The Windows API

Terry Bradbury
terry.bradbury@gmail.com
@Terry_Bradbury

pluralsight
hardcore dev and IT training

Overview

- **Declaring External Functions for the API**

- **UserForms**

- **HTMLHelp**

- **ShellExecute**

- **PlaySound**

Declaring External Functions for the API

Declaring an External Function

- **Add a reference in the declarations area**

- **Commands (sub-procedures):**
  - `[Public | Private] Declare Sub name Lib "libname" _`
    `[Alias "aliasname"] [([arglist])]`

- **Functions:**
  - `[Public | Private] Declare Function name Lib "libname" _`
    `[Alias "aliasname"] [([arglist])] [As type]`

Sleep Function

Pause Function Wrapper

PtrSafe Keyword

Conditional Compilation

Data Type Conversions

C (Windows API)	VBA
BOOL	Long
BYTE, BYTE *, CHAR	Byte (8 bits)
Char_huge *, Char FAR *, Char NEAR *	String Always passed ByVal
UINT, UINT FAR *, WORD, WPARAM, SHORT	Integer (16 bits)
INT, INT FAR *, DWORD, LPARAM, LONG	Long (32 bits)
Handles (hWnd, hDC, etc.)	Long (32-bit only) or LongPtr (32-bit or 64-bit Office 2010 and later)
Strings (LPCSTR, LPCTSTR, LPTSTR, etc.)	String Always passed ByVal
Structures	User-Defined Type Passed ByRef as TypeName or Any

Tools

Pre-Allocate Strings

GetTempPath

UserForms

GetSystemMetrics

Converting Constants

PixelsToPoints

Graphic Basics

- **1 Point = 1/72 inch (72 points per inch, or PPI)**

- **Screen resolution is measured in dots per inch (DPI), typically 96 DPI**

- **Points = Pixels * (72 / DPI)**
  - Horizontal pixels – X axis
  - Vertical pixels – Y axis

Calculating DPI Using a Device Context

- **GetDC**

- **GetDeviceCaps**

- **ReleaseDC**

GetDeviceCaps Constants

UserForm Handle

GetWindowLong

HTMLHelp

HTMLHelp

How VBA Passes Strings to External Functions

- **Automatically converts Unicode VBA strings to ANSI**

- **Creates a pointer to the ANSI string to pass it to the function ByRef**

FileOpen / CloseAll

OpenTopic / OpenContext

Index / Search

ShellExecute

ShellExecute

Documents, Folders, URLs

PlaySound

PlaySound

Summary

- **Windows API Basics**
  - External declaration structure
  - Data type conversion
  - Resources
  - Pre-allocate strings for return values

- **UserForms**
  - GetSystemMetrics
  - GetDeviceCaps (PixelsToPoints)
  - FindWindow

- **HTMLHelp**

- **ShellExecute**

- **PlaySound**