The User Interface Design Process

Step 7: Select the Proper Screen-Based Controls

Controls

Definition: A graphic object that represents the properties or operations of other objects.

- A control may:
  - Permit the entry or selection of a particular value.
  - Permit the changing or editing of a particular value.
  - Display only a particular piece of text, value, or graphic.
  - Cause a command to be performed.
  - Possess a contextual pop-up window.

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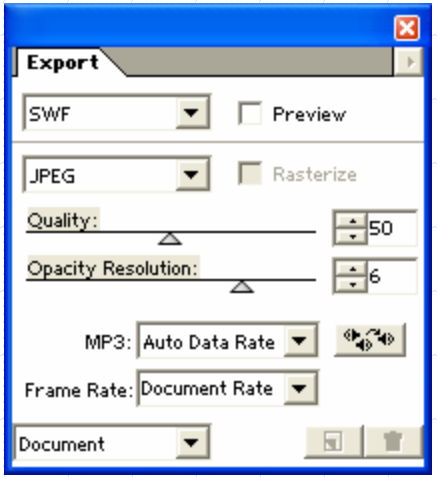
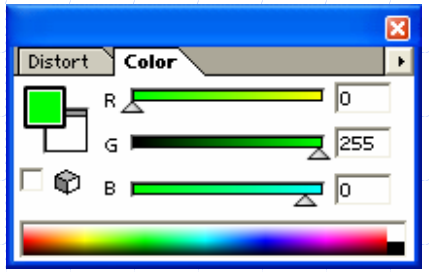
Controls (Continued)

- A control must:
  - Look the way it works.
  - Work the way it looks,
  - A control must be used exactly as its design intended.
  - A control must be presented in a standard manner.
- Design Characteristics should signal "enterablilty" or "clickability."
  - Raised elements can be pressed.
  - Recessed elements cannot be pressed.
  - Elements on a flat white background can be opened, edited, or moved.

Operable Controls

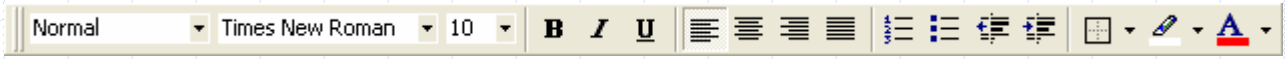
- Controls that permit the entry, selection, changing, or editing of a particular value, or cause a command to be performed.
- Classes include buttons, text entry/read-only, selection, combination entry/selection, and other specialized controls.





Buttons

- Description: A square or rectangular-shaped control with a label inside that indicates action to be accomplished. The label may consist of text, graphics, or both.
- Purpose: To start actions, change properties, or display a pop-up menu.



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Buttons (Continued)

- Advantages:
  - Always visible, reminding one of the choices available.
  - Convenient.
  - Can be logically organized in the work area.
  - Can provide meaningful descriptions of the actions that will be performed.
  - Larger size generally provides faster selection target.
  - Can possess 3-D appearance.
  - May permit use of keyboard equivalents and accelerators.
  - Faster than using a two-step menu bar/pull-down sequence.

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Buttons (Continued)

- Disadvantages:
  - Consumes screen space.
  - Size limits the number that may be displayed.
  - Requires looking away from main working area to activate.
  - Requires moving the pointer to select.
- Proper Usage:
  - Use for frequently used actions that are specific to a window.
    - To cause something to happen immediately.
    - To display another window.
    - To display a menu of options.
    - To set a mode or property value.

Command Buttons

- Usage:
  - Windows with a menu bar = use for fast access to frequently used or critical commands.
  - Windows without a menu bar: use to access all necessary commands.
- Structure:
  - Restrict the number of buttons on a window to six or fewer.
  - Give the button a raised appearance.
  - Maintain consistency in style throughout an application.

