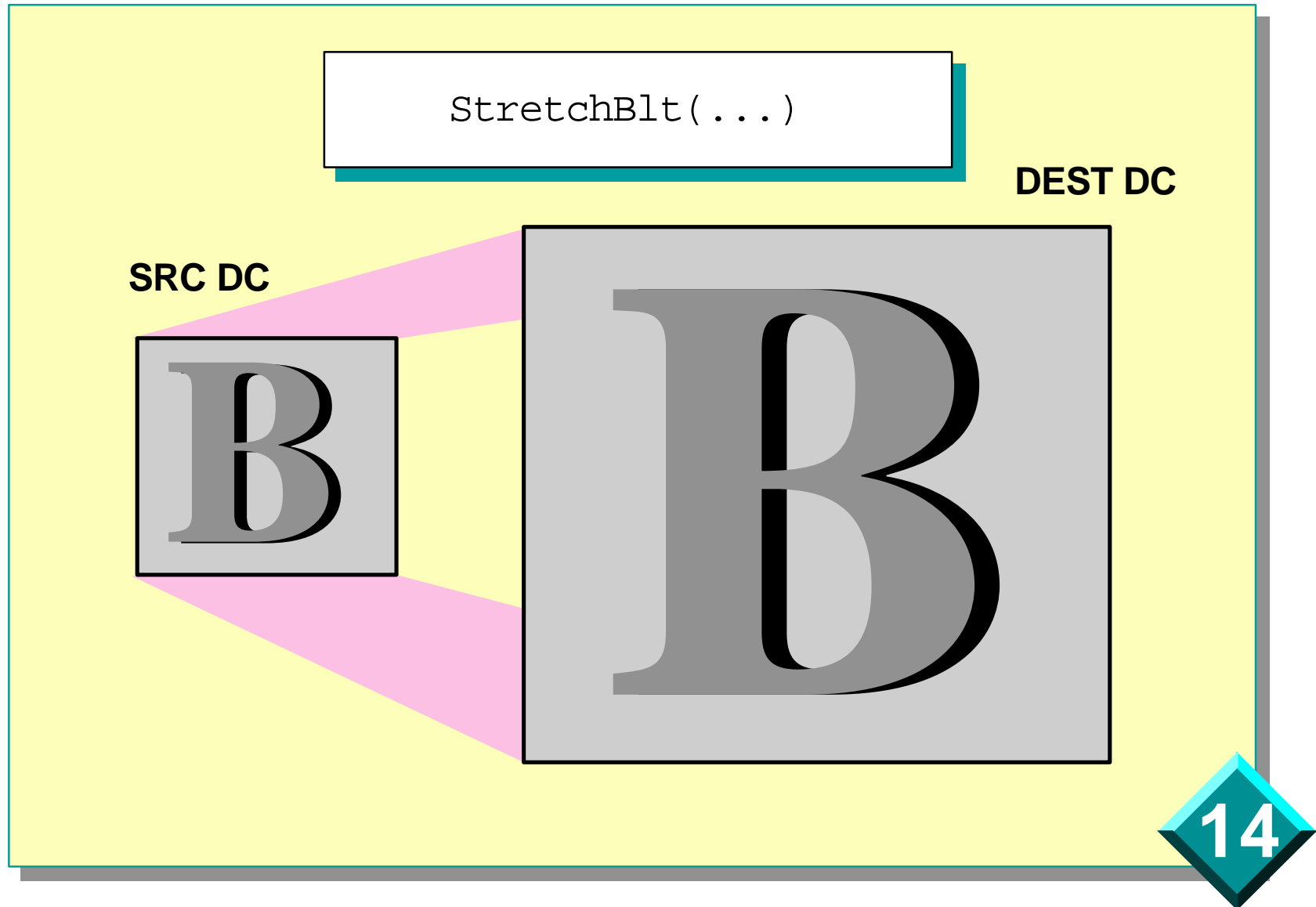
Check Whether an Application Is Running



Determining When a Process Has Finished

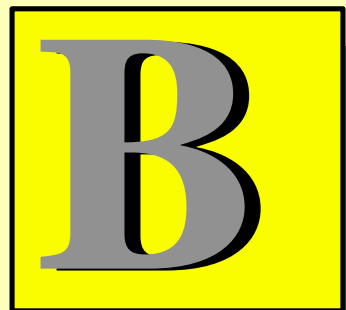
- Start a Process Using the **Shell** Function
- Call **GetActiveWindow**
- Call **IsWindow** in a Loop
- Include **DoEvents** Statement to Yield CPU

