

MS Windows C Programming

A Poor-Man's Introduction

Is This Really Necessary?

- ◆ Direct C Programming of the GUI Interface is a Daunting Task
- ◆ Visual-Basic is Slow -- Some Tasks Need The Speed of Compiled C Code
- ◆ The Trick is to Integrate C Code with Visual Basic Programming

Dynamic Link Libraries

- ◆ A Separately Compiled Program
- ◆ Contains Only Functions
- ◆ GUI Interface Can Usually Be Ignored
- ◆ Used By Several Programs At Once
- ◆ Loaded At Run Time
- ◆ Must Be “Available” When Program Starts

VB Programming with C Code

- ◆ Write Independent C Functions for Each Required Operation
- ◆ Export the Functions That Will Be Called By VB Code
- ◆ Compile and Move .DLL File to Windows System Directory
- ◆ Write VB Definitions for Functions

Use of DLL Functions

- ◆ Can Be Used As If They Were VB Functions or Subroutines
- ◆ Extreme Care is Required To Formulate Correct VB Definitions
- ◆ Most Common Error is Inability to Locate .DLL File When VB Program is Executed

Required Prolog

```
#include <windows.h>
```

```
/* The following two functions are required, but do nothing */
```

```
int FAR PASCAL _export WEP(int exittype)
```

```
{
```

```
    return 1;
```

```
}
```

```
int FAR PASCAL LibMain (HANDLE hInstance, WORD wDataSeg,  
    WORD wHeapSize, LPSTR lpszCmdLine)
```

```
{
```

```
    return 1 ;
```

```
}
```

An Exported Function

```
int FAR PASCAL _export Modulus(int Img,int Real)
{
    int R1,I1,Result

    R1 = Real * Real;
    I1 = Img * Img;
    Result = SquareRoot(R1 + R2);
    return Result;
}
```

A Non-Exported Function

```
int SquareRoot(int x)
{
    int R1,I1,Result

    r = 0; n=0;
    while (n < x)
    {
        n += r + r + 1
        r++;
    }
    return r - 1;
}
```


The .DEF File

LIBRARY LIBNAME

DESCRIPTION 'My First DLL'

EXETYPE WINDOWS

CODE PRELOAD MOVEABLE DISCARDABLE
DATA PRELOAD MOVEABLE SINGLE

HEAPSIZE 4096

VB vs. C Definitions

```
long FAR PASCAL _export HexToLong(char *Hex)
    Declare Function HexToLong Lib "FirstOne.dll"
        (ByVal InString As String) As Long
```

```
void FAR PASCAL _export LongToHex(long Value,char *Hex)
    Declare Sub LongToHex Lib "FirstOne.dll"
        (ByVal InLong As Long, ByVal OutStr As String)
```

```
int FAR PASCAL _export SumToN(int N)
    Declare Function SumToN Lib "FirstOne.dll"
        (ByVal InVal As Integer) As Integer
```

```
int FAR PASCAL _export ISquare(int N)
    Declare Function ISquare Lib "FirstOne.dll"
        (ByVal InVal As Integer) As Integer
```