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Command Buttons (Continued)

- Labels:
  - Use standard button labels when available.
  - Provide meaningful descriptions of the actions that will be performed.
  - Use single-word labels whenever possible.
  - Use mixed-case letters with the first letter of each significant label word capitalized.
  - Display labels in the regular system font in the same size.
  - Do not number labels.
  - Center the label within the button borders, leaving at least two pixels between the text and the button border.
  - Provide consistency in button labeling across all screens

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Command Buttons (Continued)

- Size:
  - Provide as large a button as feasible.
  - Maintain consistent button heights and widths.
  - Exception: Buttons containing excessively long labels may be wider.
- Number:
  - Restrict the number of buttons on a window to six or fewer.

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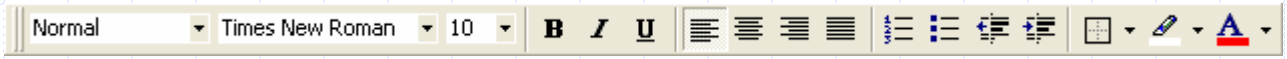
Command Buttons (Continued)

- Location and Layout:
  - Maintain consistency in button location between windows.
  - Never simply "fit" buttons in available space.
  - If buttons are for exiting the dialog, position them centered and aligned horizontally at the bottom.
  - If buttons are used for invoking a dialog feature or expanding the dialog, position them centered and aligned vertically on the right side.
  - If a button has a contingent relationship to another control, position it adjacent to the related control.
  - If a button has a contingent relationship to a group of controls, position it at the bottom or to the right of the related controls.



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Command Buttons (Continued)

- If, exiting and expanding/invoking feature buttons must be paced together:
  - If at the bottom, place exiting buttons to the right, separating the groupings by one button's width.
  - If along the right side, place exiting buttons at the bottom, separating the groupings by one button's height.
- For exiting and expanding/invoking feature buttons, do not:
  - align with the other screen controls.
  - Present displayed within a line border.
- Provide equal and adequate spacing between adjacent buttons.
- Provide adequate spacing between buttons and the screen body controls.

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Command Buttons (Continued)

- Organization:
  - Organize standard buttons in the manner recommended by the platform being used.
  - For other buttons, organize them in common and customary grouping schemes.
    - For buttons ordered left to right, place those for most frequent actions to the left.
    - For buttons ordered top to bottom, place those for most frequent actions at the top.
  - Keep related buttons grouped together.
  - Separate potentially destructive buttons from frequently chosen selections.

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Command Buttons (Continued)

- Buttons found on more than one window should be consistently positioned.
- The order should never change.
- For mutually exclusive actions, use two buttons; do not dynamically change the text.

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Command Buttons (Continued)

- Intent Indicators:
  - When a button causes an action to be immediately performed, no intent indicator is necessary.
  - When a button leads to a cascading dialog, include an ellipsis(…) after the label.
  - When a button leads to a menu, include a triangle pointing in the direction the menu will appear after the label.
  - When a button leads to an expanding dialog, include a double arrow (>>) with the label.
  - When a button has a contingent relationship to another control that must be indicated, include a single arrow (->) pointing at the control.

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Command Buttons (Continued)

- Expansion Buttons:
  - Gray them out after expansion.
  - Provide a contraction button, if necessary located beneath or to the right of the expansion button. Gray it out when not applicable.
- Defaults:
  - Intent: When a window is first displayed, provide a default action.
  - Selection: A default should be the most likely action. If a destructive action id performed, the default should be Cancel.
  - Presentation: Indicate the default action by displaying the button with a bold or double border.
  - Procedures:
    - Use the Enter key to activate a default button.
    - If another control requires use of the Enter key, temporarily disable the default while the focus is on the other control.
    - Permit double-clicking on a single selection control in a window to also carry out the default command

Command Buttons (Continued)

- Unavailable Choices: should be dimmed or grayed out.
- Keyboard Equivalents and Accelerators:
  - Equivalents:
    - assign a keyboard equivalent mnemonic to each button to facilitate keyboard selection.
    - The mnemonic should be the first character of the gbutton's label.
    - Designate the mnemonic character by underlining it.
    - Maintain the same mnemonic on all identical buttons on other screens.
  - Accelerators: Assign a keyboard accelerator to each button to facilitate keyboard selection.

