User Interface Controls

Documentation for User Interface Module

OriginLab Corporation
2/18/2015
# User Interface Controls

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User Interface Controls

1.1 Introduction

The UIM allows you to construct feature-rich applications with intuitive, easy-to-use front ends by creating Origin templates with embedded interactive data control and display objects. Each type of object is designed for a particular data display or control task. The objects are programmed using LabTalk.

1.2 UIM Objects

The UIM toolbar is used to create UIM control and indicator objects. To display the UIM toolbar, select Edit:Button Edit Mode. The UIM control and indicator objects are described in the following table.

<table>
<thead>
<tr>
<th>Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bitmap Buttons (BBUTN)</td>
<td>Bitmap Buttons provide the capability to use icons in a user interface. They can be linked to LabTalk script files. The graphic image displayed in each button is defined by a bitmap file. Standard graphic images are 32 by 32 pixels, but larger or smaller square or rectangular icons can be designed.</td>
</tr>
<tr>
<td>Check Box Controls (CHECK)</td>
<td>Check Boxes are used to control the ON/OFF status of up to 20 items in a row or column. Items which are ON (activated) are shown by a check in a box or by a lighted LED indicator. Clicking a box or indicator toggles it ON or OFF. Items can also be controlled by other object scripts. Check Boxes can display a decimal number in binary or return the current state as a decimal number.</td>
</tr>
<tr>
<td>Combination Box (COMBOX)</td>
<td>The Combination Box allows you to create a drop-down list within your Origin interface. This object is set up and operated entirely with LabTalk methods and properties.</td>
</tr>
<tr>
<td>Gauge Indicator (GAUGE)</td>
<td>The Gauge Indicator provides a way to show the current value of a variable. It uses a rotating pointer on a curved scale that represents the variable’s range. As with the other indicators, the scale can show different levels or limits as colored segments.</td>
</tr>
<tr>
<td>Object</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Horizontal Bar Indicators (HBAR)</td>
<td>Horizontal Bar Indicators show the current value of a variable by a colored bar within a horizontal scale. The scale is calibrated with the minimum, maximum, and intermediate values of the variable. Any levels and/or limits can be indicated by different colors. The numerical value of the variable is also shown in a value window under or over the bar, and a spin button can be attached to it for local control. Clicking the value window can initiate an action defined in the script.</td>
</tr>
<tr>
<td>Value Lists (LIST)</td>
<td>Value Lists are used to select one value from a list of up to 20 preset values or text strings for a single variable. Clicking the up or down arrow in its spin button box selects the previous or next value in the list, which appears in its window. The value can also be selected by other objects via their scripts.</td>
</tr>
<tr>
<td>List Box (LSTBOX)</td>
<td>The List Box allows you to create a list of options to choose from within your Origin interface. The List Box is the only object which allows you to choose more than one option at a time.</td>
</tr>
<tr>
<td>Radio Buttons (RADIO)</td>
<td>Radio Buttons are used to select one specific item out of 2 to 20 related items. Clicking the spot next to the item’s name selects it, shown by lighting its spot, and deselects the formerly selected item. Each item can run a LabTalk script when selected.</td>
</tr>
<tr>
<td>Movable Scale (SCALE)</td>
<td>The Movable Scale is a valuable tool for use in Origin graph windows. It provides a small scale with the same units as the main graph scale which can be moved around on the graph to make accurate measurements of an area of interest. If the main graph scale is nonlinear, the Movable Scale size changes to agree with the X and Y values of the main scale at its location.</td>
</tr>
<tr>
<td>Object</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spin Buttons (SPIN)</td>
<td>Spin Buttons are used to increment or decrement a value by a preset amount, up to preset maximum and minimum limits. They are also incorporated into other UIM objects, where they may increment or decrement a value or step through a list. They are activated by clicking on the up or down arrow box.</td>
</tr>
<tr>
<td>Status Controls (STATUS)</td>
<td>Status Controls are used to display numbers, text, or logical states. Clicking in a hotspot, the location where an item’s content is displayed, can either be used to initiate an action for that item via the associated script or to directly enter information. Both the type of display and the data shown can be changed by other objects via LabTalk scripts.</td>
</tr>
<tr>
<td>Strip Chart Indicators (STRIP)</td>
<td>Strip Charts combine a vertical bar indicator with a continuously scrolling record of the variable’s recent values. Different levels or limits within the variable’s range can be indicated by different colors, which carry over in the variable trace. The numerical value of the variable can also be shown in a window under the bar, and a spin button can be attached to it for local control. Clicking in the value window can initiate an action defined in the script.</td>
</tr>
<tr>
<td>Text Buttons (TBUTN)</td>
<td>Text Buttons are used to provide up to 20 labeled buttons. Clicking a button selects that item, indicated by a recessed appearance while the mouse button is pressed. When the mouse button is released, the attached script can identify the button and initiate its action.</td>
</tr>
<tr>
<td>Vertical Bar Indicators (VBAR)</td>
<td>Vertical Bar Indicators display the current value of the variable as a colored bar within a vertical scale whose height represents the variable’s range. Different levels or limits within the variable range can be indicated by different colors. The numerical value of the variable is also shown in a value window under the bar, and a spin button can be attached to it for local control. Clicking in the value window can initiate an action defined in the script.</td>
</tr>
</tbody>
</table>
1.2.1 Creating Objects

To create, place, and size a UIM object:

1) Select **Edit:Button Edit Mode** to enter the editing mode. The UIM toolbar displays.

2) Click on the button associated with the desired UIM object.

3) Drag the mouse pointer diagonally in an empty area of an Origin child window. A rectangle is drawn defining the area.

4) Release the mouse button to display the selected object in the rectangle, with its name in the upper-left corner.

5) Drag the object to place it where desired.

6) To size the object, click on the object to expose its control handles. Drag on a control handle to modify the object’s size. The top and bottom handles control the object’s height. The side handles control its width. The corner handles control both height and width.

7) Click outside of the object. It is de-selected and its border disappears.

8) Select **Edit:Button Edit Mode** to exit the editing mode. The UIM toolbar and object name disappear.

1.2.2 Naming Objects

The name of an object is only visible in Button Edit Mode. It is used in LabTalk scripts to interrogate or alter the object.

To rename an object:

1) Enter Button Edit Mode if not in the editing state.

2) Click on the object to select it. A border displays around the object.

3) Select **Format:Label Control** to open the Label Control dialog box.
4) Highlight the name in the Object Name text box and then type in a new name.

5) Click OK to close the dialog box. The new name displays in the object.

1.2.3 Customizing Objects

Once a control or indicator object has been created, it can be customized for its specific application. This involves selecting and specifying the various parameters it uses in the dialog boxes associated with it.

Overview of the UIM Dialog Boxes

Dialog boxes are used to customize UIM objects to fit specific situations. The UIM Object dialog box controls the title of the object, determines its basic visual parameters, and provides access to the other dialog boxes. The Control Titles dialog box specifies how many items are associated with the object, their labels, and the label format. Different Select Values dialog boxes specify how many values and/or text strings are included and their contents.

The various dialog boxes used by the UIM objects are listed in the following table.

Table 1.2: UIM Object Dialog Boxes

<table>
<thead>
<tr>
<th>Object Name</th>
<th>Double-click</th>
<th>Click on the Titles button</th>
<th>Click on the Values button</th>
<th>Click on the Special button</th>
<th>Click on the More button</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBTUN</td>
<td>UIM Object</td>
<td>Bitmap Control Titles</td>
<td></td>
<td>Bitmap Buttons Control</td>
<td></td>
</tr>
<tr>
<td>CHECK</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 1</td>
<td>Check Box Object</td>
<td></td>
</tr>
<tr>
<td>COMBOX</td>
<td>No dialog box control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAUGE</td>
<td>UIM Object</td>
<td></td>
<td></td>
<td>Advanced Gauge</td>
<td></td>
</tr>
<tr>
<td>HBAR</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 4</td>
<td>Indicator Object</td>
<td></td>
</tr>
<tr>
<td>LIST</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 1</td>
<td>List Object</td>
<td></td>
</tr>
<tr>
<td>LSTBOX</td>
<td>No dialog box control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RADIO</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The UIM Object Dialog Box

The UIM Object dialog box is used by most UIM control and indicator objects, although not all sections are used by every object. This dialog box also provides access to the Titles and any Values and/or Special dialog boxes for an object.

The UIM Object dialog box controls the object’s title, background appearance, size of border and control gaps, colors, arrangement of multiple items and their labels, and the type, size, and appearance of all characters.

To open the UIM Object dialog box:

1) Select Edit:Button Edit Mode. The UIM toolbar displays.

2) Click on the desired button in the UIM toolbar and then click-and-drag an area in the worksheet to create the object.

3) Double-click on the object to open the UIM Object dialog box.

<table>
<thead>
<tr>
<th>Object Name</th>
<th>Double-click</th>
<th>Click on the Titles button</th>
<th>Click on the Values button</th>
<th>Click on the Special button</th>
<th>Click on the More button</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCALE</td>
<td>Scale Object</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPIN</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STATUS</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td></td>
<td>Status Object</td>
<td></td>
</tr>
<tr>
<td>STRIP</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 5</td>
<td>Indicator Object</td>
<td>Strip Chart Object</td>
</tr>
<tr>
<td>TBUTN</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td></td>
<td>Bitmap Buttons Control</td>
<td></td>
</tr>
<tr>
<td>VBAR</td>
<td>UIM Object</td>
<td>Control Titles</td>
<td>Select Values 4</td>
<td>Indicator Object</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1.1: The UIM Object Dialog Box

**Changing the Title**

The object’s title appears in the upper-left corner of the UIM Object dialog box. By default, this is the type of object.

1) Highlight the current title in the text box and type in a new title.

2) Click OK to close the dialog box.

Note: The title is not the name of the object. The title is a visible tag for the user, controlled by the Title group. The name is only visible in Button Edit Mode. It specifies the object for reference by LabTalk scripts.

**Changing the Background**

The Bkg group controls the appearance of the object. The background can be off (making the components float in the window) or one of Origin’s colors. When the background is on, the object can appear flat or edged with a fine black line, or with raised or sunken edges.

1) Select the On check box to display a background color.

2) Select the Flat radio button to display the object flat on the background. Select the Edged radio button to display a black border around the object. Select the Raised radio button to cause the object to appear displayed above the background surface. Select the...
Sunken radio button to cause the object to appear displayed below the background surface.

**Changing the Spacing**

The Gaps group controls the amount of space in the border and between the items. Settings are in percentage of the font’s point size.

Figure 1.2: Changing the Object Spacing

<table>
<thead>
<tr>
<th>Border</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

The default Border and Controls Gaps depend on the specific type of object.

1) Highlight the value in the Border text box and type a new value.

2) Highlight the value in the Controls text box and type a new value (0 to ∼300).

**Changing the Colors**

Each type of object uses these settings differently. For more information, see "1.5 UIM Objects Reference Guide" on page 39.

The Color group of the UIM Object dialog box controls the colors of the object. Any of the defined colors can be chosen for the Background, Title Text, Label Text, Hotspot Fore (foreground), and Hotspot Bkg (background). Select the desired color from the associated drop-down list.
User Interface Controls

1.2 UIM Objects • 9

Changing the Layout

The layout of the Text Buttons and Bitmap Buttons objects is set in the Special dialog box.

The Control Layout group determines how the items are arranged in the object and where their labels are located. Items can initiate an action and/or have their contents (text, value, or color) changed. Each item consists of a hotspot and a label. The items can be arranged in a column or in a row, and the labels can be placed above, below, or to either side of the item.

Figure 1.3: Changing the Object Layout

![Image showing layout options]

Table 1.3: Object Layout Settings

<table>
<thead>
<tr>
<th>Select this...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columns radio button</td>
<td>Place multiple items in a column.</td>
</tr>
<tr>
<td>Rows radio button</td>
<td>Place multiple items in a row.</td>
</tr>
<tr>
<td>Top radio button</td>
<td>Place labels above their items.</td>
</tr>
<tr>
<td>Bottom radio button</td>
<td>Place labels under their items.</td>
</tr>
<tr>
<td>Left radio button</td>
<td>Place labels to the left of their items.</td>
</tr>
<tr>
<td>Right radio button</td>
<td>Place labels to the right of their items.</td>
</tr>
</tbody>
</table>
Changing the Title’s Appearance and Location

The Title group of the UIM Object dialog box determines where and in what form the object title appears. It can be left off or displayed plain, as a group, or as a caption. Group is used to show that all the items are related. This is useful in multi-object tools. Caption provides different appearances, either sunken, raised, flat, or as a window or a button. Window provides the object with an area for moving the object around within an Origin window when Button Edit Mode is off. Button makes the title a hotspot that can be clicked to initiate an action defined in the associated script. When the title is flat, sunken, or raised, its transparent background can be turned off and colored.

Table 1.4: Title Settings

<table>
<thead>
<tr>
<th>Select this...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>On check box</td>
<td>Display the object title.</td>
</tr>
<tr>
<td>Top check box</td>
<td>Display the object title above the items.</td>
</tr>
<tr>
<td>Plain radio button</td>
<td>Have the title appear flat on the background surface.</td>
</tr>
<tr>
<td>Group radio button</td>
<td>Group the items with the title.</td>
</tr>
<tr>
<td>Caption radio button</td>
<td>Emphasize the title. The associated drop-down list is available to select the desired background type.</td>
</tr>
</tbody>
</table>
### User Interface Controls

#### 1.2 UIM Objects

<table>
<thead>
<tr>
<th>Select this...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparent Background check box</td>
<td>Display the title area using the same color as the object background. The title area’s color can be selected from the associated drop-down list when this option is not selected. (Note: Only titles which have been set to Flat, Sunken or Risen can have their colors set in this way.)</td>
</tr>
</tbody>
</table>

Note: When the Title is set to Button mode, it will set the `index` property to 0 when clicked.

### Changing the Font

The Font group in the UIM Object dialog box selects one of two fonts: scalable (the default selection) or dialog. Either font can be bold (the default selection) or normal (bold off). The point size can be set from 1 to 400 points.

#### Figure 1.5: Changing the Font Setting

![Figure 1.5: Changing the Font Setting](image)

<table>
<thead>
<tr>
<th>Dialog</th>
<th>Scalable</th>
<th>Scalable</th>
<th>Dialog</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 pt, bold</td>
<td>16 pt, plain</td>
<td>12 pt, bold</td>
<td>16 pt, bold</td>
</tr>
</tbody>
</table>

#### Table 1.5: Font Settings

<table>
<thead>
<tr>
<th>Perform this...</th>
<th>To...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select the Dialog radio button.</td>
<td>Specify a heavier font (MS San Serif by default). Or select the Scalable radio button to specify a narrower font (Arial by default).</td>
</tr>
<tr>
<td>Select the Bold check box.</td>
<td>Bold characters.</td>
</tr>
<tr>
<td>Type a new value in the Points text box.</td>
<td>Change the point size.</td>
</tr>
</tbody>
</table>
**Changing the Default Settings**

The Default group allows you to change the default settings for each UIM object.

*To change the default settings for an object type:*

1) Create an object of the desired type.

2) Double-click on the object to open the UIM Object dialog box.

3) Set all the dialog box options to the desired settings.

4) Click OK to close the UIM Object dialog box. The object updates to reflect the settings in the UIM Object dialog box. Make note of any additional changes required.

5) Double-click on the object to re-open the UIM Object dialog box.

6) Change any additional dialog box settings as desired.

7) Click Set to alter the default settings for the current type of object. This will change the default settings to the present settings for this Origin session only. This includes the settings in all of the object dialog boxes. For example, you can make the default check box have 5 items with new default names and blue LED displays.

8) Click Save to alter the default settings for the current type of object. This will change the default settings to the present settings for this Origin session and future Origin sessions. The default settings are saved in an OBJECT.ODO file.

*To return to the original default settings:*

1) Delete the OBJECT.ODO file. OBJECT is the object type. For example, to return the Check Box object defaults to the original Origin settings, delete CHECK.ODO. The next time Origin is started, the CHECK object dialog box default values will have changed to the original default values.

**Changing the Default UIM Object Fonts**

*To change the default fonts:*

1) Using a text editor, open the ORIGIN.INI file located in the Origin software folder.
2) Add the following section and lines to the ORIGIN.INI file, substituting the desired fonts for Times New Roman and Symbol.

[UimFont]
Default=Times New Roman
Scalable=Symbol

3) Save the ORIGIN.INI file.

