

Buttons and Check Boxes

"Button", "Check Box", and "Radio Button" types are set up in the same way as "Static" non-text controls (see previous topic), making similar use of STR#, PICT, ICON, SICN, cicon, PAT, PAT#, CURS, acur, and clut resources. They differ, however, in the role played by the control's Min, Max, and Value.

Control States

Check boxes and radio buttons can be in any one of four distinct control "states":

1. unchecked, unhilited
2. unchecked, hilited (when clicked)
3. checked, hilited (when clicked)
4. checked, unhilited

Buttons can only be in states 1 & 2 (never checked).

For buttons, check boxes, and radio buttons that are not linked to resource lists, the control Min should be set to 0, Max to 1, and Value to 0 (unchecked) or 1 (checked). When such controls are clicked, BaseCt then hilites the control by inverting its contents, and ViewBV (the view driver) checks or unchecks check boxes and radio buttons (again by inverting contents) after the mouse is released.

For buttons, check boxes, and radio buttons linked to true resource lists (SICN, PAT#, acur, or clut) set Min = 0, Max = index of resource to display, and Value = 0 (unchecked) or Value = Max (checked) to have hiliting/checking displayed by inversion.

Alternatively, controls linked to resource lists, or a range of resources, or STR# lists containing a list of resources can use different resources to display each control state. To do this, set the control's Min to a value corresponding to the unchecked state, and Max to a value corresponding to the checked state (or to a button's hilited state). If the Min and Max differ by more than 1, and the control is not a button, then intermediate values are also used for the hilite states.

For example, if a check box control is linked to an SICN small icon list, with Min = 4 and Max = 7, then the icons displayed for each state would be:

1. SICN #4 = unchecked, unhilited
2. SICN #5 = unchecked, hilited
3. SICN #6 = checked, hilited
4. SICN #7 = checked, unhilited

Alternatively, if Min = 4 and Max = 5, then,

1. SICN #4 = unchecked, unhilited
4. SICN #5 = checked, unhilited

and inversion would be used to display hilite states. This scheme provides a very simple way to create custom button, check box, and radio controls without requiring a single line of code to be written.

Display Note: If the resource type linked to a check box or radio button is solid (i.e., completely replaces itself when drawn), then you can reduce "flashing" during checking and hiliting by making the control transparent (i.e., don't check "Draw Solid Body" in Style menu). The "STR# 3D Chk Box", for example, is transparent since it is based on cicon resources that replace each other when drawn. The "SICN Chk Box", however, was given a solid body since SICNs do not completely overwrite one another when the checked or hilite state is changed.

Options

In addition to bit values 16, 32 and 64 discussed in the previous topic, bit value 128 can be added to the VarCode of button-type controls to indicate that (if "Return On Hit" is checked) a click in the button should continuously return messages to the program while the button remains pressed (vs. sending one message when the button is released). The example FCTL "SICN Arrows" illustrates such buttons and is also used in the "vDemoXY" example program.

Data Linking

Check box and radio button controls can be linked to program variables (see "Data Links" in the ViewIt Guide for more info on data linking). Data links are based on the relationship between the current control Value and the control Min & Max. If Value = Min, then 0 is returned by GetVal. If Value = Max, then 1 is returned by GetVal. Similarly, if 0 is passed to BaseCt by SetVal, then Value is set to Min. If 1 is passed by SetVal, then Value is set to Max. What this means is that a program always "sees" check boxes and

radio buttons as having "values" of zero or one, and never needs to worry about how the control's Min, Max, and Value are being used.