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Command Buttons (Continued)

- Scrolling:
  - If a window can be scrolled, do not scroll the command buttons.
  - Use buttons to move between multipage forms, not scroll bars.
- Button Activation:
  - Pointing: Highlight the button is some visually distinctive manner when the pointer is resting on it and the button is available for selection.
  - Activation: Call attention to the button in another visually distinctive manner when it has been activated or pressed. Permit the user to hold the mouse button down continuously for a continuous action.

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Toolbars

- Usage:
  - To provide easy and fast access to most frequently used cammands or options across multiple screens.
  - To invoke a subapplication within an application.
  - To use in place of certain menu items.
- Structure:

  - Images:
    - Provide buttons of equal size
    - Create a meaningful and unique icon
    - Center the image within the button.
    - Give the button a raised appearance.
    - Ensure that toolbar images are discernible from Web page graphical images.

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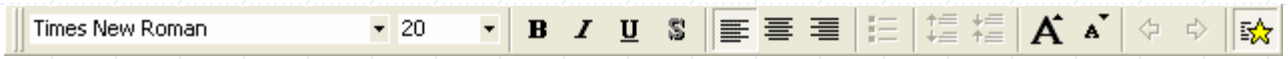
Toolbars (Continued)

- Text:
  - Create a meaningful label, adhering to label guidelines for command buttons.
  - Create toolbar buttons of equal size.
- Consistency:
  - Use the same icon throughout an application and between applications.



- Size:
  - Button: 24(w) by 22(h) pixels or 32(w) by 30(h) pixels (including border).
  - Label: 16(w) by 16(h) pixels or 14(w) by 24(h) pixels.
  - Default: Provide the smaller size as the default size with a user option to change it.
  - Image: Center the image in the button.

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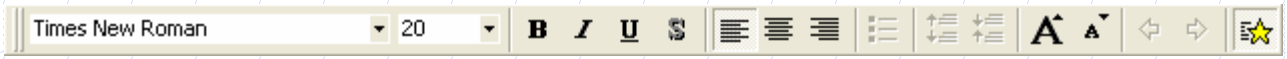
Toolbars (Continued)

- Organization:
  - Order the buttons based on common and customary grouping schemes.
    - For buttons ordered left to right, place those for the most frequently used actions to the left.
    - For buttons ordered top to bottom, place those for the most frequently used actions at the top.
  - Keep related buttons grouped together.
  - Separate potentially destructive buttons from frequently chosen selections.
  - Permit user reconfiguration of button organization



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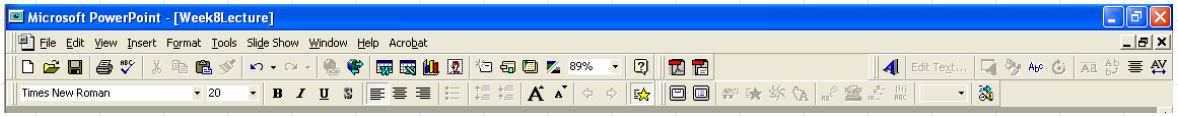
Toolbars (Continued)



- Location:
  - Position main features and functions bar horizontally across top of window just below menu bar.
  - Position subtask and subfeatures bars along sides of window.
  - Permit the location of the bar to be changed by the user.
  - Permit display of the bar to be turned on or off by the user.
- Active Items:
  - Make only currently available toolbar items available.
  - Temporarily not available items may be displayed grayed out.
- Customization:
  - Permit toolbars to be turned off by the user.
  - Allow the customizing of toolbars (but provide a default).