4) Restart Origin.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking the Titles button in the UIM Object dialog box. This dialog box is used to specify how many items are associated with the object and/or to assign labels to them. It also determines how the labels will display (plain or boxed) and their location (left, centered, or right justified) in the label area.

Figure 1.6: The Control Titles Dialog Box
To change the item titles:

1) Click on the Titles button to open the Control Titles dialog box.

2) Type a new number in the Total Items text box. The number of items in the list box reflects this change.

3) Click on the desired Item # in the list box. The selected item’s label appears in the upper text box.

4) Type a new label name in this text box.

5) Repeat the previous two steps for each additional label.

6) Select the Plain radio button to ensure that labels appear flat on the background surface. Alternatively, select the Boxed radio button to have the labels appear within a box.

7) Select the Left radio button to ensure left justification, Center for center justification, or Right for right justification.

8) Click OK (twice) to close both dialog boxes.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking the Values button in the UIM Object dialog box. This dialog box is used to store numerical values which appear in the object’s value windows, or hotspots. Values can be whole integers or decimals of up to 30 digits. All items can be accessed and changed by LabTalk scripts in the associated object or other objects.

Different UIM objects have varying numbers of items depending on their functions. Additionally, they use different versions of the Select Values dialog box.

Table 1.6: Items in the Select Values Dialog Box

<table>
<thead>
<tr>
<th>UIM Object</th>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHECK</td>
<td>≤ 20</td>
<td>Binary Item Values (ON/OFF).</td>
</tr>
<tr>
<td>HBAR</td>
<td>3</td>
<td>Current Value, Maximum &amp; Minimum.</td>
</tr>
<tr>
<td>LIST</td>
<td>≤ 20</td>
<td>Item Values.</td>
</tr>
<tr>
<td>RADIO</td>
<td>1</td>
<td>Choice (number of selected item).</td>
</tr>
<tr>
<td>SPIN</td>
<td>4</td>
<td>Current Value, Maximum, Minimum, Step Size.</td>
</tr>
</tbody>
</table>
The value of the \( n \)th field in a Status, Check, List, or Spin object can be set with a script of the syntax \texttt{ObjName.Vn=x}; For example, \texttt{Check.V3=1;} checks the 3rd field in the Check object.

<table>
<thead>
<tr>
<th>UIM Object</th>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRIP</td>
<td>4</td>
<td>Current Value, Maximum, Minimum, Width.</td>
</tr>
<tr>
<td>VBAR</td>
<td>3</td>
<td>Current Value, Maximum &amp; Minimum.</td>
</tr>
</tbody>
</table>

LIST and CHECK objects can store up to 20 numerical values. Only the first 10 can be specified in the Select Values dialog box. The remaining properties must be established by LabTalk scripts. STATUS and GAUGE have their own special dialog boxes in which all values can be set. RADIO only has one numeric property (Choice). The SPIN, STRIP, VBAR, HBAR, and GAUGE objects store the current value of the Origin variable plus the maximum and minimum values that establish their bounds. The SPIN object also has a \texttt{StepSize} parameter that sets the amount of change and the STRIP object has a \texttt{Width} parameter that sets the history display time in seconds.

To set the number of numeric items in a CHECK or LIST object:

1) Double-click on the object to select it and open the UIM Object dialog box.

2) Click the Values button to open the Select Values dialog box.

3) Highlight the value in the Max text box and type the desired new maximum number of items.

To specify the type and size of the numeric items:

1) Select the Integer check box to specify integer values. Otherwise, decimal values are displayed.

2) Highlight the value in the Digits text box and type the desired new maximum number of digits value.

3) Highlight the value in the Decimal text box and type the desired new number of places after the decimal point value. Note: The Integer check box must be cleared.

To enter or change the item values:

1) Click an empty value text box or highlight a value in the text box.

2) Type the new value in the text box.
3) Press TAB or click on the next item. The insertion mark moves to the next box.

4) Repeat this procedure for every item to be changed.

5) Click OK to close the Select Values dialog box.

6) Click OK to close the UIM Object dialog box. The object updates with the changes.

The Special Dialog Boxes
A number of UIM objects have additional dialog boxes for customizing the object. These dialog boxes are opened by clicking the Special button in the UIM Object dialog box.

For more information on these dialog boxes, see “1.5 UIM Objects Reference Guide” on page 39.

1.3 Programming
UIM control and indicator objects can be programmed to handle object-associated tasks interactively, by using LabTalk scripts.

1.3.1 LabTalk Scripts
UIM control and indicator objects are more than graphic objects visible on a screen or software objects in memory. They have LabTalk scripts associated with them that define a specific task or tasks which are to be performed when the script is activated.

A LabTalk script can be initiated by various actions:
• Objects can be set to run when Origin first starts or an Origin window is created or activated, or when a window is de-activated or closed.
• Objects can be set to run when the object or window is redrawn to update the image, or when an event or a change occurs in real-time.
• Objects can be set to run when an object is moved and/or sized. This typically occurs when the window the object is on is altered, or when the object is part of a click-and-drag interface.
• UIM control and indicator objects have graphic images with hotspots that can be clicked by a mouse. Their scripts run when the mouse button is released (a Button Up event).

LabTalk operates with object methods and properties. Methods are things that can be done to or with an object, such as updating its graphic image. LabTalk method statements take arguments and perform operations which are directly related to an object. Properties are specific attributes of an object, such as the color of a push button or the label of an item. LabTalk property statements set a particular object attribute or return its current value.

1.3.2 Methods

All UIM control and indicator objects share four object methods:

Run( )  Click(n)  Draw(local)  Draw(global)

Run( )

The Run( ) method runs an object's script file. For example, if there is an object named radio, then executing:

Radio.run();

runs the script in the radio object’s Label Control dialog box.

Click(n)

The Click(n) method simulates clicking an object’s hotspot, with \( n \) specifying the sequence number of the hotspot, either a value window or a button, which is to be clicked.

For example, if there is a radio object with the default name radio, then executing:

radio.click(2);

from the object’s Label Control dialog box produces the same result as clicking the second hotspot on the object.

Draw(local)

The Draw(local) method redraws only the parts of an object that represent its current values. For example, executing:
vbar.draw(local);
redraws only the bar graphic in the VBAR indicator.

Executing:
check.draw(local);
redraws only the check boxes in the CHECK object.

**Draw(global)**

The **Draw(global)** method redraws the entire object on the screen. It is most useful after an object's appearance is changed. For example, if the maximum value of a vertical bar indicator with the default name VBAR is changed, executing:

vbar.draw(global);
redraws the entire object with the new settings.

### 1.3.3 Properties

A property either sets or returns a value or a text string associated with an object. Each UIM object has its own specific properties, but there are some properties which all objects share.

Within an object script, the object’s properties can be accessed using **this.property** notation.

Note that when writing scripts within the Label Control dialog box of an object, the object’s properties can be accessed with the syntax **this.property**. For example, a Radio object could have its title changed when the second choice in the object is selected with the following script in the Radio object’s Label Control dialog box.

```javascript
if (this.choice==2)  this.caption$=Devices;
```
Numeric Properties

Numeric properties are set by LabTalk scripts using statements with the syntax:

```
objName.Property = number;
```

where

- `objName` is the name of a specific object,
- `Property` is a valid numeric property for the type of object, and
- `number` is a numeric value.

The current value of a numeric property is obtained by a similar LabTalk script, but the value after the equal sign is not specified. For example, entering the following in the Script window:

```
radio.Choice =
```

returns `RADIO.CHOICE = 3` if item 3 is selected (the last radio button clicked) in a RADIO control object.

Another way of obtaining a current value of an item is to use the following LabTalk script:

```
type -a "Item number $(radio.choice) is selected.";
```

which obtains the numeric value of the property, substitutes it for the expression, and types it in the Script window.

Text Properties

Text properties are designated by a $, which indicates the property is a text string. They can be set by LabTalk scripts using the syntax:

```
objName.Property$ = text
```

where

- `objName` is name of a specific object,
- `Property` is a text operator for the type of object, and
- `text` is a text string.

The current contents of a text property can be obtained and displayed by a 2-line LabTalk script using the syntax:

```
%Z = objName.Property$;
type -b "The property is %Z";
```
For example, to display the text string held in the third field of a Status object, use the script:

```
%A=Status.V3$;
type -a “The 3rd string is %A.”;
```

### 1.3.4 Shared Properties

All UIM control and indicator objects share the following properties. Other properties common to all graphical Origin objects are discussed in the LabTalk Help file.

#### Properties List

**ObjName.**

Typing the object name followed by a period and an equal sign in the Script window, and then pressing ENTER, results in all the object’s properties displaying in the Script window. Specific properties are listed first, followed by shared properties, and then Origin properties.

**Auto**

**ObjName.Auto=0/1**

The `Auto` property determines how and when a specified object is redrawn. When turned on (set to 1) by a LabTalk statement, Origin redraws the object whenever the current value changes. If turned off (set to 0), the object must be redrawn manually, using its dialog boxes, after a change has been made. The default value is 1, so it is only necessary to edit this property when manual control is desired.

**Caption$**

The `Caption$` property is used to change the title of the specified object. For example,

```
ObjName.Caption$=NewName
```

replaces the old or default title with the text string `NewName`.

**Colors**

There are various color properties which are shared by all objects. Colors are set via the sequence number of the color in the drop-down
color lists.  `objName.HotFore=7;` sets the object’s foreground hotspot color to the seventh color from Origin’s color drop-down lists.

Note: The color function can be used to automatically substitute the appropriate color number. This function uses the format

`objName.HotFore=color(red);`

**HotFore**
Set/Get the foreground hotspot color number.

**HotBkg**
Set/Get the background hotspot color number.
For example,

`this.HotBkg=7;`

or

`this.HotBkg=color(yellow);`

sets the background hotspot color of the object to yellow.

**LabelText**
Set/Get the label text color number.

**TitleText**
Set/Get the title text color number.

**BackGround**
Set/Get the object’s background color number.

**En (Enable)**
Use this property to disable an individual hotspot.
This property allows a hotspot to be disabled/enabled. By default, all hotspots are active and thus:

`Object.En=1;`

To deactivate a hotspot, use `Object.En=0;`

In the deactivated state it is impossible to click the hotspot.
Event

This property indicates when specific Windows events affect an object, such as a change in focus from one item within an object to another. This property may only be used within the Label Control dialog box of the object, with the Script, Run After drop-down list set to All Events.

Table 1.7: Supported Events

<table>
<thead>
<tr>
<th>Supported Events</th>
<th>this.Event</th>
<th>this.Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Button up</td>
<td>1</td>
<td>Item that was clicked.</td>
</tr>
<tr>
<td>Kill focus on an item</td>
<td>20</td>
<td>Item containing caret.</td>
</tr>
<tr>
<td>Set focus on an item</td>
<td>21</td>
<td>Item containing caret.</td>
</tr>
<tr>
<td>Left button down</td>
<td>22</td>
<td>Item the event occurred on.</td>
</tr>
<tr>
<td>Left button double-click</td>
<td>23</td>
<td>Item the event occurred on.</td>
</tr>
<tr>
<td>Left button up</td>
<td>24</td>
<td>Item the event occurred on.</td>
</tr>
<tr>
<td>All other events</td>
<td>0</td>
<td>Item the event occurred on.</td>
</tr>
</tbody>
</table>

For example, if a user clicked on a Status object item and changed its value, the following script would update the project based on the new value. Note that this script does not actually check to see if the value has been changed. It runs whenever a user performs a full single click on an item. This Status object allows the user to modify the active column.

```javascript
if (this.Event==20) {
    switch (this.index) {
    case 1:
        // Update column format based on this value.
        wks.col.format=this.V1;
        break;
    case 2:
        // Set column to X,Y,Error Bar, etc.
        wks.col.type=this.V2;
        break;
    ```
case 3:
  // Change column name to string in item
  wks.col.name$=this.v3$;
  break;
}

Index

The Index property indicates which item in an object has been affected by a Windows action. When the Script, Run After drop-down list is set to Button Up, this indicates which item or hotspot on an object has been clicked. When the drop-down list is set to All Events, it indicates the item which was affected by the last action. For more information, see the Supported Events table in the previous section.

All UIM objects have at least one item or hotspot that can be clicked. this.index=1 indicates the first item in the object, this.index=2 indicates the second item in the object, etc.

Note that objName.index=0 is reserved for the title of an object which has been set up as a button.

The following script prints the label on a clicked Text Button to an Attention dialog box. The Script, Run After drop-down list should be set to Button Up and the script should be typed in the Label Control dialog box. You do not need to include the comments.

Alternatively, you could use TBUTN.index==0 or simply index==0.

if (this.index==0) {type -b "You clicked the title.";}
else
  {
    %A=this.L$(this.index)$; //Get button label.
    type -b %A; //Type label to an Attention Box.
  }

Item

The Item property is a shared property of all objects which have discrete items including STATUS, CHECK, RADIO, LIST, TBUTN, BBUTN, LSTBOX and COMBOX.

The Item property sets/gets the number of the current item. The current item will be affected by all properties which would normally affect the nth item. For example, the following script disables the third item of the Radio object. Note that the n is not needed (radio.En) once the item has been set.

Radio.item=3;
Radio.E=0;
Note: If \textit{ObjectName.item} is set to zero, properties will affect \textit{all} of the object’s items.

**NumItems**

This property indicates the number of items in an object.

The Status object has the ability to resize itself to accommodate a changing number of items through the \texttt{ResizeNow} property.

This is a shared property of all objects which have discrete items including STATUS, CHECK, RADIO, LIST, TBUTN, BBUTN, LSTBOX and COMBOX.

The property sets/gets the number of items that are displayed/stored. For the LIST object, this number depends on whether the list is numeric or alphanumeric. If you change the number of items, the object changes to show the new number of boxes.

**TextSize**

Set/Get the font size of the object.

**Position**

These properties can be used to find the position of an object or to move the object. They can be used to recover an object which was dragged off the edge of a window.

\[ X \]

Set/Get the X axis coordinate of the center of the object.

\[ Y \]

Set/Get the Y axis coordinate of the center of the object.

### 1.3.5 Specific Properties

Each UIM control and indicator object also has its own specific properties. Some of these are listed in the following tables. For a full explanation, see “1.5 UIM Objects Reference Guide” on page 39.
Table 1.8: UIM Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>STATUS</th>
<th>CHECK</th>
<th>RADIO</th>
<th>LIST</th>
<th>SPIN</th>
<th>TBUTN</th>
<th>BBUTN</th>
<th>COMBOX</th>
<th>LSTBOX</th>
<th>SPIN</th>
<th>VBAR</th>
<th>HBAR</th>
<th>STRIP</th>
<th>GAUGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vn</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vn$</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itemn</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itemn$</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L$n$</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name$</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bits</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>SPIN</th>
<th>VBAR</th>
<th>HBAR</th>
<th>STRIP</th>
<th>GAUGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Max</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Min</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Inc</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
1.3.6 Entering and Editing Scripts

The scripts associated with UIM objects can be saved either in the object's associated Label Control dialog box and/or in LabTalk script files.

Using the Label Control Dialog Box

UIM control and indicator objects are standard software objects which can be cut, copied, and pasted. When the object's script file is attached in the Label Control dialog box, an object that is copied and pasted into a window functions exactly like the original.

To attach a script to an object:

1) Select Edit:Button Edit Mode. This menu command opens the UIM toolbar.

2) Click on the desired object. A border displays around the object with control handles.

3) Select Format:Label Control. The Label Control dialog box opens with the object's name listed and Button Up selected (by default) from the Script, Run After drop-down list.

If a script already exists for the object, its contents will appear in the text box at the bottom of the dialog box. The Label Control dialog box can be resized to enhance the display of this script. Existing scripts can be edited by normal editing procedures. Additional scripts can be added by scrolling down to the end of the last line and typing them in.

If no script exists, one can be created by clicking anywhere in the lower text box and then typing the script in line by line, using LabTalk methods and properties.

Numeric values or text strings for an object’s items are stored and accessed through the object's properties by statements using the syntax

\[ \text{objName.Property} \]

or

\[ \text{WinName!objName.Property} \]

if the object is in a different Origin window.

Each type of object has specific properties. For example, a RADIO object has only one specific property (Choice), which is equal to the sequential number of the selected button.
When writing LabTalk script in an object’s Label Control dialog box text box, "this" may be used instead of the object's name. For example, the first value of an object named "Status3" can be obtained using:

```
VarName=This.V1
```

instead of

```
VarName=Status3.V1
```

### Script, Run After Options

- **None:** Do not execute the script.
- **Button Up:** Click a hotspot or a button to execute the script.
- **Moved:** Move the object to execute the script. This option makes the object movable and sizable, but not clickable.
- **Sized:** Change the object size to execute the script. This option makes the object movable and sizable, but not clickable.
- **Moved or Sized:** Move or change the object size to execute the script. This option makes the object movable and sizable, but not clickable.
- **Redrawn:** Execute the script when the object is redrawn.
- **Real-Time:** Execute the script when a real-time event occurs. These events are typically generated from DDE data transfer or from a Data Acquisition module.
- **Window Create:** Execute the script when the object's window opens.
- **Window Close:** Execute the script when the object's window closes.
- **Window Activate:** Execute the script when the object's window becomes active.
- **Window Deactivate:** Execute the script when the object's window becomes inactive.
- **New Selection:** Execute the script when the unselected object is clicked.
- **Before Save:** Execute the script immediately before saving the project.
- **Axes Rescale:** Execute the script when the graph axes rescale.
- **All Events:** Execute the script when any of the events except Moved or Sized occur. Many of these events will alter the **Event** and **Index** properties, which can be used in conditional statements to act based on the specific event.

For more information, see "Event" on page 22.
Using an Origin Script File

LabTalk script files (*.OGS files) are text files containing LabTalk scripts. In the *.OGS file, (optional) sections are separated by lines with the following syntax:

[SectionName]

When a UIM object script is saved in a *.OGS file, the script is run by adding the following lines to the object's Label Control dialog box:

`run.file(FileName)`  // Method to execute the entire script file.
`run.section(FileName, SectionName)`  // Method to execute only the specified section of the script file.

To create a *.OGS file:

1) Open Code Builder, click the New button on the Standard toolbar, and then select LabTalk Script File in the New File dialog box. Select the Origin software folder for the save location and click OK to create the file.

2) Enter the desired LabTalk script in the file. To ensure that a UIM object executes only a section of script in the file, use the [SectionName] syntax described above.

3) Re-save the script file.

4) Open the UIM object's Label Control dialog box and add the `run.file(FileName)` or `run.section(FileName, SectionName)` statements described above.
1.4 Examples

The following examples illustrate how to set up a control or indicator object and program it with a LabTalk script in the object’s Label Control dialog box.

1.4.1 Status Panel

This example illustrates the process of creating and programming a simple control object that displays the sum of two numbers when clicked. It uses a Status object with two items that display the numbers in sunken value boxes and a title in a raised button. The numbers can be changed by clicking in their value boxes and entering new values. To find the sum, click on the Sum button.

Figure 1.7: Sample Status Panel

To set up the Status object:

1) Start Origin.

2) Select Edit:Button Edit Mode. The UIM toolbar displays.

3) Click on the Status button.

4) Drag a box in a blank area of the worksheet window - outside of the worksheet cells but within the window. The Status object displays. You can resize the object by clicking on the object to expose its control handles, and then dragging a control handle until the object is the desired size.

5) Double-click on the object to open the UIM Object dialog box.
30 • 1.4 Examples

User Interface Controls

The title is displayed on the top of the object.

6) Change Status to SUM in the top left text box.

7) Select the Caption radio button in the Title group.

8) Select Button from the associated drop-down list. The dialog box should appear as follows:

Figure 1.8: Editing the UIM Object Dialog Box

9) Click Special to open the Status Object dialog box.

10) Type 2 in the Number of Properties text box.

11) Click on item 1 in the items list.

12) In the Name text box in the Current Property group, change item 1 to Value 1.

13) Type a value (for example, 2) for Value 1 in the Value text box in the Data group.

14) Click on item 2 in the items list.

15) In the Name text box in the Current Property group, change item 2 to Value 2.

Turning Edit Control on will allow users to alter the values by clicking on the item and typing a new value.

16) Type a value (for example, 19) for Value 2 in the Value text box in the Data group.

17) Click All On in the Edit Control group. The dialog box should appear as follows:
18) Click OK to close the Status Object dialog box.

19) Click OK to close the UIM Object dialog box and update the object with all the changes.

Figure 1.10: Status Panel on Worksheet

To attach a script to the object:

1) Click on the Status object to select it.

2) Select **Format: Label Control** to open the Label Control dialog box.

3) In the Object Name text box, change the object name from Status to **test**.
4) Type the following script into the large text box at the bottom of the Label Control dialog box. The borders of the box can be extended by dragging them if necessary.

   if (this.index == 0) {
       type -b "The sum is $(test.v1+test.v2)";}

5) Select Button Up from the Script, Run After drop-down list. This option will execute the script when the SUM button on the object is clicked.

6) Click OK to close the Label Control dialog box.

7) Select Edit:Button Edit Mode to deselect the edit mode.

To sum the values displayed on the object:

1) Click the SUM title button to add the numbers currently displayed in the object’s value windows. The sum of the values displays in an Attention dialog box.

2) Click in a value window to change the value, then click the SUM title button again.

1.4.2 Custom Bitmap Control

In this example you will create a custom control object with 4 bitmapped graphic images and link a LabTalk script to it. The example uses the BBUTN object which can display up to 20 custom control buttons whose images are defined in bitmap files. If the specified bitmap files do not exist, then the bitmap file name replaces them. The standard size is 32 X 32 pixels (a pixel is a single dot on the screen). Larger buttons can be created, but if larger bitmaps are used, fewer buttons can be stored. All bitmaps must be of the same size and 16 color images. Windows-provided bitmaps are used in this example.

To set up the BBUTN object:

1) Start Origin.

2) Select Edit:Button Edit Mode. The UIM toolbar appears.

3) Select the Bitmap Button and drag a box in the worksheet. The Bitmap Button object displays.
4) Double-click on the object to open the UIM Object dialog box.

5) Clear the On check box in the Titles group. This disables the Bitmap's title bar.

6) Click on the Titles button to open the Bitmap Control Titles dialog box.

7) Type 4 in the Total Items text box. This text box controls how many items (buttons) are in the object. The default value is 8, but up to 20 can be included.

8) Click in the top (highlighted) line of the label list. The cursor becomes active in the top text box.

9) Click Browse. This action opens the File Open dialog box.

10) Make your Windows folder active. Select STRAW MAT.BMP (or an alternative bitmap file) and click OK.

11) Click on the line below STRAW MAT.BMP in the label list box. The cursor becomes active in the top text box.

12) Enter TRIANGLES.BMP following the procedure for STRAW MAT.BMP.

13) Enter the TILES.BMP and BUBBLES.BMP files in the same way. The images on the buttons will rescale along with the object.

14) Click OK to close the Bitmap Control Titles dialog box.

15) Click OK to close the UIM Object dialog box and implement the changes.

To attach a script to the BBTUN object:

1) Click on the object to select it.

2) Select Format: Label Control to open the Label Control dialog box.

3) Select Button Up from the Script, Run After drop-down list. This option will execute a script when a button in the object is clicked.

4) Type the following script into the large Script box at the bottom of the box. bbutn.LnS is a property which returns the nth bitmap file name. Index returns the number of the button which was clicked.

   %A=bbutn.$(index)$;
   type -b "You pressed the %A button!";

The images on the buttons will rescale along with the object.
5) Click OK to close the Label Control dialog box and display the new BBUTN object.

To use the BBUTN object:

1) Select Edit:Button Edit Mode. This menu command turns off the editing mode and closes the UIM toolbar.

2) Click the buttons to see the message in the attention box indicating which bitmap was pressed.

1.4.3 Creating a Tool to Import Files into a Worksheet

In this example, you will create a tool which uses the FUM’s file object. The tool’s buttons will read a file of comma delimited values into the active Origin worksheet. When you are finished with the example, the tool will appear as follows.

Figure 1.11: Tool to Import Files
To create a Text Button object:

1) Start Origin.

2) Select Edit:Button Edit Mode. This menu command opens the UIM toolbar for creating UIM objects.

3) Click on the TBUTN button in the UIM toolbar. The button appears depressed during the clicking action, but does not stay depressed.

4) Click on an empty area in the Origin worksheet. Hold the mouse button down and drag a rectangular box. Release the mouse button. The Text Button object displays.

5) To change the size and shape of the Text Button object, click on the object to select it. Click and drag on a control handle. Click off the object, but in the Origin worksheet, to de-select the object.

To change the Text Button’s appearance:

1) Double-click the object to open the UIM Object dialog box.

2) In the Title group, clear the On check box to turn off the title display. (This action will turn off the Text Buttons title bar.)

3) Click on the Titles button to open the Control Titles dialog box.

4) Type 2 in the Total Items text box.

5) Click on the highlighted region in the large text box. This action activates the cursor in the top text box.

6) Type Pick File. This text displays in the top text box.

7) Click below the highlighted region in the large text box. This action activates the cursor in the top text box. Additionally, Pick File displays in the first line of the large text box and is now designated as the label for the first button.

8) Type Import Data to set the label for the second button.
9) Click OK to close the Control Titles dialog box.

10) Click OK to close the UIM Object dialog box.

The object now looks the way we want it to. However, it cannot perform any actions. UIM objects cannot perform actions unless they have a script attached.

To attach a script to the object:

1) Click on the object to select it.

2) Select Format: Label Control to open the Label Control dialog box. The Label Control dialog box is used to prepare an object to run a LabTalk script.

3) Select Button Up from the Script, Run After drop-down list. This option will run the script entered in this dialog box whenever one of the text buttons is clicked on.

4) Type the following script into the large script box at the bottom of the Label Control dialog box. (You don't have to put in the comments.) If necessary, the borders of the dialog box can be extended by dragging them.
this.index holds the number of the clicked button.

```plaintext
if (this.index == 1)  getfile *.dat;
  // If the 1st button is clicked, the Open dialog box opens.
  // The file name is automatically stored in %A.
if (this.index == 2)
{
  // If second button is clicked ...
  hFile=file.open(%A);
  // Use a FUM method to open the selected file.
  loop (num, wks.ncols, 12)  wks.AddCol();
  // Add columns to the active worksheet until it has 12.
  // The import file has 12 cols.
  loop (row, 1, 8)
  {
    // Loop to read 8 rows of data.
    tokensread=file.readrow(data1,12);
    if (tokensread<=0) break;
    // If the readrow method is not working, stop.
  }
  file.close(); // Close the file.
}
```

5) Click OK to enter the script file and close the Label Control dialog box.

For more information on the FUM file methods and properties, see Chapter 6, "File Utilities". For information on loading a user-defined DLL, see Chapter 7, "Advanced Technical Information".

To use the object:

1) Select **Edit:Button Edit Mode** to turn off the edit mode.

2) You can now try out the example. Click on the Pick File button. This action opens the Open dialog box.

3) Select FUM1.DAT from the TUTORIAL folder and click Open.

4) Click on the Import Data button. Columns are added to the worksheet and the data is imported.

### 1.4.4 Demonstration Project

OriginPro contains a demonstration project which demonstrates how UIM control and indicator objects can be used to create an application.
To open the Demonstration project:

1) Select File:Open to open the Open dialog box.

2) Select UIM.OPJ in the \SAMPLES\UIM folder.

3) Click Open. The demonstration program is loaded and its Actions window displays.

To operate the UIM.OPJ demonstration project:

1) Select the Start radio button in the Main Control object to activate the project. Two numeric values are generated randomly. These are displayed in the two strip charts.

2) Select the Chart 1 or Chart 2 check box in the Check Box object to switch an individual strip chart on or off.

3) Click on the Status Box’s title button to read the current timer interval (the interval between the generation of new random numbers).

4) Click in the Status Box’s Timer Interval text box to enter a new timer interval.

5) Select the Stop radio button in the Main Control object to deactivate the project.

6) Click on the Clock Bitmap button to generate a single random number event. Repeat to see the values accumulate in a strip chart.

The Demonstration Project is a learning tool as well as a simple demonstration of an Origin project using UIM control and indicator objects. The scripts behind the Main Control, Status Box, and Clock object can be viewed to see how they were programmed using LabTalk. When beginning to create your own scripts controlling UIM objects, you may want to base them on the scripts in this project.

To see the scripts attached to the demonstration objects:

1) Select Edit:Button Edit Mode. The UIM toolbar displays.

2) Click on the desired object. A border with control handles displays around the selected object.

3) Select Format:Label Control. The Label Control dialog box opens with the LabTalk script in the lower Script text box.

4) Click OK to close the Label Control dialog box.
5) Select **File:Close** to quit the demonstration program.

**1.5 UIM Objects Reference Guide**

In the following section each UIM object is discussed individually including dialog boxes and object properties.

For information about shared properties, see “1.3.4 Shared Properties” on page 20. Shared properties have a large effect on the execution of the UIM objects. For information on how to make UIM objects interact in an application, refer to the sample project UIM.OPJ in the samples folder. The project is reviewed in “1.4.4 Demonstration Project” on page 37.
1.5.1 Bitmap Button: BBUTN

Introduction

The Bitmap Button object provides multiple buttons on which up to 20 bitmap pictures can be displayed. If the bitmap files specified do not exist, the bitmap file name replaces them. The standard size is 32 X 32 pixels (pels). Larger buttons can be created, but if larger bitmaps are used, fewer buttons can be displayed. The bitmap files are specified in the Control Titles list and can be modified through the BBUTN.Ln$ property. All bitmaps must be 16 color images of the same size.

Note: If your images appear corrupted, see “Troubleshooting creating a BBUTN object” on page 45.

Use

The BBUTN object provides a visually pleasing way of getting input from a user. Instead of the user clicking on text, they can click on an icon. An example of the use of the BBUTN object is the UIM toolbar. The UIM.OPJ project uses a bitmap button object to run a data display application. To see the script, open UIM.OPJ and ALT+double-click on the clock.

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar Default or user-defined title, displayed in the title bar.

Bkg

On Determines whether or not the object's background is visible.

Flat Determines whether or not the object is flat with no edge.

Raised Determines whether or not the object has a raised appearance.
Edged
Determine whether or not the object has an edge.

Sunken
Determine whether or not the object has a sunken appearance.

Gaps
Border
Controls the distance between the edge of the object and the buttons.
Control
Controls the distance between the buttons.

Color
Background
Controls the background color of the object outside of the buttons.

Title Text
Controls the color of the title.
Label Text
Not applicable.
HotSpot Fore
Not applicable.
HotSpot Bkg
Controls the color of the buttons outside of the bitmap image.

Control Layout
Columns
Not applicable. Use the Special dialog box to arrange buttons.
Rows
Not applicable. Use the Special dialog box to arrange buttons.

Text Position
Not applicable.

Title
On
The title will be displayed when this check box is selected.
Top
Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group
Select to have the object displayed with the group style.
Plain
This is the default option.
Caption
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down
list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Its index value is 0. In the last two cases you have no control over the background color of the title. However, the foreground text color is still selectable.

**Font**

**Dialog** Select to use the dialog box font (which is scaleable).

**Scaleable** Select to use an alternate font.

**Bold** Select for bold.

**Points** Set font size.

**Default**

**Set** Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

**Save** Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in a BBUTN.ODO file. To return to the original defaults, delete the BBUTN.ODO file.

**The Bitmap Control Titles Dialog Box**

The Bitmap Control Titles dialog box is selected by clicking on the Titles button in the UIM Object dialog box. The 16 color *.BMP files to be displayed on the bitmap buttons are specified here.

Note that the first time the *.BMP files are specified in this dialog box, the images they hold are loaded into the BBUTN object. After this, the *.BMP files do NOT need to be present. A saved BBUTN object within a template or tool will contain its own images.

**Independent**

**Browse Button** Open the File Open dialog box to select the bitmap files.

**Total Items** Sets the number of bitmap buttons.

**To use the Bitmap Control Titles dialog box:**

1) Type the number of buttons you want in the Total Items text box.

2) Click on a space to choose a file for that button.
3) Click on the Browse button to use the Open dialog box to find the files you want to display. If you type in file names, do not include the .BMP extension. If the bitmap is not in the Origin folder, the full path must be designated as part of the file name.

4) Once you have picked a file, click on the next space to choose the next file for that button.

The Bitmap Buttons Control Dialog Box

The Bitmap Buttons Control dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Independent

Buttons per Column Sets the number of buttons per column.
Square Select for square buttons. Does not affect the bitmap scaling.
Script Editable Select to make script changes to the Control Titles list affect the appearance of the BBUTN object.

Scaling

UnScaled The bitmap is displayed at its original resolution.
Full The bitmap is scaled to completely fill the button.
Integer The default setting. The bitmap is scaled by an integer amount, causing no distortion. However, if the BBUTN object is too small, the bitmap is displayed as a fully scaled bitmap.
XY Integer The bitmap is scaled by integer amounts along the X and Y axes separately.

Display Mode

Push Button Display bitmaps as buttons. Selection is restricted to one bitmap at a time.
Radio Button Display bitmaps as buttons. Selection is restricted to one bitmap at a time. Button appears depressed when selected.
Check Button Display bitmaps as buttons. Button selection is not restricted.
Animation Display bitmaps as buttons. Only one bitmap is visible at a time. Bitmap selection increments each time the button is clicked.
Radio Page Display bitmaps as tabs. Selection is restricted to one tab at a time.
Properties

Table 1.9: Bitmap Button LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bbutn.Ln$</td>
<td>Set/Return the $n$th bitmap file listed in the Bitmap Control Titles list.</td>
</tr>
<tr>
<td>Bbutn.NumItems</td>
<td>Set/Return the number of bitmaps to be displayed.</td>
</tr>
<tr>
<td>Bbutn.EditableOn</td>
<td>Sets the Script Editable field. If Bbutn.EditableOn is set to 1, script changes in Bbutn.Ln$ will change the BBUTN pictures.</td>
</tr>
</tbody>
</table>

Example Script

1) Double-click on the object after creating it to open the UIM Object dialog box.

2) Select the Caption radio button in the Title group of the UIM Object dialog box.

3) Select Button from the associated drop-down list.

4) Click OK to close the dialog box.

5) ALT+double-click on the object to open the Label Control dialog box. Enter the script as indicated below, select Button Up from the Script, Run After drop-down list, and then click OK. Note: index holds the number of the clicked button.

   if (index>0) {
       type -b Warning: Choose bitmaps of the same size!;
       GetFileName *.bmp; // Open dialog box opens.
       %B=%[A.L*.]; // Get rid of .bmp extension.
       this.EditableOn=1; // Script editable on.
       this.I$(index)$=%b; // Assign file name to button.
   }

This script allows the user to pick a new *.BMP image for the clicked button.

The following script opens a worksheet or graph from your own template, and imports a data file into the active worksheet. This BBUTN object must have 3 buttons, and the Script, Run After drop-down list must be set to Button Up.
These commands open a worksheet or graph window from the My* template and name it Import or Display.

