Interaction

Interaction refers to the user's communication with the computer. The user and computer communicate through the use of various controls. Choosing a control is not just a matter of following a recipe. Selecting the right control means the designer needs to juggle industry standards, corporate standards, and user's needs.

Contents

Command Buttons

Command buttons are the primary way that users take action within dialog boxes. Use command buttons to convey to users the major actions of a particular box. Users should be able to glance at a dialog box and know what to do there and what to do next, based on the names and placement of the command buttons.

Use command buttons only for frequent or critical immediate actions

Use command buttons when users are going to take immediate action that is frequent or critical (see Figure 9.1). Command buttons act as reminders of what actions can and should be taken. Limit command buttons to a maximum of six on a window. Command button actions can also appear as menu items. If an action is not frequent and not critical, place it on a drop-down menu.

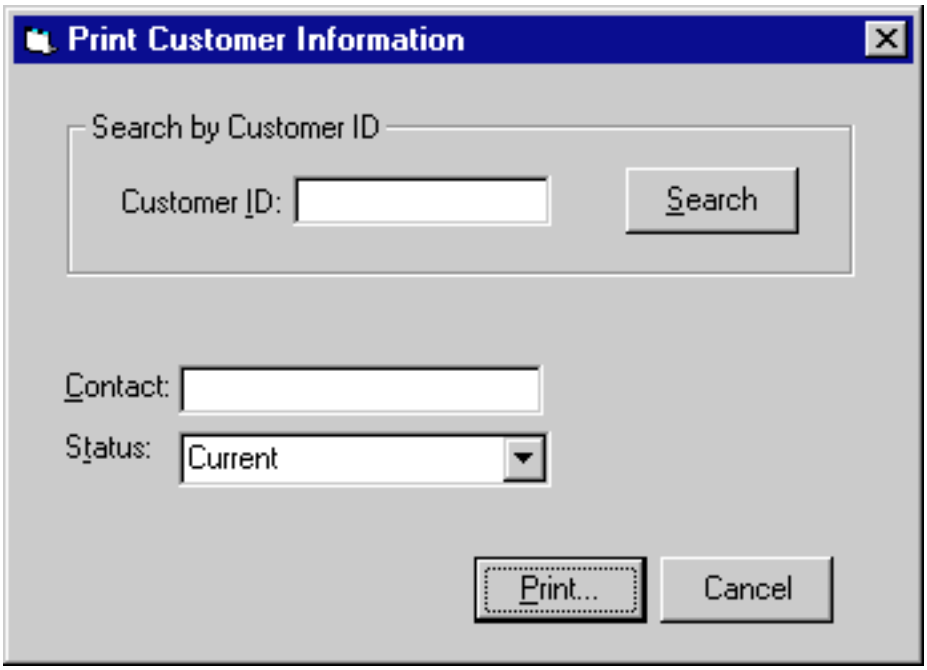

Figure 9.1. Command buttons are for frequent or critical actions.

Label buttons carefully

Make sure the label you use for a command button is clear and concise. For example, use Print Setup, not More. Use labels with multiple words when they are needed to clearly convey the meaning of the button, for example, use Print Current Orders, not Current. However, be concise and omit unnecessary words. Follow book title capitalization rules—capitalize the first letter of all major words.

Label buttons consistently

Choose specific labels for certain functions and use these labels throughout an application and from one application to another. For example, use List to display a table of choices, rather than sometimes List and sometimes Search.

Use industry standards for labels

Some labels have become standard across graphical user interfaces. Use these standard labels if you are performing the functions in Table 9.1.

Label	Action	Keyboard Equivalent
OK	Makes changes and closes the window	the Enter key
Cancel	Does not make changes and closes the window	the Escape key
Close	Closes the window when changes can't be made or canceled	C
Reset	Resets to defaults, leaves window open	R
Apply	Makes changes, leaves window open	A
Help	Opens online help	H

Table 9.1 Standard labels for frequently used actions.

Consider replacing the OK button with a specific term

If the OK command button results in a specific function such as printing or deleting, consider using the specific term instead of the generic OK as shown in Figure 9.2.

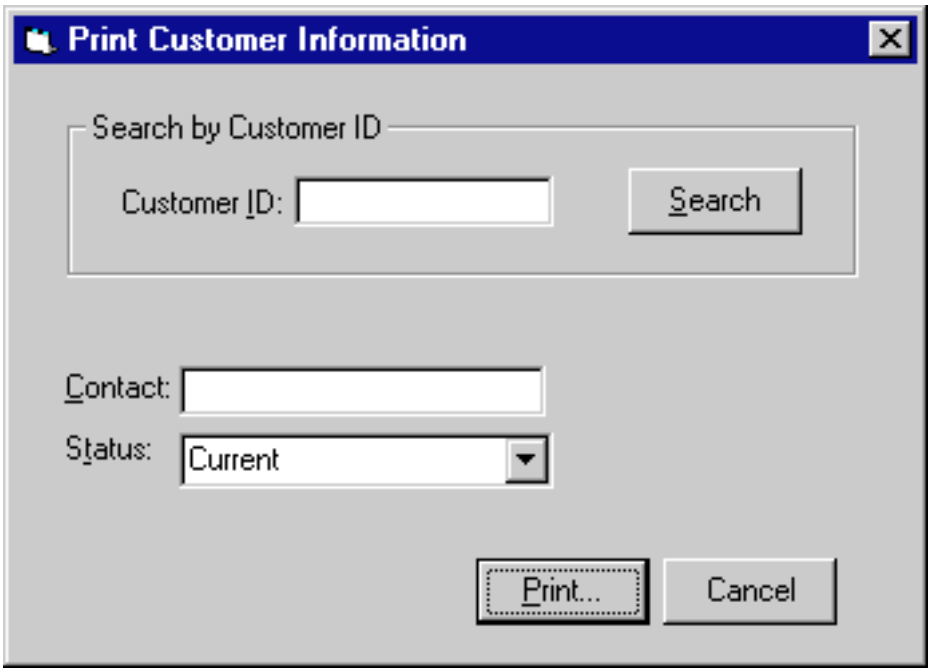

Figure 9.2 Print replaces a generic OK.

Size buttons relative to each other

If the length of text for a series of command buttons in a dialog box is similar, make all the buttons in the dialog box the size of the largest button as shown in Figure 9.3.

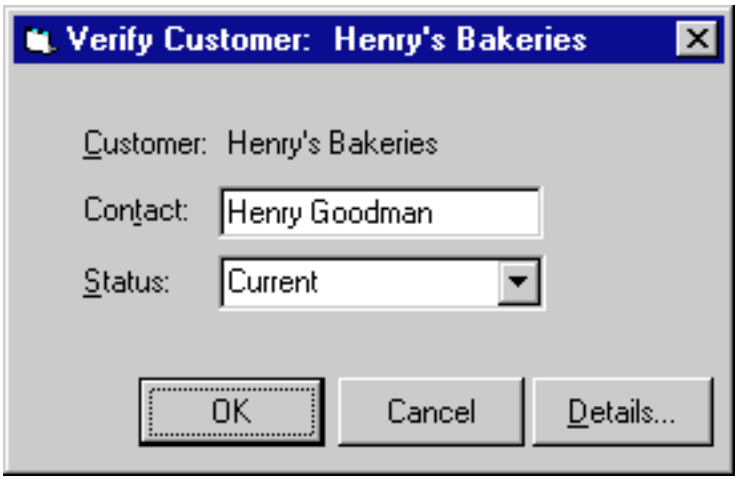

Figure 9.3 Buttons with similar length of text are the size of the largest button.

If the text length for a series of command buttons in a dialog box varies, use two button sizes—one for shorter text and another for longer text, as shown in Figure 9.4. This allows you the button size you need while avoiding too many different sizes. Do not use more than two different button sizes in a dialog box.

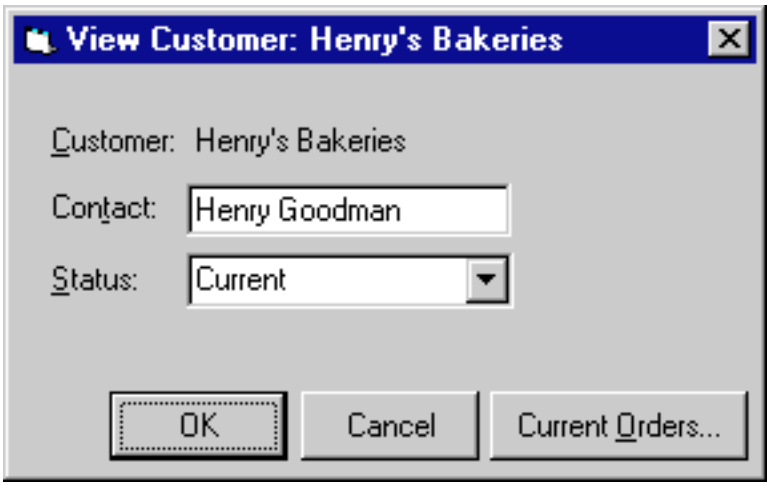

Figure 9.4 Current Orders is significantly longer than the other text of the other two buttons, so a different size button is used.

Separate buttons from the rest of the dialog box

Use white space to set off the buttons that pertain to the entire dialog box, as shown in Figure 9.5. Don't crowd buttons with the rest of the controls in the dialog box, as shown in Figure 9.6.

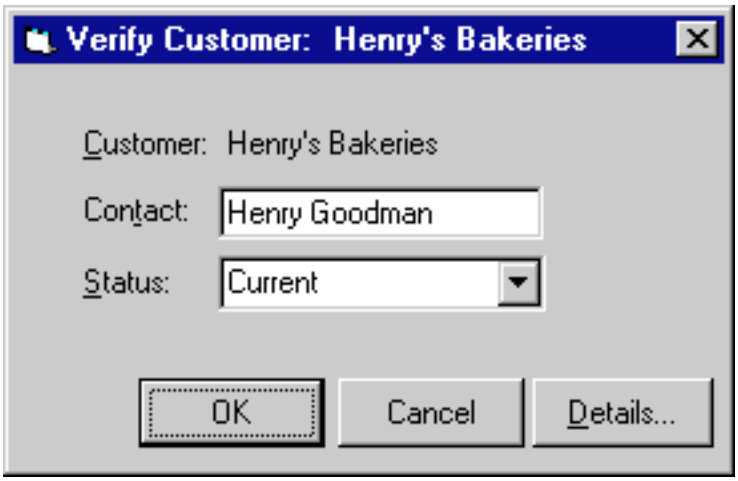

Figure 9.5 White space is used to set off buttons for the dialog box.

