Note the use of WAVE, NVAR, SVAR and FUNCREF in the function foo. These keywords are required both in the structure definition and again in the function, when the structure members are initialized.

Built-In Structures

Igor includes a few special purpose, predefined structures for use with certain operations. Some of those structures use these predefined general purpose structures:

```
Structure Rect
   Int16 top,left,bottom,right
EndStructure

Structure Point
   Int16 v,h
EndStructure

Structure RGBColor
   UInt16 red, green, blue
EndStructure
```

A number of operations use built-in structures that the Igor programmer can use. See the command reference information for details about these structures and their members.

Operation	Structure Name
Button	**WMButtonAction**
CheckBox	**WMCheckboxAction**
CustomControl	**WMCustomControlAction**
ListBox	**WMListboxAction**
ModifyFreeAxis	**WMAxisHookStruct**
PopupMenu	**WMPopupAction**
SetVariable	**WMSetVariableAction**
SetWindow	**WMWinHookStruct**
SetWindow	**WMTooltipHookStruct**
Slider	**WMSliderAction**
TabControl	**WMTabControlAction**

Applications of Structures

Structures are useful for reading and writing disk files. The **FBinRead** and the **FBinWrite** understand structure variables and read or write the entire structure from or to a disk file. The individual fields of the structure are byte-swapped if you use the /B flag.

Structures can be used in complex programming projects to reduce the dependency on global objects and to simplify passing data to and getting data from functions. For example, a base function might allocate a local structure variable and then pass that variable on to a large set of lower level routines. Because structure variables are passed by reference, data written into the structure by lower level routines is available to the higher level. Without structures, you would have to pass a large number of individual parameters or use global variables and data folders.

Using Structures with Windows and Controls

Action procedures for controls and window hook functions take parameters that use predefined structure types. These are listed under **Built-In Structures** on page IV-103.