```bash
if (index==1) window -t data MyWks Import;
if (index==2) window -t plot MyGraph Display;
if (index==3)
{
    GetFileName *.dat; //Open Open dialog box for *.dat files
    open -w %B%A; //Open chosen ASCII file.
}
```

**Troubleshooting creating a BBUTN object**

Creating your own Bitmap Buttons object can be difficult. A number of mistakes can prevent the image from appearing, or can cause it to be corrupted. If you are having these problems, open each of the files in Paintbrush or another graphics package and confirm the following points.

- The file names and paths have been correctly specified in the Bitmap Control Titles dialog box, *without* the .BMP extension.
- All specified image files are .BMP files.
- All images are saved as 16 color files. Many graphics packages automatically create or convert images to 256 color.
- Each image is 32 x 32 pels (pixels) or smaller.
- All images are exactly the same size. If one image is 32 x 32 and another is 33 x 33, one or more of the images will be corrupted.
1.5.2 Check Box: CHECK

Default Name: CHECK

Introduction
A Check Box object graphically displays the status of up to 20 items arranged in either rows or columns. Each item is represented by a hotspot, an area where the state of the item is shown, and can be changed by using the mouse.

The items displayed in the CHECK object have 2 states, ON or OFF, which can be displayed via checks or L.E.D. display. The ON state is defined by a value of 1 (or any positive value), and the OFF state by a value of 0. ON is also defined as being greater than 0 and OFF as being less than 0. Clicking on a box (when not in Button Edit Mode) toggles the state of that box. LabTalk can also be used to control the status of each item.

Two examples of CHECK objects are shown below, using the check display and the L.E.D. display.

Figure 1.13: Check Objects

In this example, boxes labeled 0, 1, 3, and 4 are defined as being ON. Thus, the value returned by the property CHECK.n would be 1 if n = 0, 1, 3, 4, and 0 for the others.
**Uses**

The CHECK object is a simple object, yet it can be used as a powerful tool in controlling the flow of operation in a project. It can be used to:

- Choose from a list of independent options.
- Dynamically control the flow of data in an active project.
- Display the status of flags being used by a project.
- Display or read binary numbers using the `Check.Bits` property to set or read a binary number to or from decimal.
- Display the results of any independent On/Off options.

**Dialog Box Control**

*The UIM Object Dialog Box*

<table>
<thead>
<tr>
<th>Independent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title Bar</strong></td>
<td>Default or user-defined title, displayed in the title bar.</td>
</tr>
<tr>
<td><strong>Bkg</strong></td>
<td></td>
</tr>
<tr>
<td><strong>On</strong></td>
<td>Determines whether or not the object's background is visible.</td>
</tr>
<tr>
<td><strong>Flat</strong></td>
<td>Determines whether or not the object is flat with no edge.</td>
</tr>
<tr>
<td><strong>Raised</strong></td>
<td>Determines whether or not the object has a raised appearance.</td>
</tr>
<tr>
<td><strong>Edged</strong></td>
<td>Determines whether or not the object has an edge.</td>
</tr>
<tr>
<td><strong>Sunken</strong></td>
<td>Determines whether or not the object has a sunken appearance.</td>
</tr>
<tr>
<td><strong>Gaps</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Border</strong></td>
<td>Controls the distance between the outer edge of the object and the items.</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td>For the CHECK object, the effect is the same as Border above.</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>Controls the background color of the object.</td>
</tr>
<tr>
<td><strong>Title Text</strong></td>
<td>Controls the color of the title.</td>
</tr>
<tr>
<td><strong>Label Text</strong></td>
<td>Controls the color of the labels.</td>
</tr>
<tr>
<td><strong>HotSpot Fore</strong></td>
<td>Controls the check or L.E.D. ON color.</td>
</tr>
</tbody>
</table>
HotSpot Bkg  Controls the background color in the check box or the OFF state of the L.E.D.

Control Layout
Columns  Select to arrange the check boxes in columns.
Rows    Select to arrange the check boxes in rows.

Text Position
Top    Select to position the text above the check boxes.
Bottom Select to position the text below the check boxes.
Left   Select to position the text to the left of the check boxes.
Right  Select to position the text to the right of the check boxes.

Title
On    The title is displayed when this check box is selected.
Top   Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Plain This is the default option.
Group Select to have the object displayed with the group style.
Caption Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font
Dialog Select to use the dialog box font (which is scaleable).
Scaleable Select to use an alternate font.
Bold   Select for bold.
Points Set font size.

Default
Set  
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save  
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in a CHECK.ODO file. To return to the original defaults, delete the CHECK.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Use this dialog box to control the number of check boxes, the layout and their names. The named items may be set and accessed from LabTalk to control their associated check boxes.

Independent

Total Items  
Sets the number of items.

Show Name  
Not applicable.

Text Style

Plain  
Label text is not boxed.

Boxed  
Label text is boxed (default).

Left  
Label text is left justified.

Center  
Label text is centered (default).

Right  
Label text is right justified.

To use the Control Titles Dialog Box:

1) Type the number of check boxes in the Total items text box (must be < 20).

2) Click on the item you wish to rename.

3) Enter the desired text.

4) Repeat until you have the desired names for each item.

5) Select the text style in the Label Text Style group.

6) Click OK to return to the UIM Object dialog box.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.
The default Select Values dialog box designates only 2 check boxes. This number can be changed here or in the Controls dialog box. To alter the number of check boxes in the Select Values dialog box, enter the desired number (must be less than 20) in the Max text box.

The first 10 check boxes are visible and changeable in this dialog box. The others have to be accessed via LabTalk using either:

\[
\text{Check.Vn} = \quad \text{or} \quad \text{Check.ItemName[n]}
\]

If the value is designated as greater than 0, a check or L.E.D. ON results. If the value is 0, the result is no check or an L.E.D. OFF state. Click OK to save your settings.

**Independent**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integer</td>
<td>Select for integer format, clear for free format.</td>
</tr>
<tr>
<td>Digits</td>
<td>The number of digits to be displayed before the decimal point.</td>
</tr>
<tr>
<td>Decimal</td>
<td>The number of digits to be displayed after the decimal point.</td>
</tr>
<tr>
<td>Max</td>
<td>The number of check boxes; must be less than 20.</td>
</tr>
<tr>
<td>1, 2, ... n, ..., 10</td>
<td>The current value of the (n^{th}) check box.</td>
</tr>
</tbody>
</table>

**The Check Box Object Dialog Box**

The Check Box Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

**Box Check Style**

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross</td>
<td>Check styling is set to cross.</td>
</tr>
<tr>
<td>L.E.D.</td>
<td>Check styling is set to L.E.D.</td>
</tr>
</tbody>
</table>

### Properties

**Table 1.10: Check Box LabTalk Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check.Vn</td>
<td>Set/Return the value of the (n^{th}) property: 1 for checked or 0 for unchecked.</td>
</tr>
<tr>
<td>Check.Ln$</td>
<td>Set/Return the (n^{th}) item name. Item names are displayed next to boxes. Note the default name is <em>Itemn</em>.</td>
</tr>
<tr>
<td>Check.Nn$</td>
<td>Set/Return the control name for the (n^{th}) item. Used when creating a tool which interfaces with a DLL.</td>
</tr>
</tbody>
</table>
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check.ItemName</td>
<td>Set/Return 1 for checked or 0 for unchecked for the specified item. The default item name is $item$. Item names can be set with <code>check.Ln$</code> or in the Control Titles dialog box.</td>
</tr>
<tr>
<td>Check.Bits</td>
<td>Checks/Converts according to binary equivalent of value, the LSB (least significant bit) is the left check box.</td>
</tr>
</tbody>
</table>

**Check.Vn**

Allows access to the $n^{th}$ item of the CHECK object.

To set the value of the fourth item use:

```
Check.V4=1;
```

To test the value of the third item use:

```
variable=Check.V3;
```

or

```
Check.v3=;
```

**Check.ItemName**

`Check.ItemName` offers an alternative way of accessing properties.

`item` is the default item name for the CHECK object. For example, if you create a CHECK object with 8 items, by default, they are given item names `item1`, `item2`, ..., `item8`. 

---

The CHECK item values are not limited to 1 or 0, though the display only has two states; ON for an item > 0, OFF for $\leq 0$. After a mouse click, the value will be 0 or 1.
To access the fifth item use

**Check.item5;**

which is equivalent to

**Check.V5;**

You are not limited to having default item names such as **itemn**. If you have specified a name, it can be used to access the item value. For example, **Check.header** could be equivalent to **Check.V5**. Changing item names is discussed below.

**Check.Ln$**

This is used to change the \(n\)th item name. An example is given below:

**Check.L5$=A New Fifth**

This changes the fifth item name from **Object 5** to **A New Fifth**.

**Check.Nn$**

This is used to change the control name for the \(n\)th item. This is only used when interfacing a tool with a DLL or other Origin object.

**Check.Bits**

Used to display a decimal number as a binary number and to interpret the current state of the CHECK object as a binary number and return this as a decimal value. For example:

**Check.Bits=177;**

results in the following CHECK object displaying (to achieve this you need to start with a CHECK object with 8 check boxes, and the check style set to L.E.D.).

**Figure 5.14: Sample Check Object**

<table>
<thead>
<tr>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

The Least Significant Bit is on the left hand side.
**Example Script**

ALT+double-click on the object to open the Label Control dialog box. Enter the script as indicated below, select Button Up from the Script, Run After drop-down list, and then click OK.

When a box is clicked, this script tests to see if the first or second item was turned on. If it was, it opens an attention box saying so.

```plaintext
switch (index) {
  case 1: // Check box 1 was clicked
    if (this.v1==1) {
      type -b First Option Switch is checked!
    }
    break;
  case 2: // Check box 2 was clicked
    if (this.v2==1) {
      type -b Second Option Switch is checked!
    }
    break;
}
```

The following script will work for a Check object with any number of items.