Figure 9.6 Don't crowd buttons with the rest of the controls in the dialog box.

Group buttons together

If you have more than three buttons, use white space to group buttons together (see Figure 9.7). Group buttons to identify:

- Buttons with similar functions
- Buttons to leave the window (OK, Cancel)
- Destructive actions (Delete)

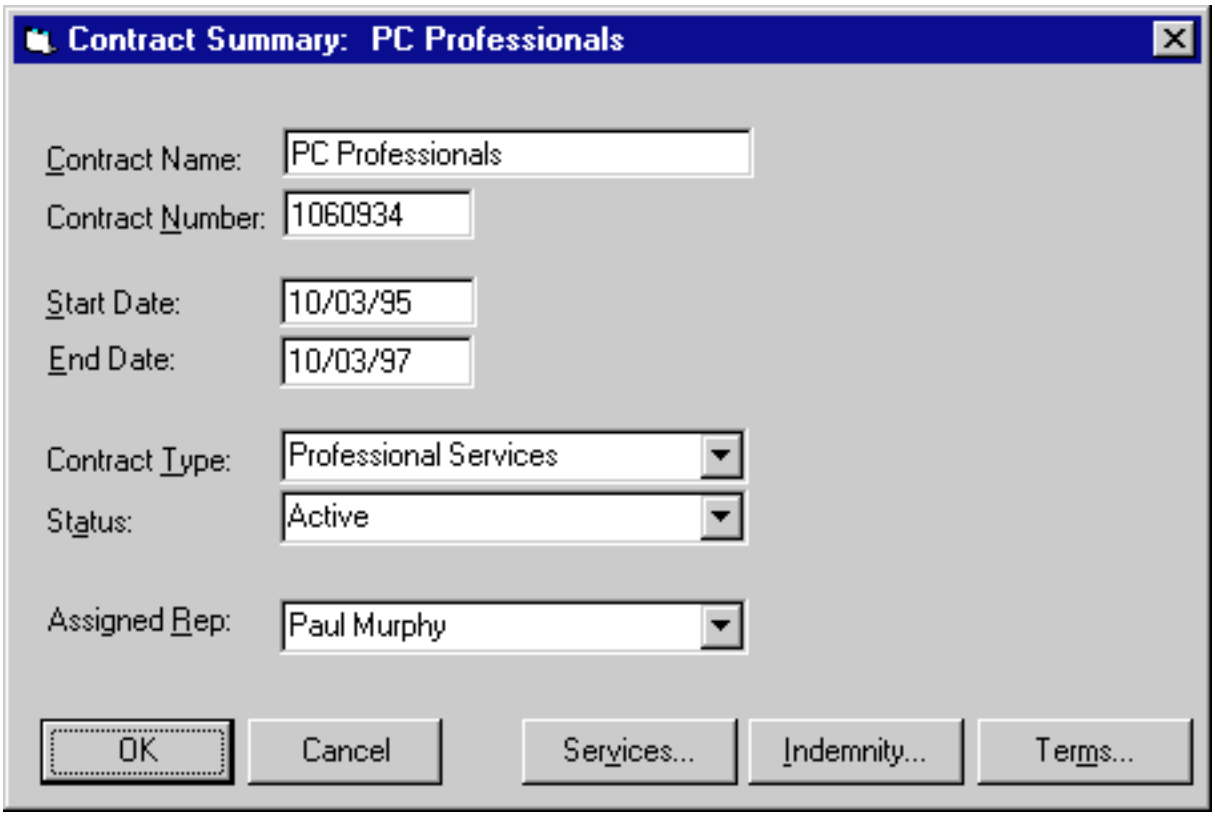

Figure 9.7 Buttons with similar functions grouped by using white space.

Place buttons consistently

Use one of these locations for buttons:

- Top right of the window (Figures 9.8, 9.9, 9.10, and 9.11)
- Bottom right of the window for Windows 95 (Figure 9.12)
- Centered on the bottom for Windows 3.1 and Motif (Figures 9.13 and 9.14)
- Bottom left for OS/2 (Figure 9.15)

Do not place buttons in both bottom and right locations in one window.

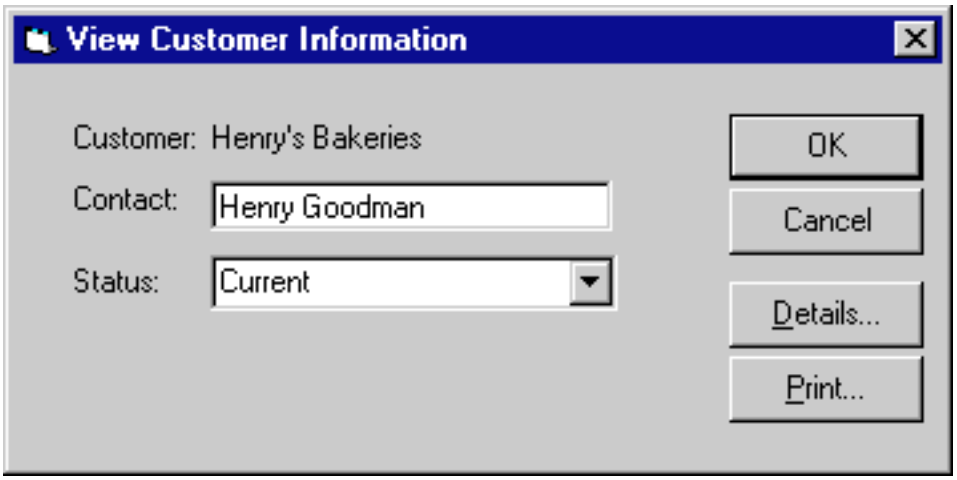

Figure 9.8 Windows 95 top right command buttons.

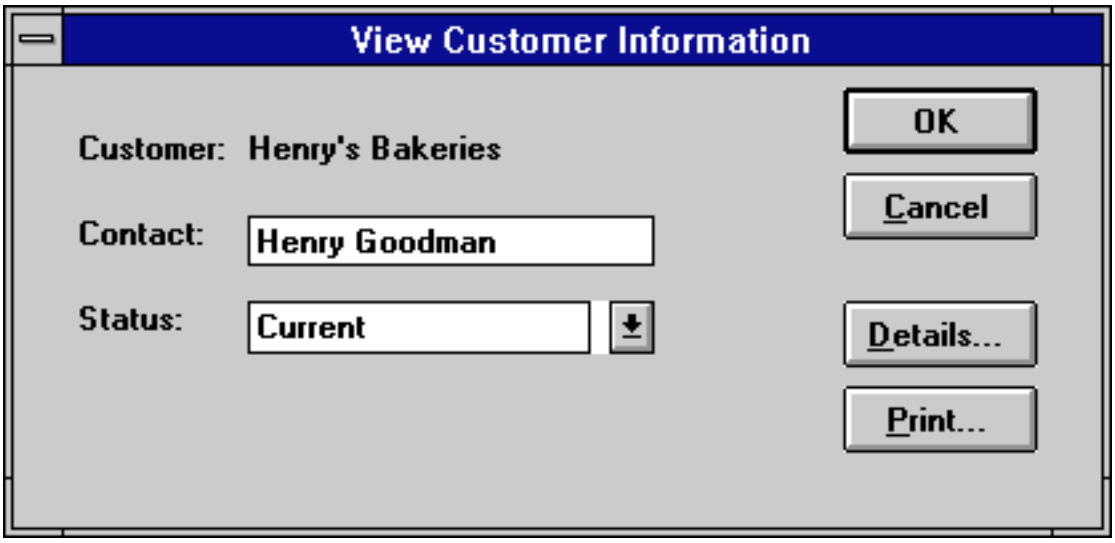

Figure 9.9 Windows 3.1 top right command buttons.

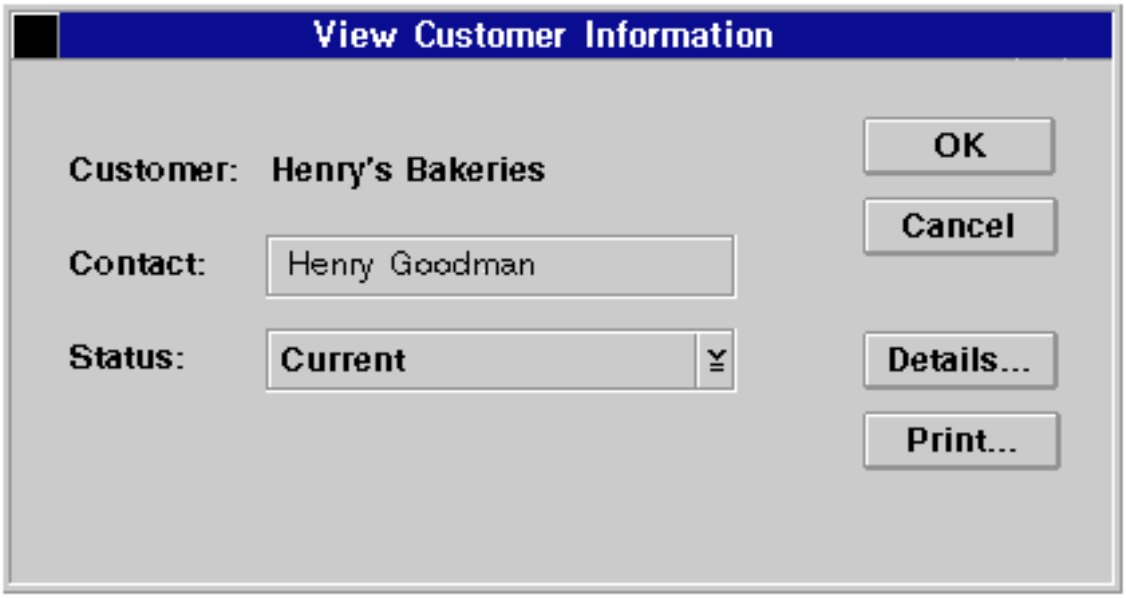

Figure 9.10 OS/2 top right command buttons.