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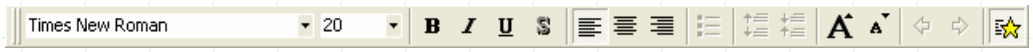
Toolbars (Continued)

- Keyboard Equivalents and Accelerators:
  - Equivalents: Assign keyboard equivalents to facilitate keyboard selection and maintain the same mnemonic on all identical buttons on all screens.
  - Accelerators: Assign a keyboard accelerator to facilitate keyboard selection.
- Button Activation:
  - Pointing: Highlight the button in some visually distinctive manner when the pointer is resting on it and the button is available for selection.
  - Activation: Call attention to the button in another visually distinctive manner when it has been activated or pressed.



Text Entry/Read-Only Controls

- Text Boxes
  - Description:
    - A control, usually rectangular in shape, in which text may be entered or edited
    - Text may be displayed for read-only purposes
    - Usually possesses a caption describing the kind of information contained within it.
    - An outline field border is included for enterable/editable text boxes and not included for read-only text boxes.
    - Two types exist: single line and multiple line.
  - Purpose: To permit the display, entering or editing of textual information.

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Text Entry/Read-Only Controls (Continued)

- Advantages
  - Very flexible.
  - Familiar.
  - Consumes little screen space.
- Disadvantages:
  - Requires use of typewriter keyboard.
  - Requires user to remember what must be keyed.
- Proper usage:
  - Most useful for data that is unlimited in scope, difficult to categorize, or of a variety of lengths.
  - When using a selection list is not possible.

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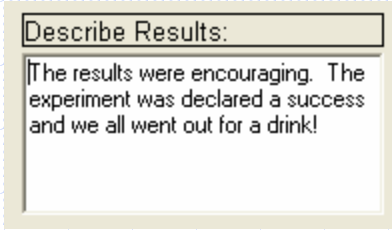
Text Entry/Read-Only Controls (Continued)

- Single-line and Multiple-Line Text Boxes
  - Single line:

    - Description: A control consisting of no more than one line of text.
    - Purpose: To make textual entries when the information can be contained within one line of the screen.
    - Typical uses: Typing the name of a file to save, the path of a file to copy, variable data on a form, or typing a command.
  - Multiple line:



    - Description: A control consisting of a multiline rectangular box for multiple lines of text.
    - Purpose: To type, edit, and read passages of text.
    - Typical uses: Creating or reading an electronic mail message, or displaying and editing text files.

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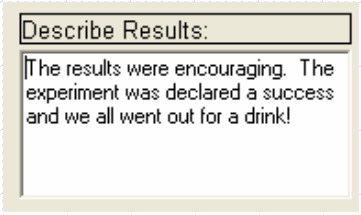
Text Entry/Read-Only Controls (Continued)

- Captions
  - Structure and size:
    - Provide a descriptive caption to identify the kind of information to be typed, or contained within, the text box.
    - Use a mixed-case font.
    - Display the caption in normal intensity or in a color of moderate brightness.
- Formatting
  - Single fields:
    - Position the field caption to the left of the text box. Place a colon (:) at the end and separate the colon from the text box by one space.
    - Alternately, the caption may be placed above the text box. Place a colon (:) at the end and position above the left corner of the box, flush with the left edge.
  - Multiple occurrence fields:
    - Position the caption left-justified above the column of entry fields
    - For display/read-only boxes: Center the caption above the displayed text box data if it is fixed length, left-justified if it is alphanumeric, short or quite variable in length. Right justify if it is numeric data



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Text Entry/Read-Only Controls (Continued)

- Fields
  - Structure:

    - Identify entry/modification text boxes with a line border or reverse polarity rectangular box. To visually indicate that it is an enterable field, present the box in a recessed manner and present display/read-only text boxes on the window background.
    - Break up long text boxes through incorporation of slashes(/), dashes (-), spaces, or other common delimiters.
  - Size:
    - Size to indicate the approximate length of the field.
    - Text boxes for fixed-length data must be large enough to contain the majority of the entries.
    - Where entries may be larger than the entry field, scrolling must be provided to permit keying into, or viewing, the entire field.
    - Employ word wrapping for continuous text in multiple-line text boxes.