```plaintext
if (check.Vn>0) type -b Item $n is on.
```

*The statement determines which item was clicked.*

*The if statements check if the item was turned on.*

*If check.Vn>0, the item is ON.*
1.5.3 Combination Box: COMBOX

Default Name: COMBOX

Introduction

The combination box object allows you to create a drop-down list within your user interface. Since the drop-down list is not scaleable, it can not be placed on a graph window. To allow the user to select more than one item at once, see “1.5.6 List Box: LSTBOX” on page 70.

The COMBOX below allows the user to choose between four data display options.

Script Control

This object is controlled exclusively through LabTalk scripts.

Properties

Table 1.11: Combination Box LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combox.Choice</td>
<td>Set/Return the index of current the selection.</td>
</tr>
<tr>
<td>Combox.NumItems</td>
<td>Get the number of items. If set to less than the current number of items, extra items are deleted. Setting to 0 deletes all items. If set to greater than the current number of items, blank strings are added.</td>
</tr>
<tr>
<td>Combox.S</td>
<td>Set/Return the numeric value of the current selection.</td>
</tr>
<tr>
<td>Combox.SS</td>
<td>Set/Return the string value of the current selection.</td>
</tr>
<tr>
<td>Combox.V</td>
<td>Add a new item and set the numeric value.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Combox.V$</td>
<td>Add a new item and set the string value.</td>
</tr>
<tr>
<td>Combox.V$n</td>
<td>Set/Return the numeric value of the $n$th item.</td>
</tr>
<tr>
<td>Combox.V$n$</td>
<td>Set/Return the string value of the $n$th item. If set to blank (V$n$=&quot;&quot;), delete the item.</td>
</tr>
<tr>
<td>This.Event</td>
<td>Indicates the Windows event which has just occurred. This property may only be used in the Label Control dialog box, with Script, Run After set to All Events. See the table below for a list of supported events.</td>
</tr>
</tbody>
</table>

**Supported Events:**

<table>
<thead>
<tr>
<th>Supported Events:</th>
<th>this.Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combox is no longer active.</td>
<td>20</td>
</tr>
<tr>
<td>Combox becomes active.</td>
<td>21</td>
</tr>
<tr>
<td>Left button down.</td>
<td>22</td>
</tr>
<tr>
<td>Left button double-click.</td>
<td>23</td>
</tr>
<tr>
<td>Left button up.</td>
<td>24</td>
</tr>
</tbody>
</table>

**Methods**

**Table 1.12: Combination Box LabTalk Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combox.Add(string [,ctrl])</td>
<td>Add string to the combination box if it is not already in the combbox. If the optional $ctrl = 1$, then always add the string.</td>
</tr>
<tr>
<td>Combox.Del([position])</td>
<td>Delete the selected item. If a position is specified, then delete the item in that position.</td>
</tr>
<tr>
<td>Combox.Ins(string [,ctrl], [position])</td>
<td>Insert string to the combbox before the specified position. If $ctrl = 1$, then do not check if string is already in the combbox. If position is not specified, append string to the end of the combbox.</td>
</tr>
<tr>
<td>Combox.Reset( )</td>
<td>Empty a combination box.</td>
</tr>
</tbody>
</table>
Creating a Combox Object

To create a Combox object:

1) Select **Edit:Button Edit Mode** to open the UIM toolbar and enter Button Edit Mode.

2) Click on the Combox button and drag a rectangular area out on a worksheet window. Release the mouse button.

3) Select **Edit:Button Edit Mode** to close the UIM toolbar and exit Button Edit Mode.

Controlling the Display in the Combox

1) Select **Window:Script Window** to open the Script window. Type the following script into the Script window.

   ```
   COMBOX.v$=One;
   COMBOX.v$=Two;
   COMBOX.v$=Three;
   ```

   The COMBOX now contains these three items in its drop-down list. To view these items, click on the COMBOX drop-down arrow.

2) Now enter the following script in the Script window.

   ```
   COMBOX.v2$=2nd
   ```

   View the change in the second item of the COMBOX by clicking on the COMBOX drop-down arrow.

3) You can also use a vector assignment operator to assign the worksheet column names as items in the drop-down list. For example, enter the following script in the Script window.

   ```
   COMBOX.v$ #= wks.cname$
   ```

   View the change by clicking on the COMBOX drop-down arrow.

4) Select one of the items in the COMBOX so that it displays as the selection in the drop-down list. Then enter the following script in the Script window.

   ```
   %A=combox.v$(combox.choice)$;
   type -b You selected $(combox.choice)...\r\nwhich is %A;
   ```
1.5.4 Advanced Gauge: GAUGE

Default Name: GAUGE

Introduction

A Gauge object provides a dynamic graphical representation of its value property in the form of a gauge. The value can be changed using LabTalk. Three Gauge objects with different settings are displayed below.

Figure 1.15: Sample Gauge Objects

Dialog Box Control

**The UIM Object Dialog Box**

**Independent**

**Title**
User-defined title, displayed in the title bar.

**Bkg**

**On**
Determines whether or not the object's background is visible.

**Flat**
Determines whether or not the object is flat with no edge.

**Raised**
Determines whether or not the object has a raised appearance.

**Edged**
Determines whether or not the object has an edge.

**Sunken**
Determines whether or not the object has a sunken appearance.
Gaps
Border Controls the distance between the edge of the object and the items within.
Control Same as Border. Border + Control is the total distance between the edge of the object and items within.

Color
Background Controls the background color of the object.
Title Text Controls the color of the title.
Label Text Controls the color of the labels.
HotSpot Fore Not applicable.
HotSpot Bkg Not applicable.

Control Layout
Not applicable.

Text Position
Not applicable.

Title
On The title is displayed when this is selected.
Top Controls the position of the title, above or beside the object.
Plain The default option.
Group Select to display the object with group style.
Caption Selecting Caption allows the following options: Sunken, Risen, Flat, Window, and Button. Selecting one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font
Dialog Select to use the dialog box font (a scaleable font).
Scaleable Select to use an alternate font.
Bold Select for bold.
Points  
Set font size.

Default  
Set  
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save  
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an GAUGE.ODO file. To return to the original defaults, delete the GAUGE.ODO file.

The Control Titles Dialog Box  
Not applicable.

The Select Values Dialog Box  
Not applicable.

The Advanced Gauge Dialog Box  
The Advanced Gauge dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Gauge Type  
These settings control the basic appearance of the Gauge object. The number indicates the number of degrees the gauge will cover. Direction indicates the orientation of the gauge.

180 Left

180 Right

270

90 Left

90 Right

90 Center

Ortho  
Use simple pointer with 90 Center gauge.

Bar Width  
The width of the gauge bar, in points.
Label Cntrl
On
Select to create a text label on the gauge. The text is specified in the associated text box. By default, the label will be near the hub of the gauge.

X Pos
Horizontal position of the label, in % of gauge width from the left.

Y Pos
Vertical position of the label, in % of gauge height from the top.

Pointer Type
Simple
Line pointer.

Triangle
Rounded pointer which narrows to a point.

Color list
Select the desired pointer color. Note that the pointer color is inverse, so the displayed color will not be exactly what was selected.

Tick Cntrl
Numbers On
Display numeric tick labels.

Maj
Select to display the specified number of major ticks. Tick increments are automatically calculated.

Min
Select to display the specified number of minor ticks between each major tick. Tick increments are automatically calculated.

Size % of Text
Major tick size in % of text size. Font size is specified in the UIM Object dialog box.

Ticks Out
Select to display ticks on the outside of the gauge curve.

Thick Ticks
Select to display thick major ticks.

Space Cntrl
Left
Distance between the left edge of the object and the left edge of the gauge, in % of object size.

Top
Distance between the top of the object and the top of the gauge, in % of object size.

Right
Distance between the right edge of the object and the right edge of the gauge, in % of object size.

Bottom
Distance between the bottom edge of the object and the bottom edge of the gauge, in % of object size.

Range Cntrl
Max
Maximum value to be displayed on the gauge.
Min

Minimum value to be displayed on the gauge.

Marker Cntrl

Max

Lowest value to be included in the “maximum” region of the gauge. Each region can be set to a different color in the Color Cntrl group.

Min

Highest value to be included in the “minimum” region of the gauge. Each region can be set to a different color in the Color Cntrl group.

Num Cntrl

Digits

Maximum number of digits to be displayed in the tick labels.

Decimals

Number of digits displayed to the right of the decimal point in tick labels.

Color Cntrl

> Max Marker

Color to be used for the “maximum” region, defined in the Marker Cntrl group.

Normal

Color to be used for the “normal” region, between the Max Marker and Min Marker. These are defined in the Marker Cntrl group.

< Min Marker

Color to be used for the “minimum” region, defined in the Marker Cntrl group.

Properties

Table 1.13: Gauge LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge.Value</td>
<td>Current value.</td>
</tr>
<tr>
<td>Gauge.Max</td>
<td>Maximum scale value.</td>
</tr>
<tr>
<td>Gauge.Min</td>
<td>Minimum scale value.</td>
</tr>
<tr>
<td>Gauge.LabelOn</td>
<td>Set = 1 to enable display of the label text defined with <code>gauge.labels</code>.</td>
</tr>
<tr>
<td>Gauge.Label$</td>
<td>Text of gauge label.</td>
</tr>
<tr>
<td>Gauge.LabelXpos</td>
<td>Horizontal position of the label, in % of gauge width from the left.</td>
</tr>
<tr>
<td>Gauge.LabelYpos</td>
<td>Vertical position of the label, in % of gauge height from the top.</td>
</tr>
<tr>
<td>Gauge.GaugeType</td>
<td>0=180 Left; 1=180 Right; 2=270; 3=90 Left; 4=90 Right; 5=90 Center.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gauge.BarWidth</td>
<td>Width of the gauge bar, in points.</td>
</tr>
<tr>
<td>Gauge.PointerType</td>
<td>0 = simple line pointer; 1 = triangle pointer.</td>
</tr>
<tr>
<td>Gauge.PointerColor</td>
<td>Number of the pointer color in the color list. To set, use the color() function. For example: gauge.PointerColor=color(red);</td>
</tr>
<tr>
<td>Gauge.MajTickOn</td>
<td>Set=1 to turn on major tick display; 0 to disable.</td>
</tr>
<tr>
<td>Gauge.MajTickNum</td>
<td>Number of major ticks.</td>
</tr>
<tr>
<td>Gauge.MinTickOn</td>
<td>Set=1 to turn on minor tick display; 0 to disable. Cannot be displayed if gauge.MajorTickOn=0.</td>
</tr>
<tr>
<td>Gauge.MinTickNum</td>
<td>Number of minor ticks between each set of major ticks.</td>
</tr>
<tr>
<td>Gauge.TickSize</td>
<td>Size of major ticks, in % of text size.</td>
</tr>
<tr>
<td>Gauge.TickOut</td>
<td>Set=1 to display ticks on the outside of the gauge curve; 0 for inside.</td>
</tr>
<tr>
<td>Gauge.NumDisplayOn</td>
<td>Set=1 to display tick labels; 0 to disable.</td>
</tr>
<tr>
<td>Gauge.SpaceLeft</td>
<td>Distance between the left edges of the object and left edge of the gauge, in % of the object width.</td>
</tr>
<tr>
<td>Gauge.SpaceRight</td>
<td>Distance between the right edges of the object and the gauge, in % of the object width.</td>
</tr>
<tr>
<td>Gauge.SpaceTop</td>
<td>Distance between the top edges of the object and the gauge, in % of the object height.</td>
</tr>
<tr>
<td>Gauge.SpaceBottom</td>
<td>Distance between the bottom edges of the object and the gauge, in % of the object height.</td>
</tr>
<tr>
<td>Gauge.ThreshMax</td>
<td>Lowest value in the “maximum” region.</td>
</tr>
<tr>
<td>Gauge.ThreshMin</td>
<td>Highest value in the “minimum” region.</td>
</tr>
<tr>
<td>Gauge.GaugeDigits</td>
<td>Maximum number of digits in the tick labels.</td>
</tr>
<tr>
<td>Gauge.GaugeDecimals</td>
<td>Number of digits to the right of the decimal place to display in the tick labels.</td>
</tr>
<tr>
<td>Gauge.LowColor</td>
<td>Number of the “minimum” region (see gauge.ThreshMin) color. To set, use gauge.HiColor=color(red);</td>
</tr>
<tr>
<td>Gauge.HiColor</td>
<td>Number of the “maximum” region (see gauge.ThreshMax) color.</td>
</tr>
<tr>
<td>Gauge.DefColor</td>
<td>Number of the “normal” region color.</td>
</tr>
</tbody>
</table>

**Example Script**

Make the gauge title a button by selecting the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Enter the following script and select Button
Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```javascript
this.max=10;   // Set the range.
this.min=0;   // Set the minimum value.
this.threshmax=8;   // Set the maximum range.
this.threshmin=1;   // Set the minimum range.
this.draw();   // Redraw the altered gauge.
repeat 50
{
    this.value=rnd()*10;   // Display 50 random values.
}
```

Click on the gauge title to run the script. This script changes the Gauge settings and then sets its current value 50 times. The gauge automatically updates to display each value, resulting in an animated data display.
1.5.5 Horizontal Bar: HBAR

Defined color ranges for the HBAR allow you to see the state of any variable at a glance.

Introduction

The Horizontal Bar object displays the current value of its value property. The value can be changed using LabTalk or HBAR's own spin buttons.

An HBAR object with a range of 100 to 200 is shown below, with spin buttons activated.

Figure 1.16: Sample Horizontal Bar Object

Uses

The HBAR object differs from VBAR only in that it is horizontal and therefore suited to those tasks which require a horizontal display. Of course, you may have as many HBAR's, VBAR's, Gauges and Strip Charts in a project as you desire.

Dialog Box Control

The UIM Object Dialog Box

Independent

| Title         | User-defined title, displayed in the title bar. |
### Bkg
| On  | Determines whether or not the object's background is visible. |
| Flat | Determines whether or not the object is flat with no edge. |
| Raised | Determines whether or not the object has a raised appearance. |
| Edged | Determines whether or not the object has an edge. |
| Sunken | Determines whether or not the object has a sunken appearance. |

### Gaps
| Border | Controls the distance between the edge of the object and the items within. |
| Control | Same as Border above. Border + Control is the total distance between the edge of the object and items within. |

### Color
| Background | Controls the background color of the object. |
| Title Text | Controls the color of the title. |
| Label Text | Controls the color of the labels. |
| HotSpot Fore | Controls the color of the value text. |
| HotSpot Bkg | Controls the background color of the value display box. |

### Control Layout
Not applicable.

### Text Position
Not applicable.

### Title
| On | The title will be displayed when this check box is selected. |
| Top | Controls the position of the title, above or beside the object. |
| Plain | The default option. |
| Group | Select to display the object with group style. |
| Caption | Selecting Caption allows the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To |
do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

Font

Dialog
Select to use the dialog box font (a scaleable font).

Scaleable
Select to use an alternate font.

Bold
Select for bold.

Points
Set font size.

Default

Set
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an HBAR.ODO file. To return to the original defaults, delete the HBAR.ODO file.

The Control Titles Dialog Box

Not applicable.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current
The current value for the HBAR object.

Max
The greatest value allowed.

Min
The smallest value allowed.

Integer
Select for integer format. Clear for free format.

Digits
Designate the number of digits before the decimal point when displaying the value text.

Decimal
Designate the number of digits after the decimal point when displaying the value text.

Max (on the right)
Not applicable.

4, 5, ..., n, ..., 10
Not applicable.
**The Indicator Object Dialog Box**

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

### Layout

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tick Size</strong></td>
<td>The size of the tick as a percentage of the text size.</td>
</tr>
<tr>
<td><strong>Right Gap</strong></td>
<td>The distance between the horizontal bar and the bottom edge of the object as a percentage of the object's box height. This is useful in positioning the spin buttons when they are selected.</td>
</tr>
<tr>
<td><strong>Bar Size</strong></td>
<td>The width of the bar as a percentage of the object's height.</td>
</tr>
<tr>
<td><strong>Txt Move</strong></td>
<td>The distance between the values text and the center of HBAR's indicator bar as a percentage of the object's height. Neglecting to designate this distance will cause the buttons to be positioned within the bar thus rendering them useless. This option has a default value of 0. An appropriate value for use with spin buttons is 35%.</td>
</tr>
</tbody>
</table>

### Ticks

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Digits</strong></td>
<td>The number of digits before the decimal point when displaying the tick labels.</td>
</tr>
<tr>
<td><strong>Decimal</strong></td>
<td>The number of digits after the decimal point when displaying the tick labels.</td>
</tr>
<tr>
<td><strong>Number of ticks</strong></td>
<td>The number of ticks to be placed on the object.</td>
</tr>
</tbody>
</table>

### Ticks Label Style

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plain</strong></td>
<td>Tick labels are plain styled.</td>
</tr>
<tr>
<td><strong>Boxed</strong></td>
<td>Tick labels are boxed.</td>
</tr>
<tr>
<td><strong>Left</strong></td>
<td>Tick labels are left justified.</td>
</tr>
<tr>
<td><strong>Centered</strong></td>
<td>Tick labels are centered.</td>
</tr>
<tr>
<td><strong>Right</strong></td>
<td>Tick labels are right justified.</td>
</tr>
</tbody>
</table>
Color

Num Levels  The number of levels to be used.
Bkg  The color behind the bar.
1-Color List  The color to be used for the lower limit up to the first limit.
2-Color List  The color to be used for ranges from: min to \((\text{max-min})/1000\) x Level start value
2-Number Box  Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Figure 1.17: Setting Up the Levels

The appropriate level colors are displayed on the bar up to and including the current value. The Bkg color is displayed on the bar at all points greater than the current value.

Spin Button

On  Select to use the spin buttons.
Step Size  The amount the present value will be incremented or decremented when an arrow is pressed.

The More Dialog Box

Not applicable.
Properties

Table 1.14: Horizontal Bar LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBar.Value</td>
<td>Current value.</td>
</tr>
<tr>
<td>HBar.Max</td>
<td>Maximum scale value.</td>
</tr>
<tr>
<td>HBar.Min</td>
<td>Minimum scale value.</td>
</tr>
<tr>
<td>HBar.Inc</td>
<td>Increment value.</td>
</tr>
</tbody>
</table>