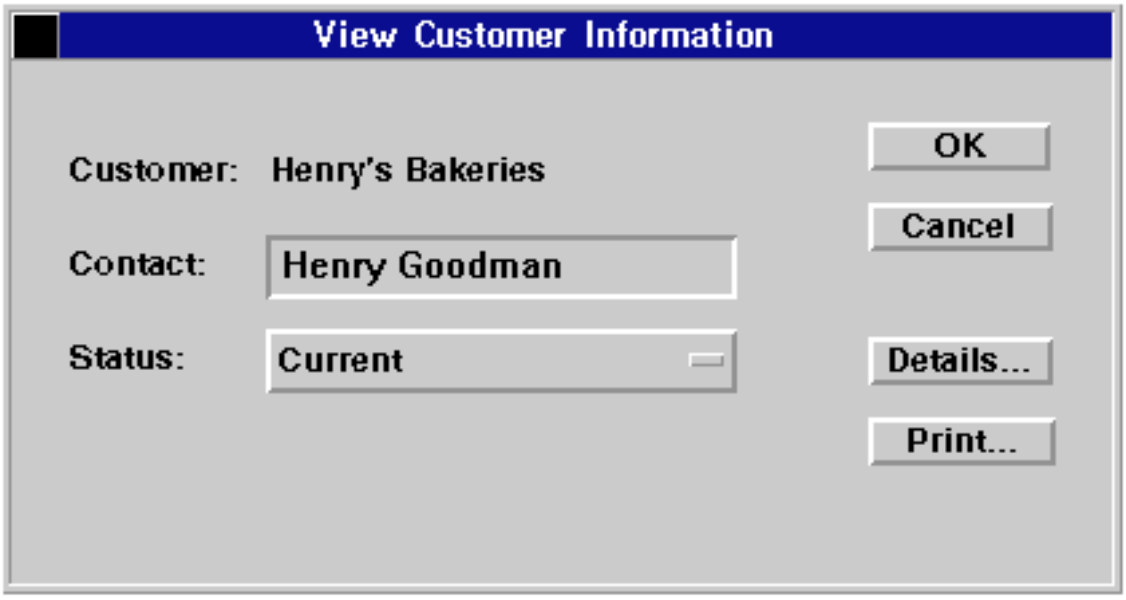

Figure 9.11 Motif top right command buttons.

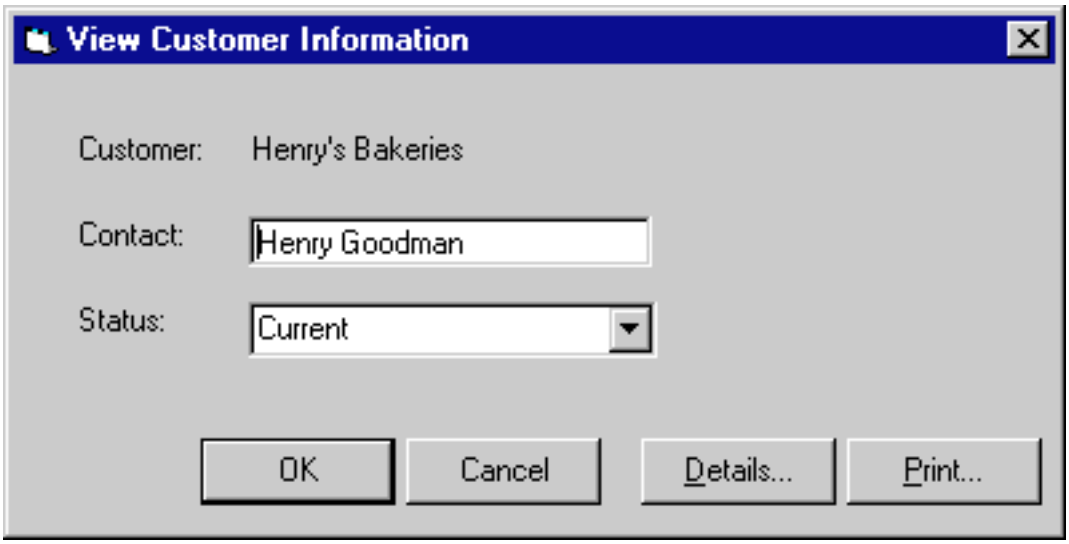

Figure 9.12 Windows 95 bottom right command buttons.

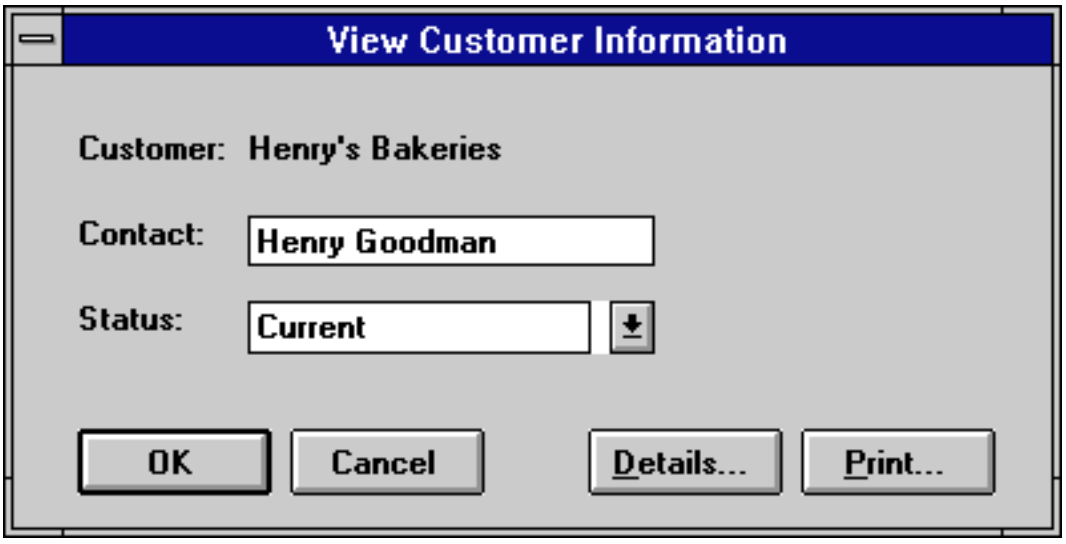

Figure 9.13 Windows 3.1 bottom centered command buttons.

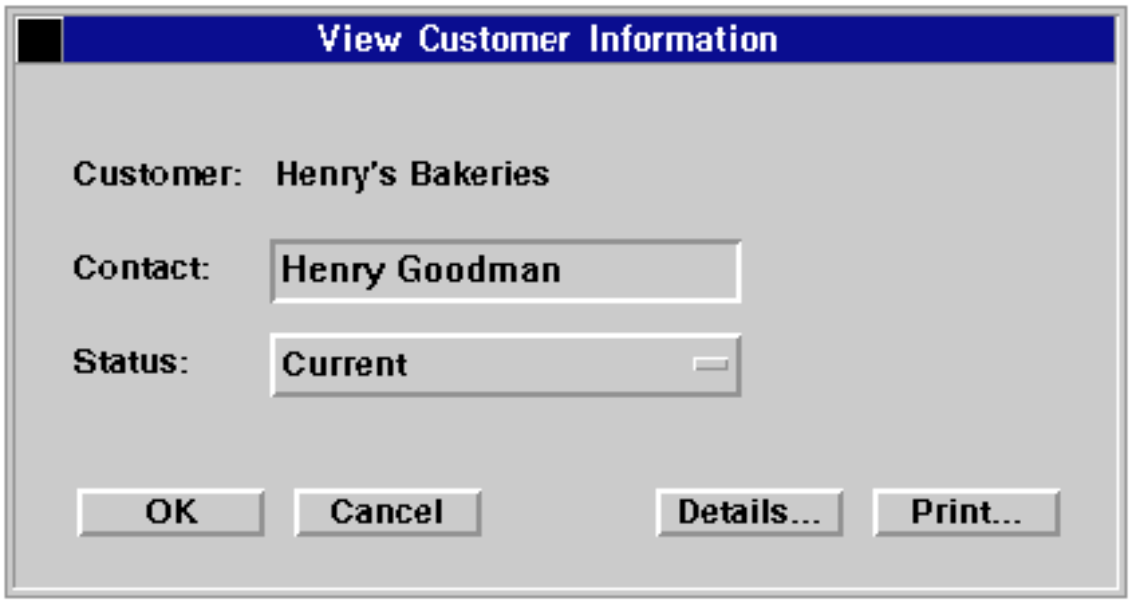

Figure 9.14 Motif bottom centered command buttons.

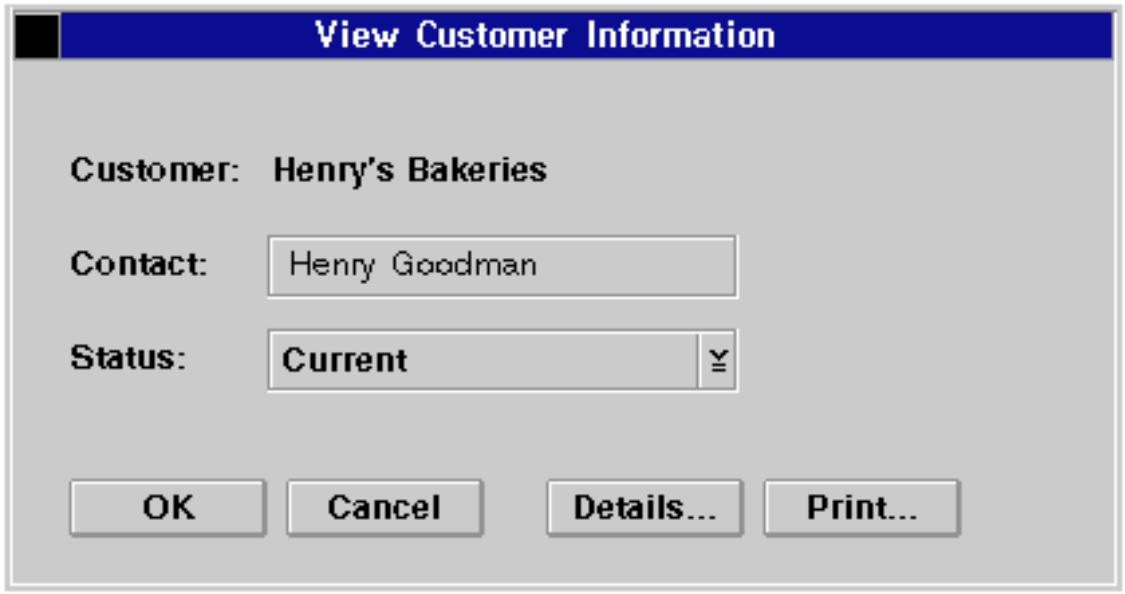

Figure 9.15 OS/2 bottom left command buttons.