StretchBlt Sizes a Bitmap



Using BitBlt to Copy a Picture

SRC DC



BitBlt

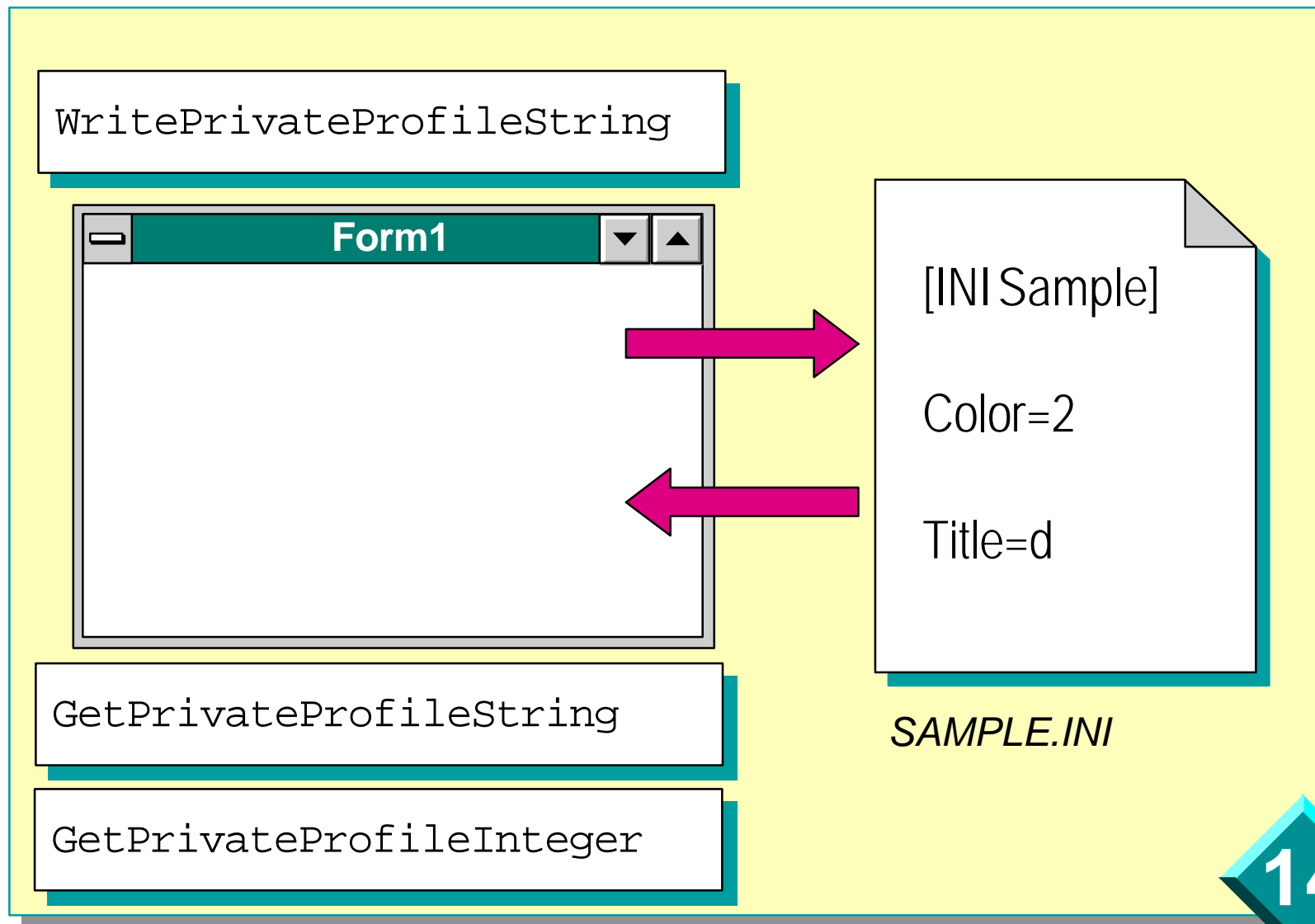
DEST DC



dwRop Parameter Determines Type of Copy
Direct, Inverted, XOr, And, Or, etc.

dwRop = SRCINVERT

Creating an APP.INI File



Summary

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