Example Script

Select the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```labtalk
this.max=10;
this.min=0;
this.draw(); // Redraw to update the displayed object
repeat 50
{ // Loop 50 times to set 50 values.
  this.value=rnd()*10; // Set HBAR's value to a random #.
}
```

Click on the title button to run the script. This script simulates a flow of real-time data to the HBAR.
1.5.6 List Box: LSTBOX

Default Name: LSTBOX

Introduction

List Box is the only UIM object which allows the user to select more than one item at once.

The List Box object provides a list of strings for the user to select one or more choices. Since the List Box is not rescalable, it can not be placed on a graph window.

Script Control

Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lstbox.An</td>
<td>Set/Return the selection state of the $n^{th}$ item. 0 = not selected, 1 = selected.</td>
</tr>
<tr>
<td>Lstbox.Choice</td>
<td>Set/Return the current selected item.</td>
</tr>
<tr>
<td>Lstbox.In</td>
<td>Return the index of the $n^{th}$ selected item. Set to 0 to unselect $n^{th}$ selected item.</td>
</tr>
<tr>
<td>Lstbox.MultiSel</td>
<td>Set/Return multiple selection mode. 0 = off, 1 = basic, 2 = extended. Basic mode lets the user toggle each selection on/off by clicking. Extended enables SHIFT+click and CTRL+click selection.</td>
</tr>
<tr>
<td>Lstbox.NumItems</td>
<td>Set/Return the number of items. If set to less than the current number of items, extra items are deleted. Set to zero to delete all items. If set to greater than the current number of items, blank strings are added.</td>
</tr>
<tr>
<td>Lstbox.NumSels</td>
<td>Return the number of selected items. Set to 0 to unselect all selected items.</td>
</tr>
<tr>
<td>Lstbox.Sn</td>
<td>Set/Return the numeric value of the $n^{th}$ selected item.</td>
</tr>
<tr>
<td>Lstbox.SnS</td>
<td>Set/Return the string value of the $n^{th}$ selected item.</td>
</tr>
<tr>
<td>Lstbox.Vn</td>
<td>Set/Return the numeric value of the $n^{th}$ item.</td>
</tr>
<tr>
<td>Lstbox.VnS</td>
<td>Set/Return the string value of the $n^{th}$ item.</td>
</tr>
</tbody>
</table>
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This.Event</td>
<td>Number indicating a Windows event. See the table below. This property may only be used in the Label Control dialog box of the object. Set Script, Run After to All Events.</td>
</tr>
<tr>
<td>Lstbox.Index</td>
<td>Number of the item involved in an event. See the table below for more information.</td>
</tr>
</tbody>
</table>

### Supported Events:

<table>
<thead>
<tr>
<th>Supported Events</th>
<th>this.Event</th>
<th>this.Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object de-selected</td>
<td>20</td>
<td>Last selected item.</td>
</tr>
<tr>
<td>Item selected</td>
<td>21</td>
<td>Item containing caret.</td>
</tr>
<tr>
<td>Left button down</td>
<td>22</td>
<td>Item the event occurred on.</td>
</tr>
<tr>
<td>Left button double-click</td>
<td>23</td>
<td>Item the event occurred on.</td>
</tr>
<tr>
<td>Left button up</td>
<td>24</td>
<td>Item the event occurred on.</td>
</tr>
</tbody>
</table>

### Methods

#### Table 1.16: List Box LabTalk Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lstbox.Add(string[, cntrl])</td>
<td>Add string to LSTBOX if not already in listbox. If cntrl is 1 then always add string.</td>
</tr>
<tr>
<td>Lstbox.CopyAll(NewLB[, cntrl][,position])</td>
<td>Copy all items from NewLB that are not already in LSTBOX listbox into LSTBOX listbox. If cntrl is 1 then copy all always. Use position to specify where items are to be inserted. If position == 0 or is not specified, strings are inserted before the current selection (Lstbox.Choice).</td>
</tr>
<tr>
<td>Lstbox.CopySel(NewLB[, cntrl][,position])</td>
<td>Similar to CopyAll except that it copies only selected items.</td>
</tr>
<tr>
<td>Lstbox.Del([position])</td>
<td>Delete all selected items. If item is specified, delete only the specified item.</td>
</tr>
<tr>
<td>Lstbox.Ins(string[, cntrl][,position])</td>
<td>Insert string item into specified position in the listbox if it is not already there. If cntrl == 1, always add. If position is not specified, append string to end.</td>
</tr>
</tbody>
</table>
### UIM Objects Reference Guide

#### User Interface Controls

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lstbox.MoveAll(NewLB[,cntrl][,position])</td>
<td>Similar to CopyAll except all items are removed from the source listbox.</td>
</tr>
<tr>
<td>Lstbox.MoveSel(NewLB[,cntrl][,position])</td>
<td>Similar to MoveAll except moves only selected items.</td>
</tr>
<tr>
<td>Lstbox.Reset()</td>
<td>Empty a listbox.</td>
</tr>
<tr>
<td>Lstbox.Shift(offset)</td>
<td>Move the current selected item up or down the number of items specified in offset.</td>
</tr>
</tbody>
</table>

### Creating a List Box Object

*To create a List Box object:*

1) Select **Edit:Button Edit Mode** to open the UIM toolbar and enter Button Edit Mode.

2) Click on the LSTBOX button and drag a rectangular area out on a worksheet window. Release the mouse button.

3) Select **Edit:Button Edit Mode** to close the UIM toolbar and exit Button Edit Mode.

### Controlling the Display in the List Box

1) Select **Window:Script Window** to open the Script window. Type the following script into the Script window.

   ```
   LSTBOX.v$=One;
   LSTBOX.v$=Two;
   LSTBOX.v$=Three;
   ```

   The LSTBOX now displays these three items.
2) Now enter the following script in the Script window.
   \texttt{LSTBOX.v2$=2nd}
   Notice the change in the second item of the LSTBOX.

3) You can also use a vector assignment operator to assign the
   worksheet column names as items in the LSTBOX. For example,
   enter the following script in the Script window.
   \texttt{LSTBOX.v$ #= wks.cname$}
   The column names now display in the LSTBOX.

4) Select one of the items in the LSTBOX. Then enter the following
   script in the Script window.
   \texttt{\%A=LSTBOX.v$(LSTBOX.choice)$;}
   \texttt{type -b You selected $(LSTBOX.choice)...\n\nwhich is \%A;}
1.5.7 Radio: Radio

Default Name: Radio

Introduction

A RADIO object allows the user to select from a number of named choices. Only one item can be active at a time.

This choice can be accessed with LabTalk script using the Radio.Choice property. This returns the position of the current choice.

An example of a RADIO object with 5 items is included below.

Figure 1.18: Sample Radio Object

Since the third item is selected, the value of Radio.Choice is 3. This could be set using the following script:

Radio.Choice=Radio.thirdchoice;

Notice that there is no space left between the words "third" and "choice". This command is the same as:

Radio.Choice=3;

An alternate way of changing the current choice is by clicking on the desired item.

Uses

The RADIO object has only one active choice and so it is ideally suited to controlling tasks which have a definite set of exclusive states.

A RADIO object is used in the UIM.OPJ application to start and stop the flow of data through the project. To see the script used to control this, open UIM.OPJ and ALT+double-click on the Main radio object.
## Dialog Box Control

*The UIM Object Dialog Box*

### Independent

<table>
<thead>
<tr>
<th>Title Bar</th>
<th>Default or user-defined title, displayed in the title bar.</th>
</tr>
</thead>
</table>

### Bkg

<table>
<thead>
<tr>
<th>On</th>
<th>Determines whether or not the object's background is visible.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>Determines whether or not the object is flat with no edge.</td>
</tr>
<tr>
<td>Raised</td>
<td>Determines whether or not the object has a raised appearance.</td>
</tr>
<tr>
<td>Edged</td>
<td>Determines whether or not the object has an edge.</td>
</tr>
<tr>
<td>Sunken</td>
<td>Determines whether or not the object has a sunken appearance.</td>
</tr>
</tbody>
</table>

### Gaps

<table>
<thead>
<tr>
<th>Border</th>
<th>Controls the distance between the outer edge of the object and the items.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>For the RADIO object, the effect is the same as above.</td>
</tr>
</tbody>
</table>

### Color

<table>
<thead>
<tr>
<th>Background</th>
<th>Controls the background color of the object.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Text</td>
<td>Controls the color of the title.</td>
</tr>
<tr>
<td>Label Text</td>
<td>Controls the color of the labels.</td>
</tr>
<tr>
<td>HotSpot Fore</td>
<td>Controls the selected radio button color.</td>
</tr>
<tr>
<td>HotSpot Bkg</td>
<td>Controls the unselected radio button color.</td>
</tr>
</tbody>
</table>

### Control Layout

<table>
<thead>
<tr>
<th>Columns</th>
<th>Select if you wish the check boxes to be arranged in columns.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rows</td>
<td>Select if you wish the check boxes to be arranged in rows.</td>
</tr>
</tbody>
</table>
Text Position

Top
Select to position the text above the check boxes.

Bottom
Select to position the text below the check boxes.

Left
Select to position the text to the left of the check boxes.

Right
Select to position the text to the right of the check boxes.

Title

On
The title will be displayed when this check box is selected.

Top
Determines the position of the title. The title can be above (selected) or beside the object (cleared).

Group
Select to have the object displayed with the group style.

Plain
This is the default option.

Caption
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button.
Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list.
Selecting the Transparent Background check box sets the color to the current background color.
Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog
Select to use the dialog box font (a scaleable font).

Scaleable
Select to use an alternate font.

Bold
Select for bold.

Points
Set font size.

Default

Set
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an
RADIO.ODO file. To return to the original defaults, delete the RADIO.ODO file.

The Control Titles Dialog Box
The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Use this dialog box to control the number of check boxes, the layout, and their names. The named items may be set and accessed from LabTalk to control their selection state.

Independent
- Total items: Sets the number of titles.
- Show Name: Not applicable.

Text Style
- Plain: Label text is not boxed.
- Boxed: Label text is boxed (default).
- Left: Label text is left justified.
- Center: Label text is centered (default).
- Right: Label text is right justified.

To use the Control Titles Dialog Box:

1) Type the number of check boxes in the Total items text box (must be < 20).
2) Click on the item you wish to rename.
3) Enter the desired text.
4) Repeat until you have the desired names for each item.
5) Select the desired text style from the Label Text Style group.
6) Click OK to return to the UIM Object dialog box.

The Select Values Dialog Box
Click on the Values button in the UIM Object dialog box to access the Select Values dialog box.

This dialog box has one active field, the Choice field. This is the current choice and has the same value as Radio.Choice.
Properties

Table 1.17: Radio LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio.Choice</td>
<td>Selected item number.</td>
</tr>
<tr>
<td>Radio.ItemName</td>
<td>Returns the position of ItemName in the list. This is used with Radio.Choice. The default item name is itemn.</td>
</tr>
<tr>
<td>Radio.NumItems</td>
<td>Set/Return the number of items in the RADIO object.</td>
</tr>
<tr>
<td>Radio.Ln$</td>
<td>Sets $n$th item name. Item names are displayed next to radio buttons. By default Radio.Ln$=Itemn.</td>
</tr>
</tbody>
</table>

Example Script

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```juvenal
switch (this.choice)
{
  case 1:
    type -b First option chosen;
    break;
  case 2:
    type -b Second option chosen;
    break;
}
```

To access the choice property from the Script window or another object, use radio.choice.
1.5.8 Scale: SCALE

Default Name: SCALE

Introduction

The scale object provides an accurate scale which dynamically sizes itself to reflect the scale at its current position on the graph. For example, on a log-log graph the scale object shrinks as you move it to the right.

A log-log graph with two identical scale objects at different positions is displayed below.

Figure 1.19: Sample Scale Object
Dialog Box Control

The Scale Object Dialog Box

The SCALE object has only one dialog box. It is accessed by double-clicking on the object.

Axis Titles

The positioning of the titles should correspond to the positioning of the scales.

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Title</td>
<td>This is centered within the object box's horizontal plane.</td>
</tr>
<tr>
<td>Above</td>
<td>Orients the X title above the X scale axis.</td>
</tr>
<tr>
<td>Below</td>
<td>Orients the X title below the X scale axis.</td>
</tr>
<tr>
<td>Y Title</td>
<td>This is centered within the object box's vertical plane.</td>
</tr>
<tr>
<td>Left</td>
<td>Orients the Y title to the left of the Y scale axis.</td>
</tr>
<tr>
<td>Right</td>
<td>Orients the Y title to the right of the Y scale axis.</td>
</tr>
</tbody>
</table>

X Scale

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No X scale will be displayed.</td>
</tr>
<tr>
<td>Top</td>
<td>X axis scale is placed on top of the SCALE object.</td>
</tr>
<tr>
<td>Middle</td>
<td>X axis scale is placed in the middle of the SCALE object.</td>
</tr>
<tr>
<td>Bottom</td>
<td>X axis scale is placed at the bottom of the SCALE object.</td>
</tr>
</tbody>
</table>

Y Scale

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No Y scale will be displayed.</td>
</tr>
<tr>
<td>Left</td>
<td>Y scale is placed to the left of the SCALE object.</td>
</tr>
<tr>
<td>Middle</td>
<td>Y scale is placed in the middle of the SCALE object.</td>
</tr>
<tr>
<td>Right</td>
<td>Y scale is placed to the right of the SCALE object.</td>
</tr>
</tbody>
</table>

X Range

Sets the length of the X axis scale which corresponds with its range regardless of where it is placed. The X range is a free format number.

Y Range

Sets the length of the Y scale.

Color
Sets the color of the scale object.

**Line Width**
Sets the width of the scale lines to be drawn.

**X Ticks**
- **Major-Above**: Major tick is above the X scale axis.
- **Major-Below**: Major tick is below the X scale axis.
- **Minor-Above**: Minor tick is above the X scale axis.
- **Minor-Below**: Minor tick is below the X scale axis.
- **Number**: The number of major ticks to be displayed. The number of minor ticks will be one less than the number of major ticks.

**Y Ticks**
- **Major-Left**: Major tick is to the left of the scale's Y axis.
- **Major-Right**: Major tick is to the right of the scale's Y Axis.
- **Minor-Left**: Minor tick is to the left of the scale's Y Axis.
- **Minor-Right**: Minor tick is to the right of the scale's Y Axis.
- **Number**: The number of major ticks to be displayed. The number of minor ticks will be one less than the number of major ticks.

**Gaps**
- **X to Edge**: Sets the distance between the scale's X axis and the top or bottom edge of the object, depending on title position. This distance is a percentage of the object box's height. If the X scale is set to the middle, this has no effect.
- **X to Axis**: Sets the distance between the X title and the scale's X axis as a percentage of the object box's height.
- **Y to Edge**: Sets the distance between the scale's Y axis and either the left or right edge of the object, depending on title position. This distance is a percentage of the object box's width. If the Y scale is set to the middle, this has no effect.
- **Y to Axis**: Sets the distance between the Y title and the scale's Y axis as a percentage of the object box's width.
Font
Dialog Select to use the dialog box font.
Scaleable Select to use a scaleable font.
Bold Select for bold format.
Points Sets the font size.

Properties

Table 1.18: Scale LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale.XRange</td>
<td>Sets/returns the X range.</td>
</tr>
<tr>
<td>Scale.YRange</td>
<td>Sets/returns the Y range.</td>
</tr>
<tr>
<td>Scale.L1$</td>
<td>Sets the title of the X range.</td>
</tr>
<tr>
<td>Scale.L2$</td>
<td>Sets the title of the Y range.</td>
</tr>
</tbody>
</table>

Example Script

Select Button Up from the Script, Run After drop-down list in the Label Control dialog box. Enter the following script in the associated script box and click OK.

```labtalk
scale.xrange=x3;
scale.yrange=y3;
scale.l1$=$(scale.xrange);
scale.l2$=$(scale.yrange);
plot -c;
```

This script sets the length of the X and Y branches of the object and changes the title of each to that length. For this code to work properly, SCALE needs to be in its default settings.
1.5.9 Spin Button: SPIN

Default Name: SPIN

Introduction

A SPIN object displays a value next to up and down arrows which can be used to increment the value in preset amounts. The value is defined within certain ranges. The Max, Min, Inc (increment amount) and Value are all accessible by LabTalk.

An example of a SPIN object is shown below.

Figure 1.20: Sample Spin Object

Uses

There are many situations in which it is desirable to change the value of a variable by a fixed amount in either a positive or negative direction. For example, if you have designed a simulation of bacterial growth and you wish to control how many cycles the simulation is to be run, you could do this via LabTalk.

The increment amount and ranges can be controlled through dialog boxes or LabTalk.

To choose from a list of numbers without a fixed mathematical relationship, see “1.5.13 Value List: LIST” on page 108. You can also use this object to choose from a list of text items.

To provide a drop-down list, see “1.5.3 Combination Box: COMBOX” on page 54.

If you want to be able to select more than one item at once, see “1.5.6 List Box: LSTBOX” on page 70.

Dialog Box Control

The UIM Object Dialog Box
### Independent

<table>
<thead>
<tr>
<th>Title Bar</th>
<th>Default or user-defined title, displayed in the title bar.</th>
</tr>
</thead>
</table>

### Bkg

<table>
<thead>
<tr>
<th>On</th>
<th>Determines whether or not the object's background is visible.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>Determines whether or not the object is flat with no edge.</td>
</tr>
<tr>
<td>Raised</td>
<td>Determines whether or not the object has a raised appearance.</td>
</tr>
<tr>
<td>Edged</td>
<td>Determines whether or not the object has an edge.</td>
</tr>
<tr>
<td>Sunken</td>
<td>Determines whether or not the object has a sunken appearance.</td>
</tr>
</tbody>
</table>

### Gaps

<table>
<thead>
<tr>
<th>Border</th>
<th>Controls the distance between the outer edge of the object and the items.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>For the SPIN object, the effect is the same as Border above.</td>
</tr>
</tbody>
</table>

### Color

<table>
<thead>
<tr>
<th>Background</th>
<th>Controls the background color of the object.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Text</td>
<td>Controls the color of the title.</td>
</tr>
<tr>
<td>Label Text</td>
<td>Controls the color of the text inside the value box.</td>
</tr>
<tr>
<td>HotSpot Fore</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>HotSpot Bkg</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

### Control Layout

Not applicable.

### Text Position

<table>
<thead>
<tr>
<th>Top</th>
<th>Select to position the spin buttons above the value box.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom</td>
<td>Select to position the spin buttons below the value box.</td>
</tr>
<tr>
<td>Left</td>
<td>Select to position the spin buttons to the left of the value box.</td>
</tr>
<tr>
<td>Right</td>
<td>Select to position the spin buttons to the right of the value box.</td>
</tr>
</tbody>
</table>

### Title
### On
The title will be displayed when this check box is selected.

### Top
Determines the position of the title. The title can be above (selected) or beside the object (cleared).

### Group
Select to have the object displayed with the group style.

### Plain
This is the default option.

### Caption
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button.
Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. Note: The index number of the Title button is 0.