Match button position to the use of the window

Choose either a vertical or a horizontal design for a particular window and position the buttons to match the design. A horizontal design should have buttons on the top right, as shown in Figure 9.16. A vertical design should have buttons on the bottom, as shown in Figure 9.17.

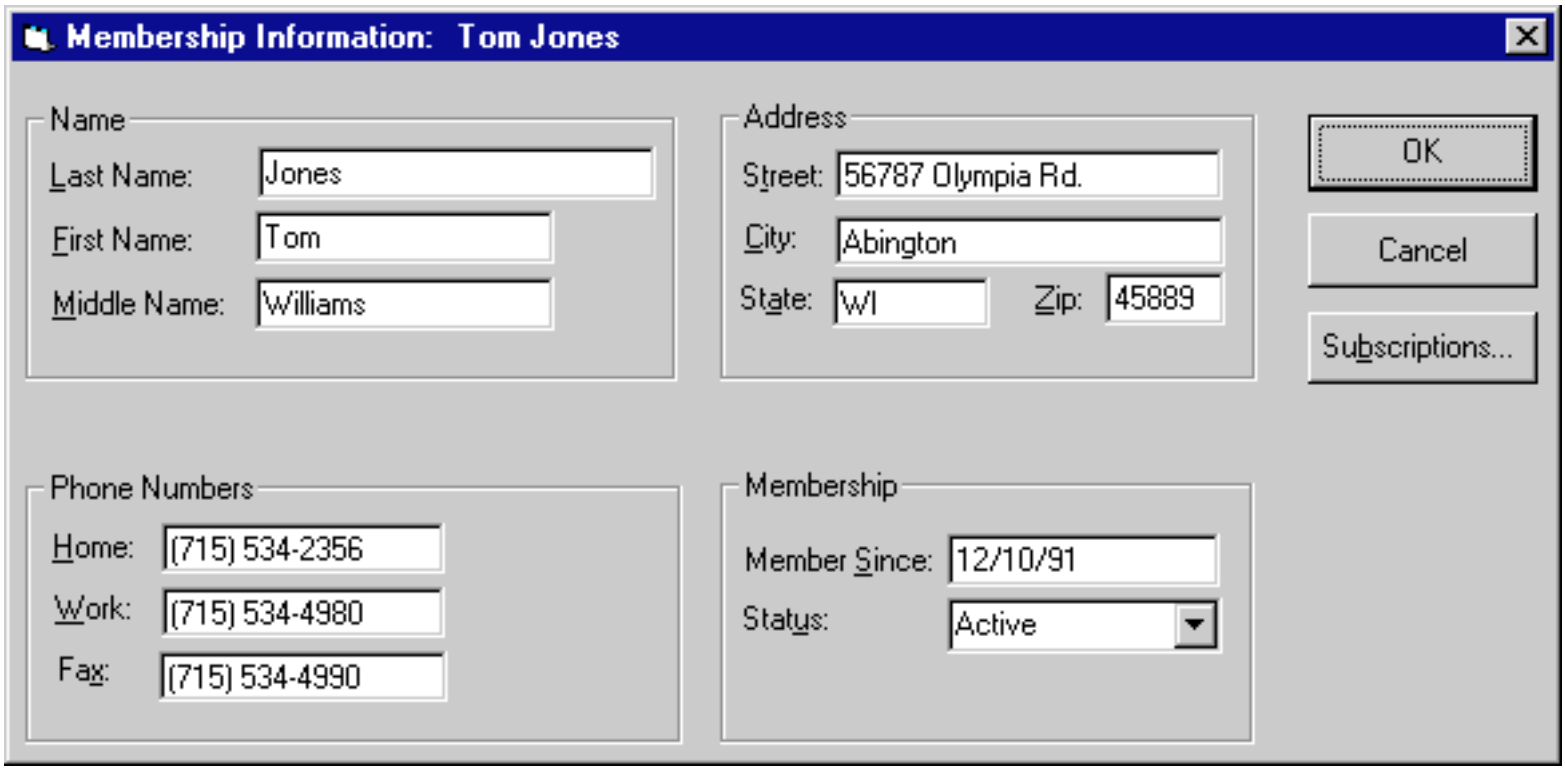

Figure 9.16 Horizontal flow command button placement for Windows 95.

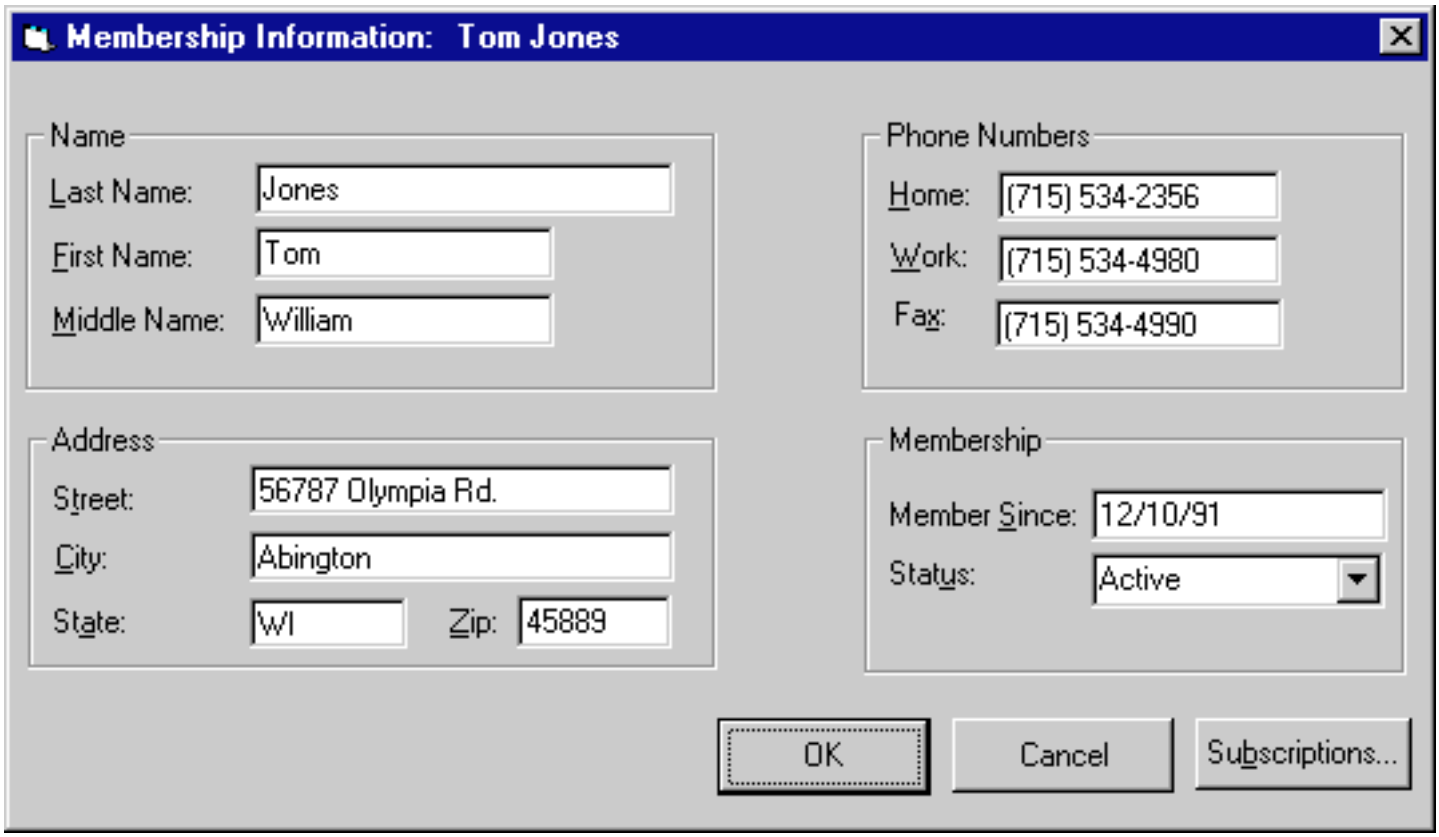

Figure 9.17 Vertical flow command button placement for Windows 95.

The grouping and layout of data in the window plays a role in determining which design to use. The length and number of buttons are also factors. If you have long button names or a lot of buttons, you may want to use a horizontal design with top right buttons. You can make these decisions on a window-by-window or box-by-box basis. Window flow designs do not need to be the same across all windows or boxes.

Position limited action buttons where needed

If a command button pertains to only one part of the dialog box, place the button where it is needed. Figure 9.18 places the Search button in the box where it will be used.

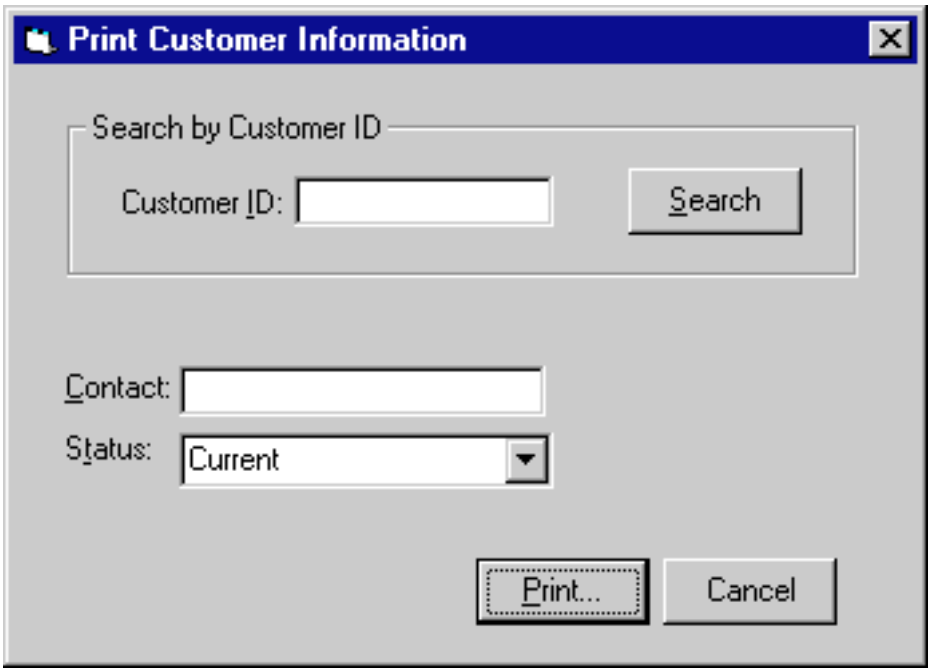

Figure 9.18 Search button placed in group box where it is used.

Order buttons consistently

Whenever possible, place buttons in the following order:

1. Affirmative buttons to leave the window (OK)
2. Canceling actions to leave the window (Cancel)
3. Unique buttons for the window

The order is the same for bottom or top-right placement (see Figure 9.19).

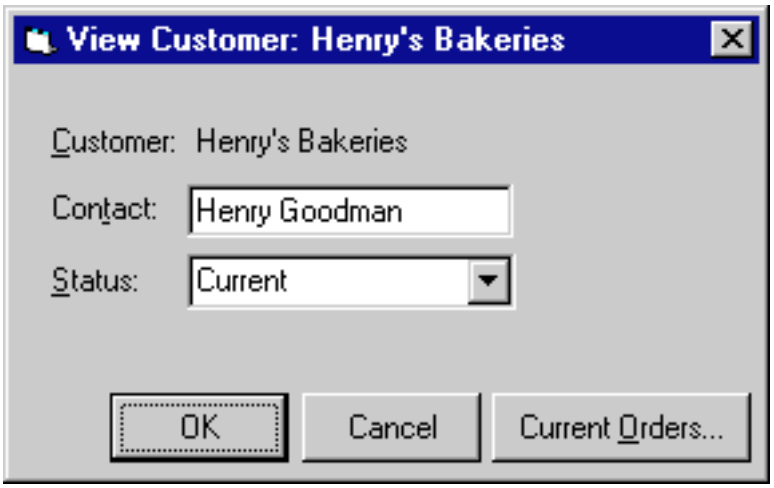

Figure 9.19 Affirmative button (OK) is first, followed by canceling action (Cancel), and then a unique button for the window (Current Orders).

Use ellipses (…) to indicate that input is needed

If more input is required to complete a button action, use ellipses (…) after the button name (see Figure 9.20).

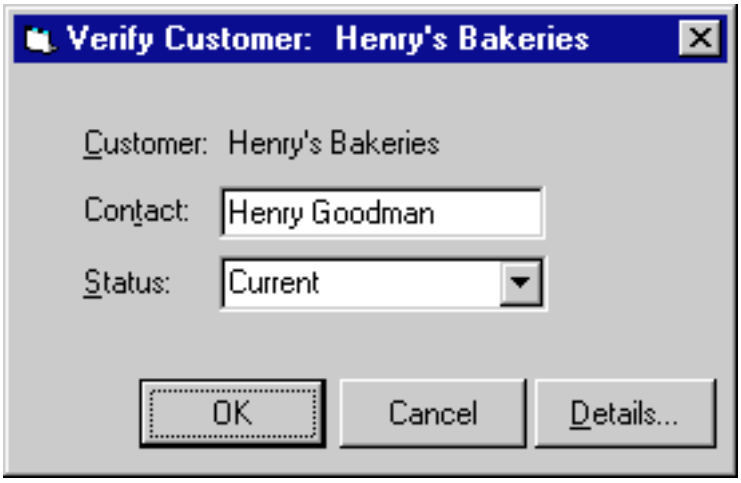

Figure 9.20 Another dialog box displays when the user selects Details, therefore ellipses are shown after the button name.

Gray out unavailable buttons

Use graying out to show that a button's action is not available. For instance, certain actions might not be available in order to restrict a user's actions until another step is taken. Figure 9.21 shows a Search button when the Search action is available. In Figure 9.22, the Search action is not available, so the button is grayed out.

Graying out implies that there is an action the user can take to make the button available. If in fact there is no action the user can take to change the button's state (the button will never be usable) do not include the button.

Figure 9.21 Search action available.

Figure 9.22 Search action not available.

Assign a nondestructive default button

Choose one button on the window as the default. If the user presses the Enter key, that button is invoked. Make the most common or important action on that window the default, for example, Print on a print window. Do not use a destructive button, such as Delete, as a default, even if it is the most common or important action for the window.

Option Buttons

Option buttons, also known as radio buttons, replace many data entry actions.

Use option buttons for one choice

Use option buttons when users should pick one mutually exclusive choice from a list of options, for example, choosing a pay period in a personnel application.

Label option buttons descriptively

Pick a clear and descriptive label for each option button, for example, Send Course Description rather than Course.

Group option buttons together and label them

Place option buttons together in a group. Use a frame to show the group. Use a descriptive label for the entire group (see Figure 9.23).

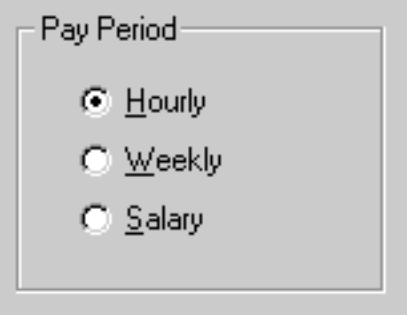

Figure 9.23 Option buttons grouped and labeled.

Align option buttons vertically

Line up option buttons vertically (Figure 9.24), if you have the space, rather than horizontally (Figure 9.25) to make them easier to scan.

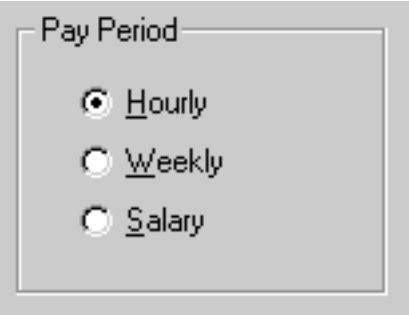

Figure 9.24 Align option buttons vertically.

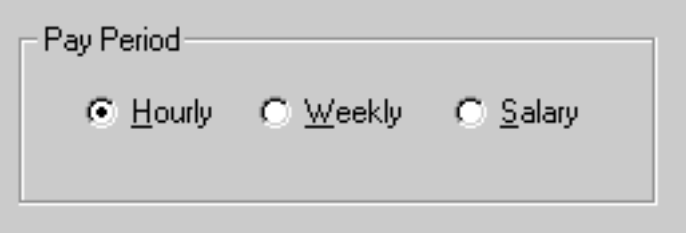

Figure 9.25 Don't align option buttons horizontally.

Limit option buttons to six or fewer

Limit option buttons to six or fewer choices. If you have more choices, consider using a list box instead. List boxes are discussed later in this chapter.

Choose an order

Decide on the best order for the option buttons. Some ordering methods include:

- By frequency—most frequently used options at the top
- By task—if there is a usual order in which parts of a task are performed
- By logic—if there is a logical order, for instance a list of dates
- By alphabet—only use alphabetical order if the labels match the way your users think about the items.

Avoid binary option buttons

If users need to make yes/no or on/off choices, use a single check box (Figure 9.26) rather than option buttons (Figure 9.27). However, use two option buttons for distinct, mutually exclusive choices, such as male/female.

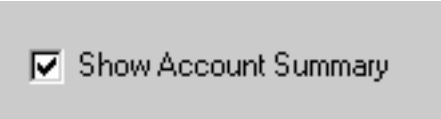

Figure 9.26 Use a check box for yes/no choices.

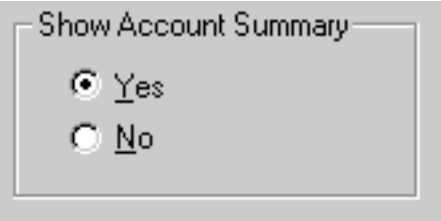

Figure 9.27 Don't use two option buttons for yes/no choices.

Check Boxes

Check boxes replace some data entry actions and provide a quick way to make multiple choices.

Use check boxes for choosing more than one option

Use check boxes when users can choose one or more options.

Use check boxes for toggling

Use check boxes when users are toggling a feature on or off, as shown in Figure 9.28. It is okay to have just one check box.

Figure 9.28 Use a check box for toggling a feature on or off.

Label check boxes descriptively

Pick a clear descriptive label that users will understand for each check box. For example, use Reverse Print Order, not Reverse.

Group and label check boxes

Place check boxes together in a group. Use a frame to show the group. Use a descriptive label for the entire group (see Figures 9.29 through 9.32).

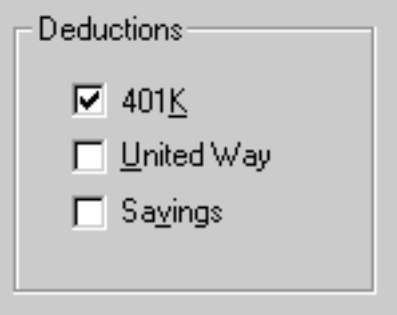

Figure 9.29 Windows 95 check boxes.

Figure 9.30 Windows 3.1 check boxes.

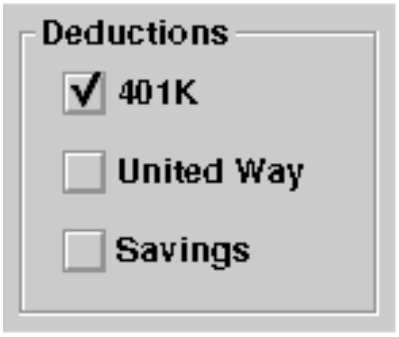

Figure 9.31 OS/2 check boxes.

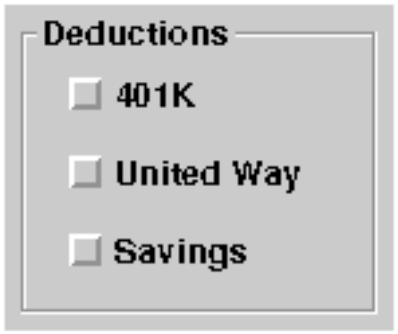

Figure 9.32 Motif check boxes.

Align check boxes vertically

Line up check boxes vertically (Figure 9.33) rather than horizontally (Figure 9.34) to make them easier to scan.

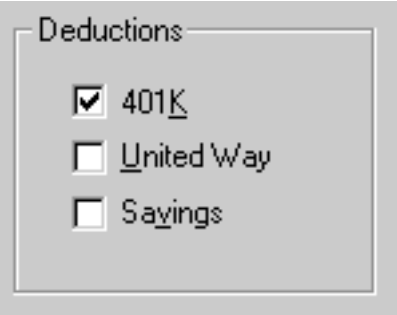

Figure 9.33 Align check boxes vertically.