### Font
- **Dialog**
  Select to use the dialog box font (a scaleable font).
- **Scaleable**
  Select to use an alternate font.
- **Bold**
  Select for bold.
- **Points**
  Set font size.

### Default
- **Set**
  Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).
- **Save**
  Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an SPIN.ODO file. To return to the original defaults, delete the SPIN.ODO file.
The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

Independent

Total Items
Not applicable.

Show Name
Select to display the name shown in the text box.

Text Style

Plain
Value display text is not boxed (do not use).

Boxed
Value display text is boxed (default).

Left
Value display text is left justified.

Center
Value display text is centered (default).

Right
Value display text is right justified.

The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current
The current value for the SPIN object.

Step Size
The amount of the current value should be incremented (up arrow) or decremented (down arrow).

Max
The greatest value allowed.

Min
The smallest value allowed.

Integer
Select for integer format, clear for free format.

Digits
The number of digits before the decimal place to be displayed.

Decimal
The number of digits after the decimal place to be displayed.

Max (on the right)
Not applicable.

5, 6, ... n, ..., 10
Not applicable.

The Special Dialog Box

Not applicable.
Properties

Table 1.19: Spin LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spin.Value</td>
<td>Current value.</td>
</tr>
<tr>
<td>Spin.Max</td>
<td>Maximum value.</td>
</tr>
<tr>
<td>Spin.Min</td>
<td>Minimum value.</td>
</tr>
<tr>
<td>Spin.Inc</td>
<td>Increment value.</td>
</tr>
</tbody>
</table>

To remove the maximum and minimum bounds, set `spin.max` and `spin.min` to zero.

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group of the UIM Object dialog box. Select Button from the associated drop-down list. Click OK to close the dialog box.

Select Button Up from the Script, Run After drop-down list in the Label Control dialog box. Enter the following script in the associated script box and click OK.

```javascript
if (this.index==0)
{
    // Remove upper and lower bounds, set the increment.
    this.max=0;
    this.min=0;
    this.inc=2;
}
if (this.value==54) {type -b Now at 54}
```

Click the title button to execute the script.

If the title is clicked, `index` will be set to 0.
A similar script can be used to initialize any object.
1.5.10 Status : Status

Default Name: STATUS

Introduction

The STATUS object is a multi-functional object which allows you to store and display up to 20 numbers, strings, and logical items. These various types of data can be mixed on one object. On a worksheet you can allow the direct entry of text and numbers when a field is clicked.

The following example STATUS object displays nine items: two text strings, three numeric, and four logical.

Figure 1.21: Sample Status Object

These items may be accessed by LabTalk, by dialog box control, or via interaction with the user. In the latter method a field needs to have its edit property set on. The user then clicks and directly enters the data. If the item is a logical operator, the state will be changed by a mouse click.

The non-displayed data for each item can also be used, though only one may be displayed.

The output boxes are hotspots. When clicked, these either allow direct data entry or return an index which may be interpreted by a LabTalk script placed behind the object.
Dialog Box Control

The UIM Object Dialog Box

Independent
Title Bar
Default or user-defined title, displayed in the title bar.

Bkg
On
Determines whether or not the object's background is visible.
Flat
Determines whether or not the object is flat with no edge.
Raised
Determines whether or not the object has a raised appearance.
Edged
Determines whether or not the object has an edge.
Sunken
Determines whether or not the object has a sunken appearance.

Gaps
Border
Controls the distance between the outer edge of the object and the items.
Controls
For the STATUS object, the effect is the same as Border above.

Color
Background
Controls the background color of the object.
Title Text
Controls the color of the title.
Label Text
Controls the color of the labels.
HotSpot Fore
Controls the text and numeric value color, check and L.E.D. ON color.
HotSpot Bkg
Controls the background color in the display box or the OFF state of the L.E.D.

Control Layout
Columns
Select if you wish the items to be arranged in columns.
Rows
Select if you wish the items to be arranged in rows.
**Text Position**

**Top**
Select to position the label text above the display boxes.

**Bottom**
Select to position the label text below the display boxes.

**Left**
Select to position the label text to the left of the display boxes.

**Right**
Select to position the label text to the right of the display boxes.

**Title**

**On**
The title will be displayed when this check box is selected.

**Top**
Determines the position of the title. The title can be above (selected) or beside the object (cleared).

**Group**
Select to have the object displayed with the group style.

**Plain**
This is the default option.

**Caption**
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

**Font**

**Dialog**
Select to use the dialog box font (a scaleable font).

**Scaleable**
Select to use an alternate font.

**Bold**
Select for bold.

**Points**
Set font size.

**Default**

**Set**
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

**Save**
Click on the Save button to permanently alter the default settings for the current type of object to the
current settings. The defaults will be saved in an STATUS.ODO file. To return to the original defaults, delete the STATUS.ODO file.

**The Control Titles Dialog Box**

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box. Although it can be used to set item names for the STATUS object, all of its functions are duplicated in the Status Object dialog box.

**The Select Values Dialog Box**

Not applicable.

**The Status Object Dialog Box**

The Status Object dialog box is opened by clicking on the Special button in the UIM Object dialog box. This dialog box replaces the Control Titles and Select Values dialog boxes. It allows the entering and formatting of text and numeric data.

The Status Object dialog box allows the control of all 20 items.

Text, numeric or logical data can be stored, though for each specific item only one may be displayed. Select the desired item to be edited from the list and enter the data type (default is numeric). Format and enter your data. To store this information, either click OK or choose another item to edit.

If you wish to change the number of properties, you need to enter the desired number, then click on the item list.

**Current Property**

**Name**
The current item's name, to be displayed next to the value box. Item names can also be set in the Control Titles dialog box.

**Num**
Current item is of type numeric.

**Text**
Current item is of type text.

**Bin**
Current item is of type binary.

**List**
Contains a list of all the present items. Select the item you wish to edit.

**Justification**

**Left**
Current value display is left justified.

**Center**
Current value display is centered.

**Right**
Current value display is right justified.
Apply to All
Click on this button to apply your current text formatting to all items of this STATUS object.

Edit Control

On
Select if you wish the current item to have direct edit. This means you can directly enter text or numbers but you cannot then use this hotspot to send an index to a script. Edit On is not relevant for binary mode.

All On
Click on this button to set direct edit for all properties.

All Off
Click on this button to remove direct edit for all properties.

Data

Value
The numeric value for this item.

Text
The text string for this item.

Numeric Style

Integer
The data conversion is of integer type.

Free Form
The data conversion is free form. This means that decimal places will be displayed if needed. For more accurate control, choose Custom.

Custom
Allows you to define the number of places to be displayed after the decimal place.

Digits
The number of digits to be displayed (max is 30).

Decimal
The number of digits to be displayed after the decimal place. Maximum is 17, although the accuracy is also dependent on the number of digits before the decimal place due to internal storage limitations.

Bin Style

Check
Current binary item is of type Check.

L.E.D.
Current binary item is of type L.E.D.

Text Style

Number of
The number of characters to be displayed

Characters
(maximum is 30).

Apply Width to All
If the current style is numeric, then the Digits field is used to set the width of all items.
If the current style is text, then the Number of Characters field sets the width.

**Independent**

**Number of properties** The number of items you wish this status object to store.

**Properties**

Table 1.20: Status LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status.V&lt;n&gt;</td>
<td>Sets/Returns the value stored in the (n)th item of the status object.</td>
</tr>
<tr>
<td>Status.V&lt;n&gt;$</td>
<td>Sets/Returns the text string stored in the (n)th item of the status object.</td>
</tr>
<tr>
<td>Status.ItemName</td>
<td>Sets/Returns the value stored in the ItemName item.</td>
</tr>
<tr>
<td>Status.ItemName$</td>
<td>Sets/Returns the text string stored in the ItemName item.</td>
</tr>
<tr>
<td>Status.L&lt;n&gt;$</td>
<td>Sets the (n)th item name. Item names are displayed next to boxes. The default name is item(n).</td>
</tr>
<tr>
<td>Status.D&lt;n&gt;</td>
<td>Sets/Returns the number of digits for the (n)th value.</td>
</tr>
<tr>
<td>Status.C&lt;n&gt;</td>
<td>Sets/Returns the number of characters for the (n)th value.</td>
</tr>
<tr>
<td>Status.T&lt;n&gt;</td>
<td>Sets/Returns the type of the (n)th value (numeric, text, binary check or binary L.E.D.).</td>
</tr>
<tr>
<td>Status.A&lt;n&gt;</td>
<td>Sets/Returns the direct edit item for the (n)th value.</td>
</tr>
<tr>
<td>Status.N&lt;n&gt;$</td>
<td>Sets/Returns the control name for the (n)th item.</td>
</tr>
<tr>
<td>Status.Numitems</td>
<td>Controls the number of status boxes to be displayed.</td>
</tr>
<tr>
<td>Status.Resizenow</td>
<td>Set to 1 to immediately rescale the object to the ideal height for the number of items and control gap setting.</td>
</tr>
</tbody>
</table>
**Status.Vn$**

Allows access to the $n^{th}$ text string stored in the STATUS object.

To set the text string for fourth item use:

```plaintext
Status.V4$=The Fourth Item
```

To read a text string stored in the third item use:

```plaintext
%a=Status.V3$
%a=
```

The text strings are limited to 50 characters.

*For large strings use the status.cn property to change the item box width.*

**Status.ItemName$**

**Status.ItemName** offers an alternative way of accessing text strings stored in items.

To read the fifth item use:

```plaintext
%A=Status.item5$
%A=
```

This is equivalent to:

```plaintext
%A= Status.V5$
```

If you have changed the default item names in the Status Object dialog box or with the status.Ln$ property, use the name you created to access the values. For example, `%A=status.NumPts`.

**Status.Ln$**

Allows access to the name of the $n^{th}$ item, as displayed next to its value box. For example:

```plaintext
Status.L5$=Trial#;
```

**Status.Dn**

This property sets/gets the number of digits set for the $n^{th}$ value. This is only meaningful for numerical values.

**Status.Cn**

This property sets/gets the number of characters set for the $n^{th}$ value. This is only meaningful for text values.

**Status.Tn**

This property sets/gets the type of the $n^{th}$ value. 0 is numerical, 1 is text, 2 is binary check display, and 3 is binary LED display.
**Status.A{n**
This property sets/get the direct edit status of the \(n\)th item. If an item is directly editable, the user can directly enter text or numbers but cannot then use this hotspot to send an index to a script. Edit on is not relevant for binary mode. When this property is 0, the default, the value cannot be directly edited. 1 means that the field is editable.

**Status.N{n}$**
This is used to change the control name for the \(n\)th item. This is only used when interfacing a tool with a DLL or other Origin object.

**Status.Resizenow**
This property immediately rescales the height of the status object. It will not continue to automatically rescale, so must be called each time. Width is not affected. This property is only effective in column layout with text positioned to the left or right. To rescale, set Status.Resizenow=1.

For example, this property could be part of a script to automatically change the status object if new columns are added to the associated worksheet.

```
Status.Auto=0; // Turns off the auto redraw.
Status.NumItems=%(Q events,@#); // Sets the # of items to the number of columns in
// the "Q events" worksheet.
Status.Auto=1; // Will redraw at next event.
Status.Resizenow=1; // Alter height to accommodate new items.
```

**Status.Name, Status.Numitems**
Same as for the CHECK object.

**Example Scripts**
Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```bash
switch (index) {
  case 1:
    GetFileName c:\data\gb_dat*.*;
    open -w %B%A;
    break;
```
case 2:
    GetFileName c:\data\ct_dat*.*;
    open -w %B%A;
    break;

case 3:
    GetFileName c:\data\mm_dat*.*;
    open -w %B%A;
    break;

default:
    type -b No information is available at this time;
    break;
}

The next script uses the **Event** property to sense when an item has been clicked and then unclicked. In a Status object with editable fields, the user may have altered the value. This script would alter the active column properties based on the Status object values. This script must be entered in the Label Control dialog box and All Events should be selected from the Script, Run After drop-down list.

```javascript
if (this.Event==20)
{
    switch (this.index)
    {
        case 1: // Update column format based on this value.
            wks.col.format=this.V1;
            break;
        case 2: // Set column to X,Y,Error Bar, etc.
            wks.col.type=this.V2;
            break;
        case 3: // Change column label to string in item.
            wks.col.name$=this.V3$;
            break;
    }
}
```
1.5.11 Strip Chart: STRIP

Default Name: STRIP

Introduction

A Strip chart’s value can be changed using LabTalk or the chart’s own spin buttons.

This object provides a continuously scrolling strip chart which presents its value property over time. A strip chart object with a range of -10 to 10, with spin buttons activated, is displayed below.

Figure 1.22: Sample Strip Chart Object

Uses

Like its physical laboratory namesake, the strip chart is ideal for the display of data when a ranged value display is needed and a previous history is also required. How much of a past history is displayed is controlled by the user via LabTalk or dialog boxes.

For more information on this project, see page 37.

The UIM.OPJ project uses two strip charts to display real-time data. To see the script which updates the strip charts, open UIM.OPJ and ALT+double-click on the clock.
Dialog Box Control

The UIM Object Dialog Box

Independent
Title
User-defined title, displayed in the title bar.

Bkg
On
Determines whether or not the object's background is visible.
Flat
Determines whether or not the object is flat with no edge.
Raised
Determines whether or not the object has a raised appearance.
Edged
Determines whether or not the object has an edge.
Sunken
Determines whether or not the object has a sunken appearance.

Gaps
Border
Controls the distance between the outer edge of the object and the items.
Control
Same as Border above. Border + Control is the total distance between the edge of the object and items within.

Color
Background
Controls the background color of the object.
Title Text
Controls the color of the title.
Label Text
Controls the color of the labels.
HotSpot Fore
Controls the color of the value text.
HotSpot Bkg
Controls the background color of the value text box.

Control Layout
Not applicable.

Text Position
Not applicable.
Title

On
The title will be displayed when this check box is selected.

Top
Determines the position of the title. The title can be above (selected) or beside the object (cleared).

Group
Select to have the object displayed with the group style.

Plain
This is the default option.

Caption
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog
Select to use the dialog box font (a scaleable font).

Scaleable
Select to use an alternate font.

Bold
Select for bold.

Points
Set font size.

Default

Set
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an STRIP.ODO file. To return to the original defaults, delete the STRIP.ODO file.

The Control Titles Dialog Box

Not applicable.
The Select Values Dialog Box

The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent

Current
The current value for the STRIP object.

Max
The greatest value allowed.

Min
The smallest value allowed.

Width
The amount of past history of values displayed in the strip chart, in seconds.

Integer
Select for integer format. Clear for free format.

Digits
Designate the number of digits before the decimal point when displaying the value text.

Decimal
Designate the number of digits after the decimal point when displaying the value text.

Max (on the right)
Not applicable.

4, 5, ..., n, ..., 10
Not applicable.

The Indicator Object Dialog Box

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Layout

Tick Size
The size of the tick as a percentage of the text size.

Right Gap
The strip chart size as a percentage of the object box's width.

Bar Size
The width of the bar as a percentage of the object's height.

Txt Move
The distance between the values text and the bottom edge of the object as a percentage of the height of the object.

Ticks

Digits
The number of digits before the decimal point when displaying the tick labels.

Decimal
The number of digits after the decimal point when displaying the tick labels.

Number of ticks
The number of ticks to be placed on the object.
Ticks Label Style

- **Plain**: Tick labels are plain styled.
- **Boxed**: Tick labels are boxed.
- **Left**: Tick labels are left justified.
- **Centered**: Tick labels are centered.
- **Right**: Tick labels are right justified.

Color

- **Num Levels**: The number of levels to be used.
- **Bkg**: The color behind the bar.
- **1-Color List**: The color to be used for the lower limit up to the first limit.
- **2-Color List**: The color to be used for ranges from: min to ((max-min) /1000) x Level start value
- **2-Number Box**: Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Spin Button

- **On**: Select to enable the spin buttons.
- **Step Size**: The amount the present value will be incremented or decremented when a spin button arrow is pressed.

*The Strip Chart Dialog Box*

The Strip Chart Object dialog box is opened by clicking on the More button in the Indicator Object dialog box.

Color

- **Buffer Size**: Not applicable.
- **Bkg**: The background color of the strip chart.
Properties

Table 1.21: Strip Chart LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip.Value</td>
<td>Current value displayed.</td>
</tr>
<tr>
<td>Strip.Max</td>
<td>Maximum scale value.</td>
</tr>
<tr>
<td>Strip.Min</td>
<td>Minimum scale value.</td>
</tr>
<tr>
<td>Strip.Inc</td>
<td>Increment value.</td>
</tr>
<tr>
<td>Strip.Time</td>
<td>Time axis range in seconds.</td>
</tr>
</tbody>
</table>

Example Script

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK. The script will run when a user clicks the strip chart value box.