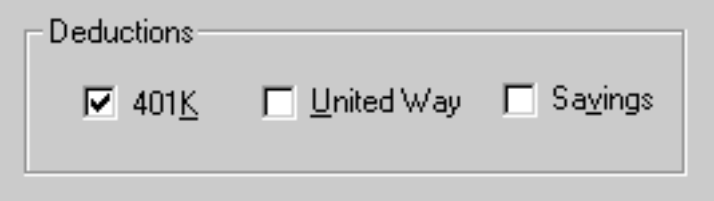

Figure 9.34 Don't align check boxes horizontally.

Limit check boxes to ten or fewer

Limit check boxes to ten or fewer choices. If you have more choices consider using a multiple select list box instead.

Choose an order

Decide on the best order for check boxes. Some ordering methods are:

- By frequency—most frequently used options at the top
- By task—if there is a usual order in which parts of a task are performed
- By logic—if there is a logical order, for instance a list of dates
- By alphabet—only use alphabetical order if the labels match the way your users think about the items.

Do not use Select All or Deselect All check boxes

If you anticipate users will want to select all of a set of check boxes, or turn them all off, consider using a multiple selection list box with Select All and Deselect All buttons (Figure 9.35) instead of check boxes (Figure 9.36). Multiple selection list boxes are discussed later in this chapter.

Figure 9.35 Use multiple selection list boxes with Select All and Deselect All command buttons.

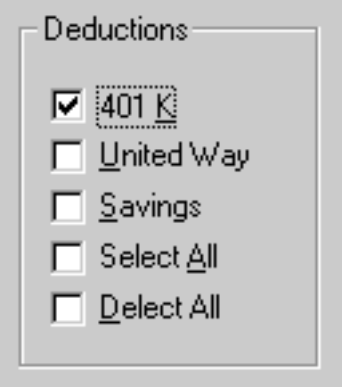

Figure 9.36 Don't use Select All and Deselect All check boxes.

Text Boxes

Text boxes are the main way for users to type in data.

Use a border to indicate data entry

Use a text box with a border to indicate that a user can enter or edit data, as shown in Figure 9.37.

Figure 9.37 Put a border around a text entry field.

Show display-only data without a box

If data is for display only and cannot be changed or added, do not place a box around it (see Figure 9.38).

Figure 9.38 Don't put a border around display-only data.

Gray out temporarily protected fields

If a particular text box is temporarily protected, gray out the box and label to signify that data cannot be entered or changed at this time. Figure 9.39 shows a field in which data can be changed; Figure 9.40, one where it cannot.

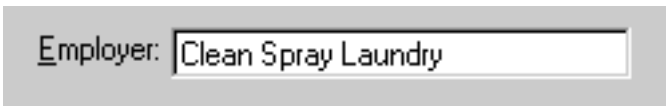

Figure 9.39 Data that can be changed.

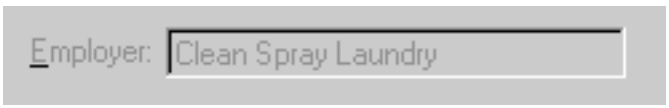

Figure 9.40 Data that cannot be changed is temporarily grayed out.

Use box length to signify approximate data length

Size text boxes to indicate the approximate length of the field as shown in Figure 9.41. If you have text boxes of similar length, make them the same length unless you need to show the exact size of the field. If the length of the field can vary, use text boxes of the same length to minimize the number of unique margins on the screen (Figure 9.42).

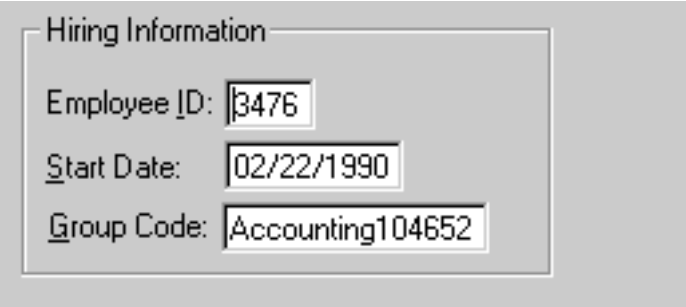

Figure 9.41 Each text box is a specific length to show the exact size of the field.

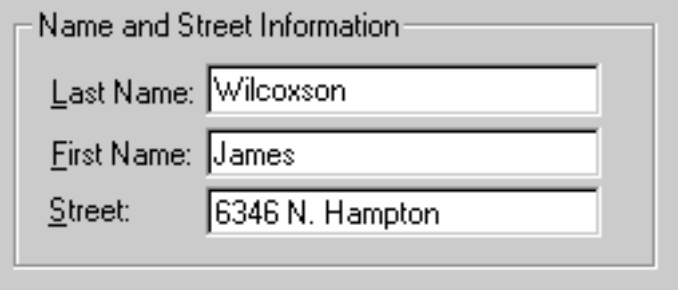

Figure 9.42Text boxes are the same size if the data fields vary.

Align text boxes

Left align text boxes on the screen to minimize the number of different margins (see Figure 9.43). If a particular text box has a long label, use a different margin for that text box. Limit the number of unique margins to two.

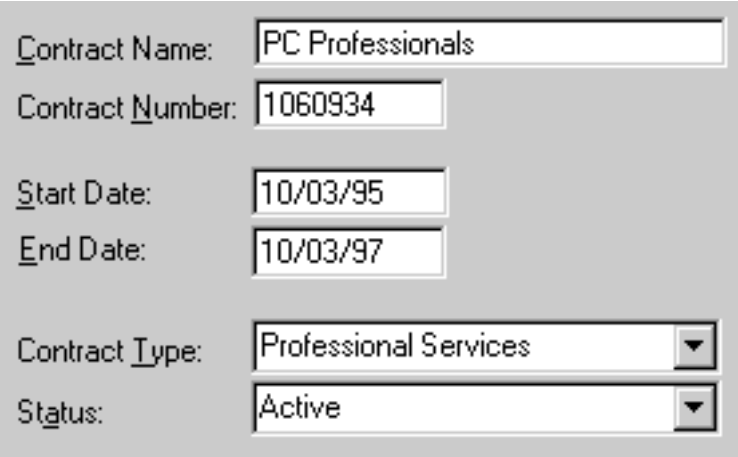

Figure 9.43 Text boxes are left aligned.

Group text boxes

If you have text boxes that all pertain to similar information, group them together in a frame and label the entire group.

Label all text boxes

Assign a descriptive label to every text box. Avoid acronyms or abbreviations unless you are sure all users will understand them. It is okay to use multiple-word text box labels; however, keep them concise. Capitalize the first letter of the initial word of a label.

Place labels to the left

Place labels for text boxes to the left of the box. Avoid placing labels on top of text boxes.

Align text box labels to the left

Align text box labels on the left (Figure 9.44). Do not right-align labels. Right-aligned labels produce a ragged left margin, which is hard to scan (Figure 9.45).

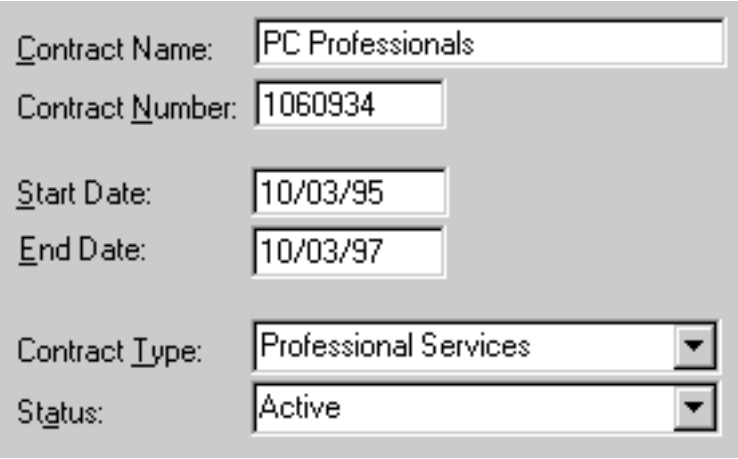

Figure 9.44 Left-align labels.

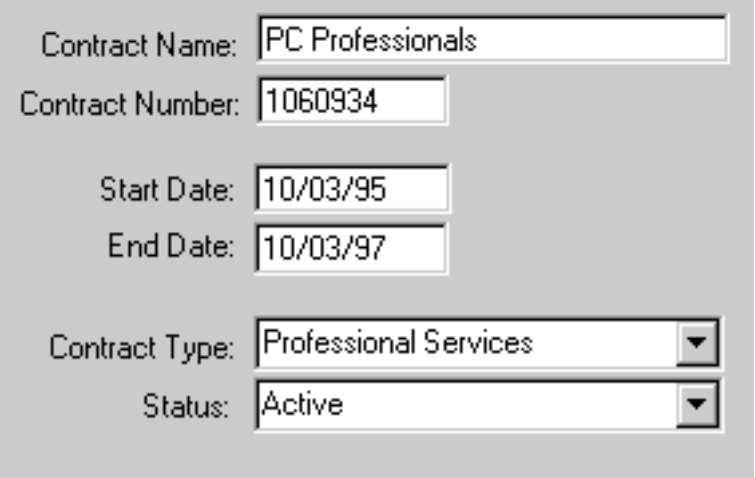

Figure 9.45 Don't use ragged left margins for labels.

Place a colon after text box labels

Use a colon after text box labels to distinguish between the label and the data that follows (see Figure 9.46). Do not use colons after group frame names or column headings.

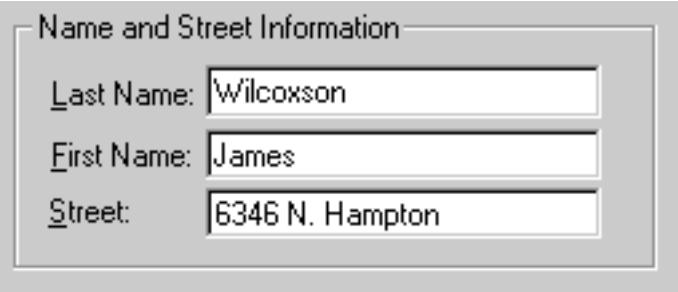

Figure 9.46 Use colons after text box labels. Do not use colons after group labels.

List Boxes

List boxes are an alternative to long option button lists (Figures 9.47 through 9.50). They are also an alternative to data entry and they ensure data integrity.

Use list boxes for long lists

Use list boxes rather than option buttons when you have a lot of options. When you have more than six option buttons use a single select list box.

Use list boxes for dynamic data

If data is likely to change over time, use a list box rather than option buttons. It is easier to change the choices that appear in a list box.

Show three to eight items at a time

Show at least three, but no more than eight items in a list box at a time. If you have more items use a scroll bar to view the rest of the items. See the guidelines on drop-down list boxes later in this chapter.

Figure 9.47 Windows 95 list box.

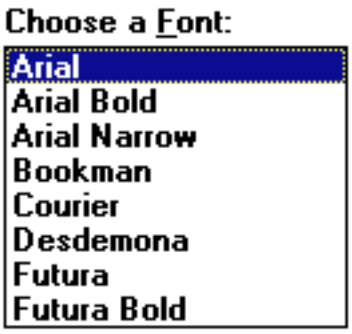

Figure 9.48 Windows 3.1 list box.

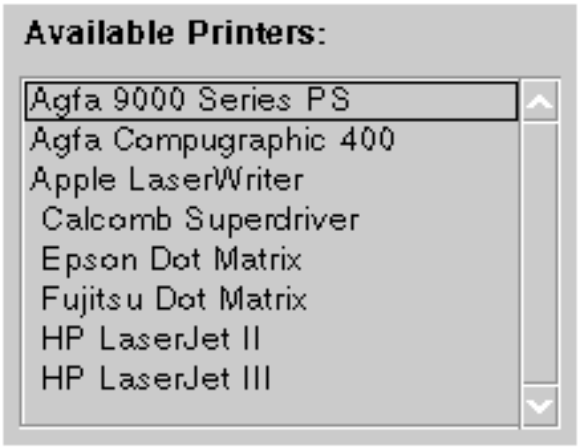

Figure 9.49 OS/2 list box.

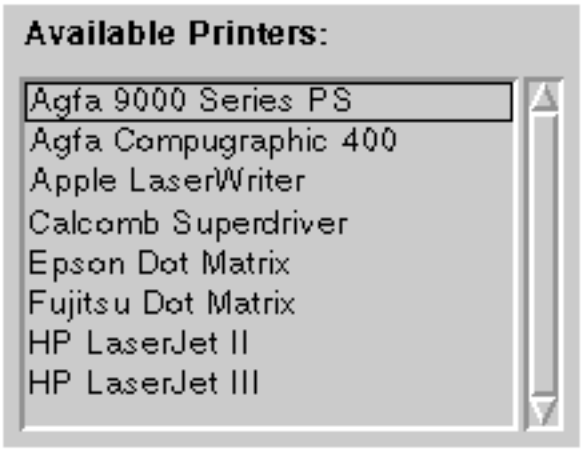

Figure 9.50 Motif list box.

Label each list box

Choose a label for the entire list box that describes the items inside the box, for example Available Printers. Place the label on the top of the list, left justified, followed by a colon.

Use filters for large lists

If there are more than 40 items in a list, provide a way for users to filter the list to narrow down the number of options from which they must choose, as shown in Figure 9.51.

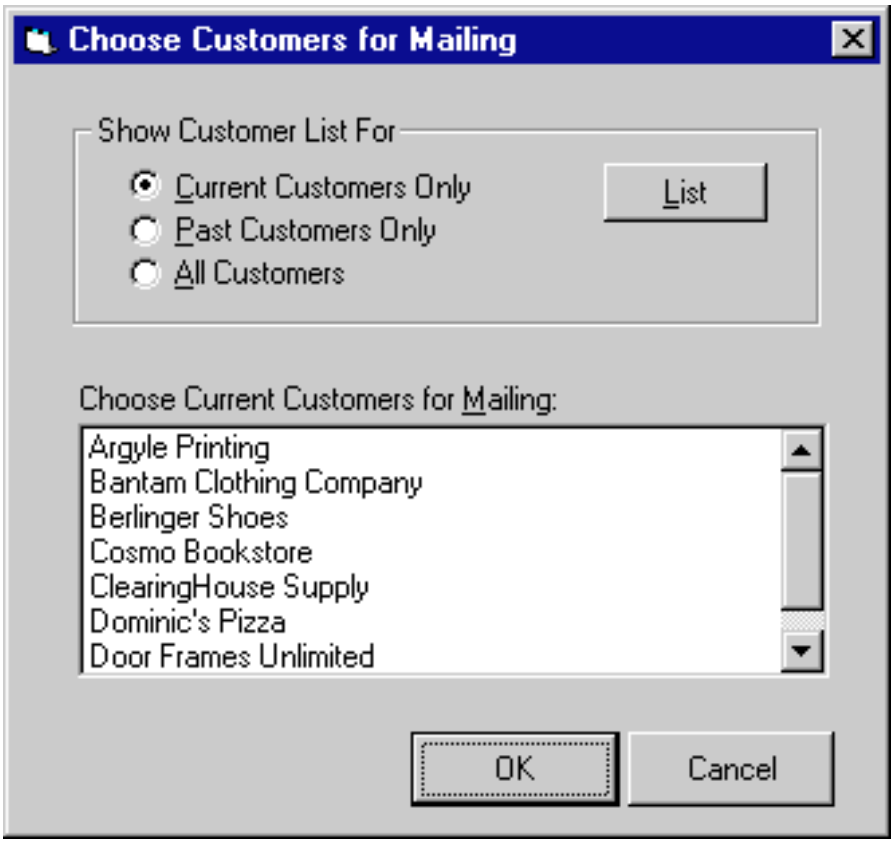

Figure 9.51 A filter is used for a long list of customers.

Use drop-down list boxes to save space

Drop-down list boxes allow you to save window space. Use a drop-down list box if most users will select the first item. However, list boxes hide all but the first option from the users. Users have to go through an extra step to get to the rest of the list. Do not use a drop-down list box if it is important for users to see all the options all the time.

Use a combination list box to allow users to type in an option

A combination list box lets users type in a choice as well as pick it from the list. Use a combination list box when most users know what they want and prefer just typing it in. A combination list box is also useful when the list is long and users could skip down to a lower point in the list by typing in one or more letters. Do not allow users to add items to a list by using a combination list box.

Multiple Selection List Boxes

Multiple selection list boxes are an alternative to long check box lists. Multiple selection list boxes, however, can be hard for users to use. You may need to compensate for their usability problems by following the guidelines below.

Use a multiple selection list box instead of check boxes

Consider using a multiple selection list box instead of check boxes if you have more than ten options or your list is likely to change over time.

Consider instructions for multiple selection list boxes

Many users are not familiar with multiple selection list boxes. They might not know that they can choose more than one option or might not know how to choose more than one option. Consider including a line of instruction or a prompt that tells users that they can choose more than one (see Figure 9.52). Instructions are particularly important when one window contains both a single selection list box and a multiple selection list box.

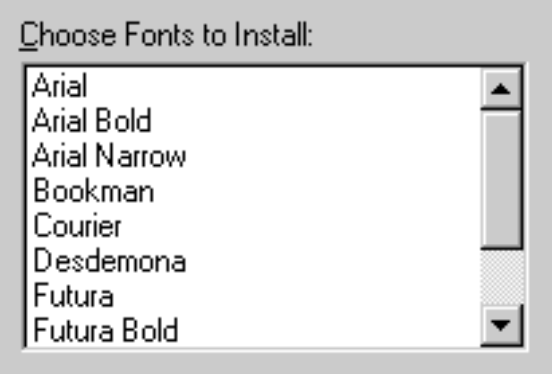

Figure 9.52 Instructions are included in label.

Consider a selection summary box

If you use a scrolling multiple selection list box, consider also displaying a box with a summary of what the user is selecting (see Figure 9.53). This way, the user does not have to continually move up and down the list to see what has already been chosen.

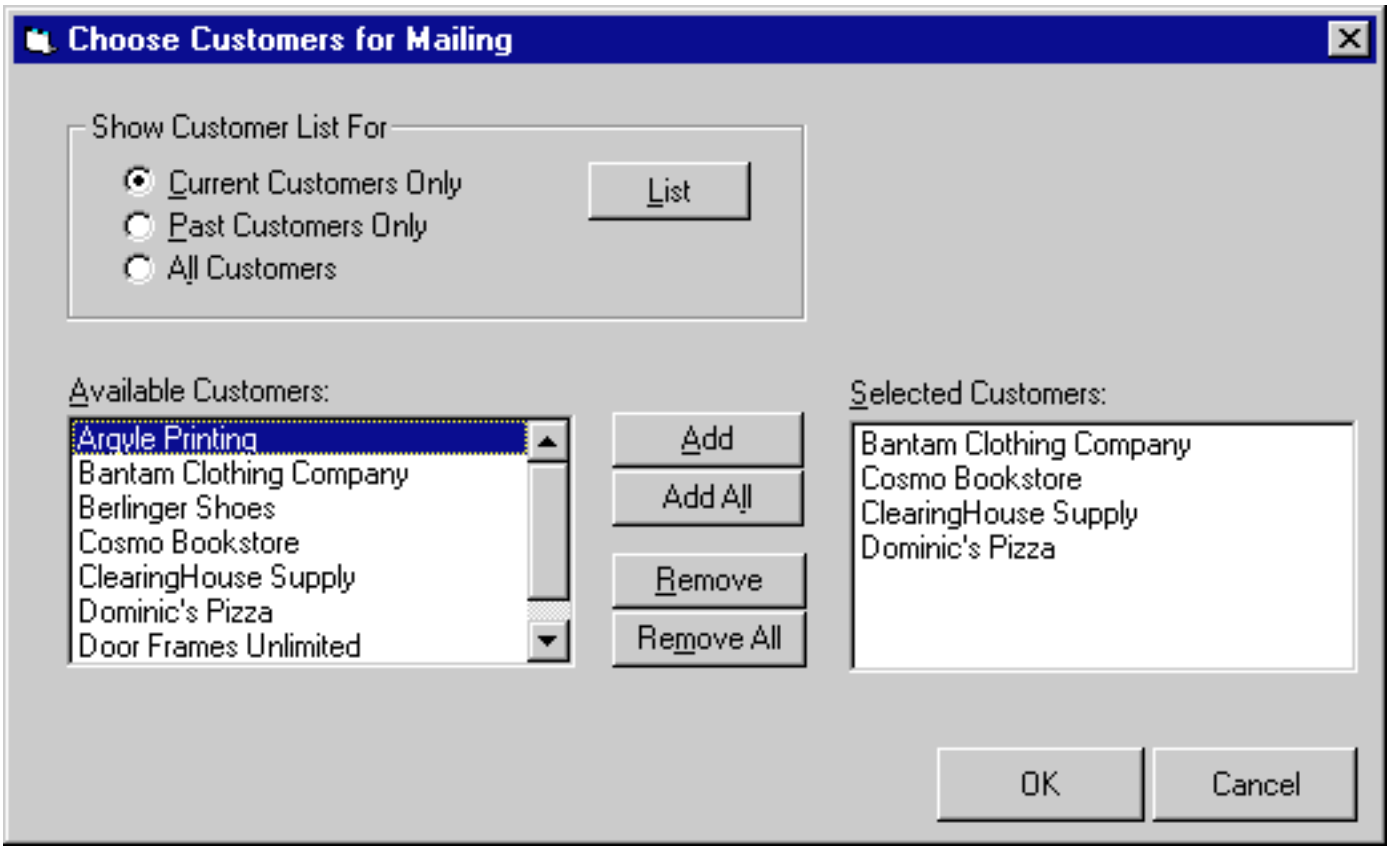

Figure 9.53 A selection summary box is used to display what the user has already selected.