```labtalk
// User enters a new time axis range in a dialog box.
getnumber -s (Time Axis Range) NewTime;
this.time=NewTime;
this.max=15; this.min=0;
this.draw(); // Redraw the object to show changes.
// Give the chart 50 random values.
repeat 50
{
    this.value=rnd()*10;
}
```

This script prompts the user to enter a time axis range. It then sets the time and value range, redraws the object, and feeds the object 50 random values.
1.5.12 Text Button: TBUTN

Default Name: TBUTN

Introduction

The TBUTN object provides multiple labeled buttons which return an index value when pressed. Use this value and a simple LabTalk script as a menu system or to perform a group of like (or dislike) operations. An example of a TBUTN object with four labeled buttons is shown below. By default, the buttons are not labeled. They can be labeled in the Control Titles dialog box or with a LabTalk script.

Figure 1.23: Sample Text Button Object

Dialog Box Control

The UIM Object Dialog Box

Independent

Title Bar Default or user-defined title, displayed in the title bar.

Bkg

On Determines whether or not the object's background is visible.

Flat Determines whether or not the object is flat with no edge.

Raised Determines whether or not the object has a raised appearance.

Edged Determines whether or not the object has an edge.

Sunken Determines whether or not the object has a sunken appearance.
Gaps
Border Controls the distance between the outer edge of the object and the items.
Control Controls the distance between the text buttons.

Color
Background Controls the background color of the object.
Title Text Controls the color of the title.
Label Text Controls the color of the text on the text buttons.
HotSpot Fore Not applicable.
HotSpot Bkg Controls the background color of the text button.

Control Layout
Not applicable.

Text Position
Not applicable.

Title
On The title will be displayed when this box is selected.
Top Determines the position of the title. The title can be above (selected) or beside the object (cleared).
Group Select to have the object displayed with the group style.
Plain This is the default option.
Caption Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font
Dialog Select to use the dialog box font (a scaleable font).
Scaleable Select to use an alternate font.
Bold Select for bold.
Points

Set font size.

Default

Set
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an TBUTN.ODO file. To return to the original defaults, delete the TBUTN.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.

This dialog box determines the text which appears on the buttons of the TBUTN object. The section Text Styles refers to this text.

Independent

Total items:
Sets the number of buttons.

Show Name
Not applicable.

Text Style

Plain
Button text is not boxed (default).

Boxed
Button text is boxed.

Left
Button text is left justified.

Center
Button text is centered (default).

Right
Button text is right justified.
To use the Control Titles Dialog Box:

1) Type the desired number of buttons in the Total items text box.

2) Click in the space within the large text box of the button you wish to name.

3) Enter the desired text.

4) Repeat until you have the desired names for each item.

5) Select the desired text style from the Label Text Style group.

6) Click OK to return to the UIM Object dialog box.

The Bitmap Buttons Control Dialog Box

The Bitmap Buttons Control box is opened by clicking on the Special button in the UIM Object dialog box.

Independent

Buttons per Column Sets the number of text buttons per column.
Square Check for square text buttons.
Script Editable Not applicable.

Scaling

Not applicable.

Display Mode

Push Button Display text as buttons. Selection is restricted to one button at a time.
Radio Button Display text as buttons. Selection is restricted to one button at a time. Button appears depressed when selected. Display the selected button using the Hotspot Fore drop down list selection in the Color group of the UIM Object dialog box.
Check Button Display text as buttons. Button selection is not restricted. Display the selected button(s) using the Hotspot Fore drop down list selection in the Color group of the UIM Object dialog box.
Animation Display text as buttons. Only one button is visible at a time. Text selection increments each time the button is clicked.
Radio Page Display text as tabs. Selection is restricted to one tab at a time.
Properties

Table 1.22: Text Button LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TButn.L$n$</td>
<td>Sets/Returns the text displayed on the $n$th button.</td>
</tr>
<tr>
<td>TButn.Numitems</td>
<td>Sets/Returns the number of Text buttons to be displayed.</td>
</tr>
</tbody>
</table>

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group. Select Button from the Caption drop-down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```labtalk
if (this.index==0)
{
    getnumber -$s (Number of Buttons) num;
    // Open a dialog box to choose # of buttons.
    this.numitems=$(num);
    // Set the new number of buttons.
    loop(i, 1, num)
    {
        getstring (Enter some text) (Name$(i)) Text;
        // Make the assignment to the buttons.
        this.l$(i)$=%b;
    }
    // Update the object.
    this.draw();
}
if (index>0)
{
    %A=this.L$(index)$; // Put text into %A.
    type -$b Button # $(index), %A;
}
```

If the title is clicked, open a dialog box for the user to specify the number of text buttons they want. Then allow them to enter a new label for each button.

If a button is clicked, type its number and text to an attention box.
1.5.13 Value List: LIST

Default Name: LIST

Introduction

The LIST object allows you to select and display one choice from a list of numbers or words. This choice can be controlled from LabTalk or by using spin arrows to move up and down the list. An example of a LIST object is shown below.

Figure 1.24: Sample List Object

Uses

The List object allows a user to choose one option from a list of numbers or text strings. Like the SPIN object, the LIST controls the values of a single variable and so is ideally suited to single variable control situations. It differs from the SPIN object in that the user chooses from a list of options, so there does not need to be a fixed mathematical relationship between the options. For example, the choices for states could be -13, 7, 92, 11, 10202, and 3, as listed in the Select Values dialog box. The LIST object could be used to manipulate a variable in a simulation model, to show situations in which interesting events occur. The LIST object can also allow the user to choose from a list of text options as listed in the Control Titles dialog box.

To provide the user with a drop-down list, “1.5.3 Combination Box: COMBOX” on page 54. If you want the user to be able to select more than one item at once, see “1.5.6 List Box: LSTBOX” on page 70 or “1.5.2 Check Box: CHECK” on page 46.

Dialog Box Control

The UIM Object Dialog Box

Independent
<table>
<thead>
<tr>
<th><strong>Title Bar</strong></th>
<th>Default or user-defined title, displayed in the title bar.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bkg</strong></td>
<td></td>
</tr>
<tr>
<td>On</td>
<td>Determines whether or not the object's background is visible.</td>
</tr>
<tr>
<td>Flat</td>
<td>Determines whether or not the object is flat with no edge.</td>
</tr>
<tr>
<td>Raised</td>
<td>Determines whether or not the object has a raised appearance.</td>
</tr>
<tr>
<td>Edged</td>
<td>Determines whether or not the object has an edge.</td>
</tr>
<tr>
<td>Sunken</td>
<td>Determines whether or not the object has a sunken appearance.</td>
</tr>
<tr>
<td><strong>Gaps</strong></td>
<td></td>
</tr>
<tr>
<td>Border</td>
<td>Controls the distance between the outer edge of the object and the items.</td>
</tr>
<tr>
<td>Controls</td>
<td>For the STATUS object, the effect is the same as Border above.</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td></td>
</tr>
<tr>
<td>Background</td>
<td>Controls the background color of the object.</td>
</tr>
<tr>
<td>Title Text</td>
<td>Controls the color of the title.</td>
</tr>
<tr>
<td>Label Text</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>HotSpot Fore</td>
<td>Controls the color of the Name and Value texts.</td>
</tr>
<tr>
<td>HotSpot Bkg</td>
<td>Controls the background color of the Name and Value boxes.</td>
</tr>
<tr>
<td><strong>Control Layout</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable.</td>
<td></td>
</tr>
<tr>
<td><strong>Text Position</strong></td>
<td></td>
</tr>
<tr>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>
Title

On  The title will be displayed when this check box is selected.

Top  Determines the position of the title. The title can be above (selected) or beside the object (cleared).

Group  Select to have the object displayed with the group style.

Plain  This is the default option.

Caption  Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font

Dialog  Select to use the dialog box font (a scaleable font).

Scaleable  Select to use an alternate font.

Bold  Select for bold.

Points  Set font size.

Default

Set  Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save  Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in an LIST.ODO file. To return to the original defaults, delete the LIST.ODO file.

The Control Titles Dialog Box

The Control Titles dialog box is opened by clicking on the Titles button in the UIM Object dialog box.
Independent
Total items: Controls the number of strings to be stored.
Show Name Select to display the name shown in the Special dialog box.

Text Style
Plain Value display text is not boxed (do not use).
Boxed Value display text is boxed (default).
Left Value display text is left justified.
Center Value display text is centered (default).
Right Value display text is right justified.

The Select Values Dialog Box
The Select Values dialog box is selected by clicking on the Values button in the UIM Object dialog box.

Independent
Integer Select for integer format, clear for free format.
Digits The number of digits before the decimal place to be displayed.
Decimal The number of digits after the decimal place to be displayed.
Max Controls the number of values in the list.
1, 2, ..., n, ..., 10 The current value of the nth value in the value list.

The List Object Dialog Box
The List Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Independent
Object Texts Select to use the strings in the Control Titles dialog box.
Object Values Select to use the numbers in the Select Values dialog box.
Spin Arrows Select to use the spin arrows.
Object Name: Controls the name displayed when Show Name is enabled in the Control Titles dialog box.
Properties

Table 1.23: List LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>List.Vn</td>
<td>Sets/Returns the $n^{th}$ selectable value in the Control Values list.</td>
</tr>
<tr>
<td>List.Ln$</td>
<td>Sets/Returns the $n^{th}$ selectable text in the Control Values list.</td>
</tr>
<tr>
<td>List.text$</td>
<td>Set/Returns the Select Values number at the position of the text in the Control Titles.</td>
</tr>
<tr>
<td>List.Choice</td>
<td>Sets/Returns the Current position in the list.</td>
</tr>
<tr>
<td>List.Numitems</td>
<td>Sets/Returns the number of properties of the current display type.</td>
</tr>
</tbody>
</table>

Example Script

Double-click on the object after creating it, and select the Caption radio button in the Title group. Select Button from the Caption drop down list. Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

Prompt the user for new values if the title is clicked.

```labtalk
if (this.index==0){
    loop (i,1,$(list.numitems)) {
        getnumber -s Item number $(i) this.v$(i); 
        type -b The values list is changed!
        this.draw(); // Update the displayed object
    }
}
```
1.5.14 Vertical Bar: VBAR

Default Name: VBAR

Introduction

The VBAR object automatically displays its value property. The VBAR object displays the current value of its value property in a value box and on a Vertical Bar. The value can be changed using LabTalk or VBAR's own spin buttons.

A VBAR object with a range of -10 to 10 with spin buttons activated is shown below.

Figure 1.25: Sample Vertical Bar Object

![Vertical Bar Object](image)

Uses

VBAR provides user-specified level color coding. There are many times when it is important to monitor the status of a specific variable or data input. VBAR provides a visual way of doing this.

The VBAR can be used in any application which needs a non-graphed graphical output.

VBAR is one of 4 graphical display objects, all of which are well suited to real time display of value data. The others are Horizontal Bar, Gauge, and Strip Chart.

Dialog Box Control

The UIM Object Dialog Box

Independent
<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>User-defined title, displayed in the title bar.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bkg</strong></td>
<td>Determines whether or not the object's background is visible.</td>
</tr>
<tr>
<td><strong>On</strong></td>
<td>Determines whether or not the object is flat with no edge.</td>
</tr>
<tr>
<td><strong>Raised</strong></td>
<td>Determines whether or not the object has a raised appearance.</td>
</tr>
<tr>
<td><strong>Edged</strong></td>
<td>Determines whether or not the object has an edge.</td>
</tr>
<tr>
<td><strong>Sunken</strong></td>
<td>Determines whether or not the object has a sunken appearance.</td>
</tr>
<tr>
<td><strong>Gaps</strong></td>
<td>Controls the distance between the outer edge of the object and the items.</td>
</tr>
<tr>
<td><strong>Border</strong></td>
<td>Same as Border above. Border + Control is the total distance between the edge of the object and items within.</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Controls the background color of the object.</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>Controls the color of the title.</td>
</tr>
<tr>
<td><strong>Title Text</strong></td>
<td>Controls the color of the labels.</td>
</tr>
<tr>
<td><strong>Label Text</strong></td>
<td>Controls the check color the value text.</td>
</tr>
<tr>
<td><strong>HotSpot Fore</strong></td>
<td>Controls the background color of the value text.</td>
</tr>
<tr>
<td><strong>Control Layout</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Columns</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Rows</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Text Position</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Top</strong></td>
<td>The title will be displayed when this check box is selected.</td>
</tr>
<tr>
<td><strong>Bottom</strong></td>
<td>Determines the position of the title. The title can be above (selected) or beside the object (cleared).</td>
</tr>
</tbody>
</table>
Group
Select to have the object displayed with the group style.

Plain
This is the default option.

Caption
Selecting Caption gives you the following options: Sunken, Risen, Flat, Window, and Button. Choosing one of the first three options allows you to select a color for the background of the title. To do so, clear the Transparent Background check box and select a color from the drop-down list. Selecting the Transparent Background check box sets the color to the current background color. Selecting Window from the Caption drop-down list sets the title as a Windows title bar. Selecting Button sets the title to act as a button. The index number of the Title button is 0.

Font
Select to use the dialog box font (a scaleable font).

Scaleable
Select to use an alternate font.

Bold
Select for bold.

Points
Set font size.

Default
Click on the Set button to alter the default settings for the current type of object to the current settings (for this Origin session only).

Save
Click on the Save button to permanently alter the default settings for the current type of object to the current settings. The defaults will be saved in a VBAR.ODO file. To return to the original defaults, delete the VBAR.ODO file.

The Control Titles Dialog Box
Not applicable.

The Select Values Dialog Box
The Select Values dialog box is opened by clicking on the Values button in the UIM Object dialog box.

Independent
The current value for the VBAR object.

Current
The greatest value allowed.

Max
The smallest value allowed.

Min
Select for integer format. Clear for free format.

Integer
Digits  Designate the number of digits before the decimal point when displaying the value text.

Decimal  Designate the number of digits after the decimal point when displaying the value text.

Max (check box)  Not applicable.

4, 5, ... n, ..., 10  Not applicable.

The Indicator Object Dialog Box

The Indicator Object dialog box is opened by clicking on the Special button in the UIM Object dialog box.

Layout

Tick Size  The size of the tick as a percentage of the text size.

Right Gap  The distance between the bar and the right edge of the object, as a percentage of the object's width. This is needed when the spin button option is selected.

Bar Size  The width of the bar as a percentage of the object's height.

Txt Move  The distance between the values text and the bottom edge of the object as a percentage of the height of the object.

Ticks

Digits  The number of digits before the decimal point when displaying the tick labels.

Decimal  The number of digits after the decimal point when displaying the tick labels.

Number of ticks  The number of ticks to be placed on the object.
Ticks Label Style
- **Plain**: Tick labels are plain styled.
- **Boxed**: Tick labels are boxed.
- **Left**: Tick labels are left justified.
- **Centered**: Tick labels are centered.
- **Right**: Tick labels are right justified.

Color
- **Num Levels**: The number of levels to be used.
- **Bkg**: The color behind the bar.
- **1-Color List**: The color to be used for the lower limit up to the first limit.
- **2-Color List**: The color to be used for ranges from: \( \min \to ((\max - \min) /1000) \times \text{Level start value} \)
- **2-Number Box**: Level Start value, which must be: greater than the previous value, less than following value, or between 0 and 1000.

Spin Button
- **On**: Select to enable the spin buttons.
- **Step Size**: The amount the present value will be incremented or decremented when a spin button is pressed.

*The More Dialog Box*
Not applicable.

Properties

Table 1.24: Vertical Bar LabTalk Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBar.Value</td>
<td>Current value.</td>
</tr>
<tr>
<td>VBar.Max</td>
<td>Maximum scale value.</td>
</tr>
<tr>
<td>VBar.Min</td>
<td>Minimum scale value.</td>
</tr>
<tr>
<td>VBar.Inc</td>
<td>Increment value.</td>
</tr>
</tbody>
</table>
**Example Script**

Enter the following script and select Button Up from the Script, Run After drop-down list in the Label Control dialog box and click OK.

```javascript
this.max=10;
this.min=0;
this.draw(); // Update the displayed object
repeat 50
{
    this.value=rnd()*10;
}
```

Click on the value display box to run the script.

*This script will set the VBAR’s range and simulate sending 50 data points to the object when the value window is clicked.*