Consider multiple selection checklists

Another way to show what the user is selecting is a multiple selection checklist. This combines a multiple selection list box with check boxes that the user can select.

Consider Select All or Deselect All buttons

If you have a set of options and anticipate that users will either want to select them all or turn them all off, consider using a multiple selection list box with Select All and Deselect All buttons, rather than check boxes.

Tables and Grids

Tables and grids allow users to enter or view larger amounts of information at a time.

Use tables for comparisons among data

Display a table if users need to compare two or three pieces of data and you can't predict ahead of time which they need (see Figure 9.54).

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
East	20.4	27.4	90	20.4
West	30.6	38.6	34.6	31.6
North	45.9	46.9	45	43.9

Figure 9.54 Use tables for comparing data.

Use grids for multiple data entry

Use grids to allow users to enter several pieces of data at a time.

Label columns

Choose labels for columns that accurately reflect the data.

Use row labels if necessary

If rows contain different data, label each row.

Left justify labels

Left justify column and row labels. Do not use a colon after the label.

Spin Boxes

Spin boxes allow users an alternate way to enter data.

Use spin boxes for limited cycling

Use spin boxes to cycle through possible choices when the choice list is less than ten, as shown in Figure 9.55, and the order is predictable (such as days of the week).

Figure 9.55 Spin box.

Combine spin boxes with text boxes

If you use spin boxes, consider combining them with text boxes so that users can type in the specific value they want in addition to cycling through choices.

Sliders

Sliders are an effective way for users to quickly adjust values that do not need to be exact.

Use sliders for visually choosing values

Consider using a slider control to increase or decrease continuous values. They are especially effective if you show the result (see Figures 9.56 through 9.59).

Figure 9.56 Windows 95 sliders.

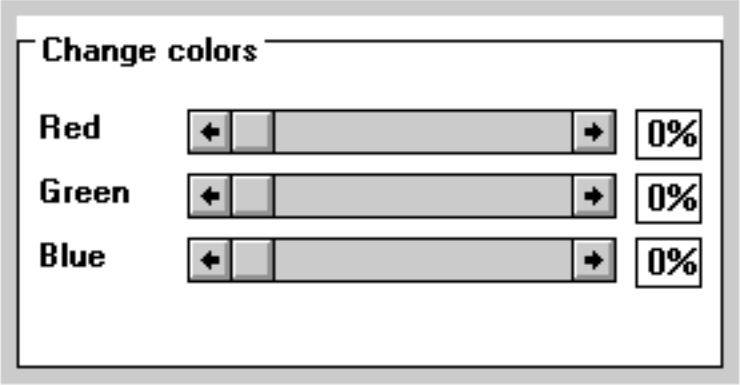

Figure 9.57 Windows 3.1 sliders.

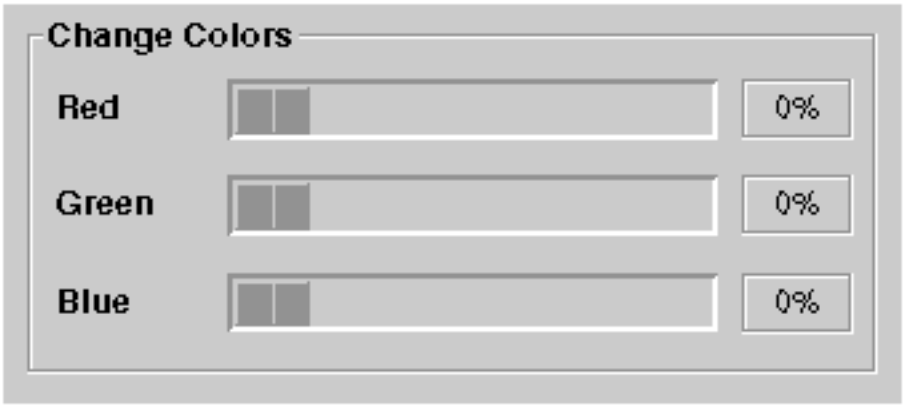

Figure 9.58 OS/2 sliders.

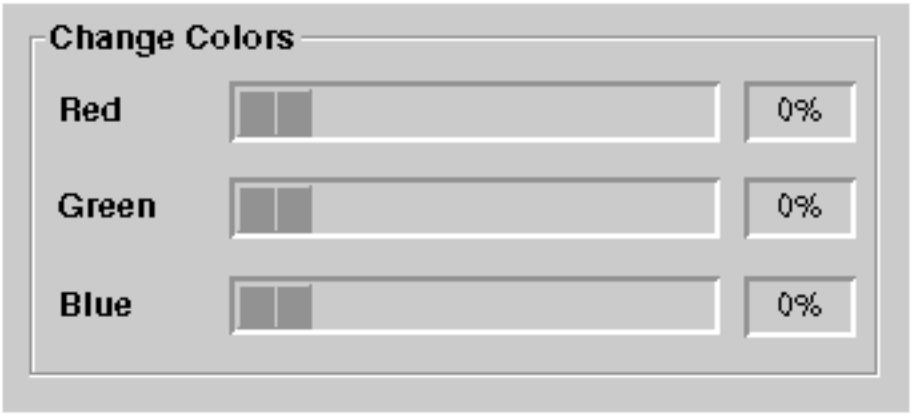

Figure 9.59 Motif sliders.

Use sliders for large data ranges

Do not use sliders for data choices fewer than ten. For small data ranges use a different control, for instance, a spin box or a text box for data entry. Spin boxes and text boxes are discussed earlier in this chapter.

Display results

Display the actual data value that the slider position represents.

Allow data entry

If users know the exact value, let them enter a value directly instead of using the slider.

Allow the use of arrows for small increments

Use arrows at either end of the slider for fine increments when users get close to the value they want.

Tree Views

Tree views show the relationship among items in a list.

Use tree views when hierarchy is important

A tree view displays the hierarchical relationship among elements (see Figure 9.60). It is useful when users need to select an item from a list, and the placement of the item depends on hierarchies, as in a file or directory system. Tree views are useful when the relationship of the item in the hierarchy helps the user to locate the item they are looking for. Expanding and collapsing allows the user to alter the amount of detail while they search.

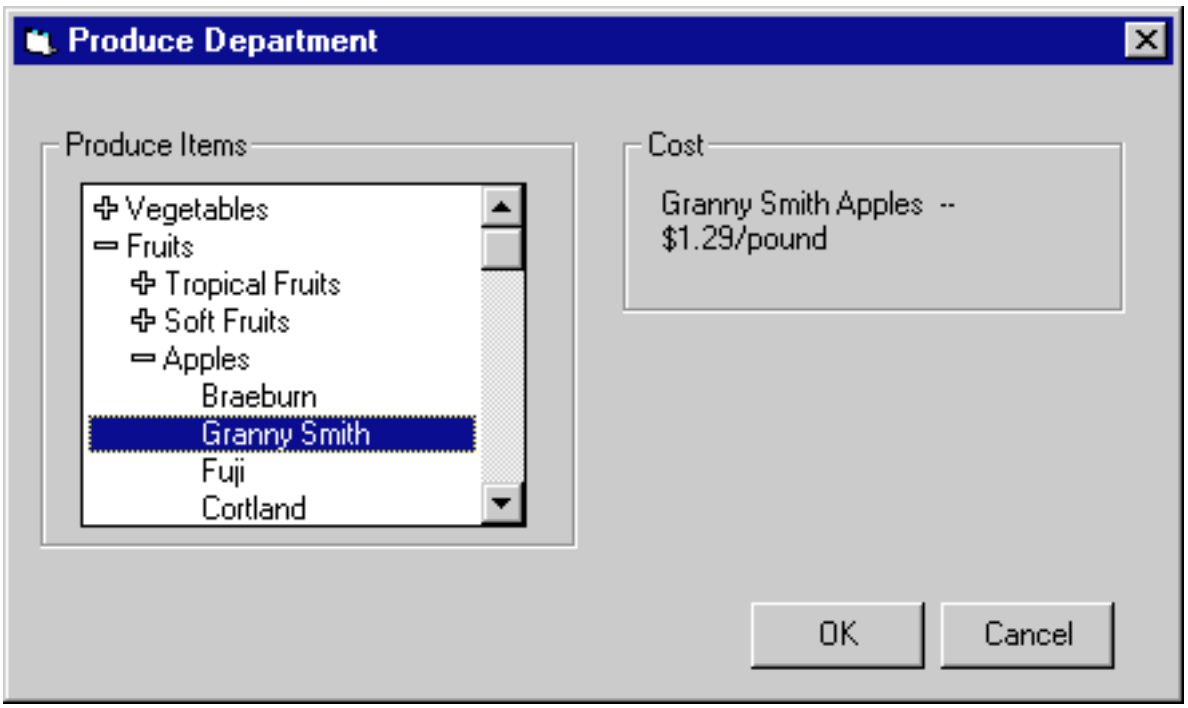

Figure 9.60 Tree views show hierarchy.

Use tree views for more advanced users

Many users are unfamiliar with tree views because they are relatively new and are not used in all programming environments. The tree view can be hard for users to use if they do not understand the relationships among the items, and may not realize the functionality of expanding and collapsing.

Do not use tree views to replace menus, home bases, or launch pads

Tree views should not be used to replace menu systems, home bases, or launch pads. They are useful as a searching and selecting control only.