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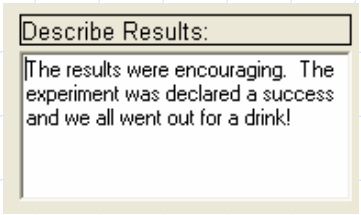
Text Entry/Read-Only Controls (Continued)

- Highlighting:
  - Call attention to text box data through a highlighting technique: Higher intensity, or a color that both complements the screen background and contrasts well with it.
- Unavailable fields: Gray-out temporarily unavailable text boxes.
- Fonts: Use a Rich-Text Box to support multiple fonts.



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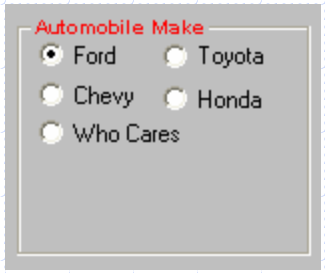
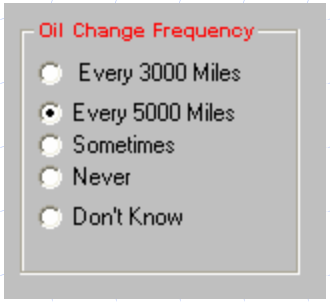
Selection Controls

- Radio Buttons
- Check Boxes
- Palettes
- List Boxes
- List View Controls
- Drop-down/Pop-up List Boxes

Radio Buttons

- Description:
  - A two-part control consisting of a small circle, diamond, or rectangle with choice descriptions.
  - When a choice is selected: the option is highlighted and any existing choice is automatically unhighlighted and deselected.
- Purpose:
  - To set one item from a small set of mutually exclusive options (2 to 8).
- Advantages:
  - Easy-to-access choices
  - Easy-to-compare choices.
  - Preferred by users.





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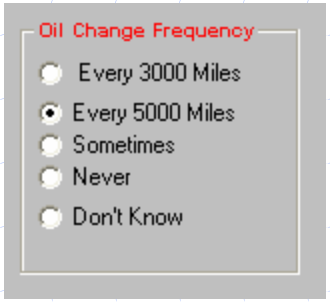
Radio Buttons (Continued)



- Disadvantages:
  - Consume screen space.
  - Limited number of choices.
- Proper Usage:
  - For setting attributes, properties, or values.
  - For mutually exclusive choices.
  - Where adequate screen space is available.

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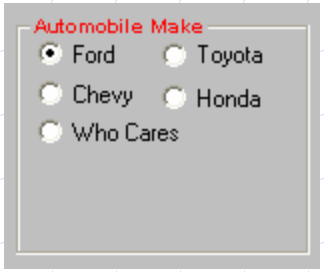
Radio Buttons (Continued)



- Proper Usage (Continued):
  - Most useful for data and choices that are:
    - Discrete.
    - Small and fixed in number.
    - Not easily remembered.
    - In need of textual description to meaningfully describe the alternatives.
    - Most easily understood when the alternatives can be seen together and compared to one another.
    - Never changed in content.
  - Do not use:
    - For commands.
    - Singly to indicate the presence or absence of a state.

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Radio Buttons (Continued)

- Choice Descriptions:
  - Provide meaningful, fully spelled-out choice descriptions clearly describing the values or effects set by the radio buttons.
  - Display in a single line of text.
  - Display using mixed-case letters, using the sentence style.
  - Position descriptions to the right of the button. Separate them by at least one space from the button.
  - When a choice is conditionally unavailable for selection, display the choice description grayed out or dimmed.
  - Include a None choice if it adds clarity.
- Size: Show a minimum of two choices, a maximum of eight.

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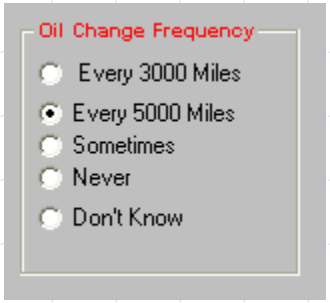
Radio Buttons (Continued)

- Defaults:
  - When the control possesses a state or affect that has been predetermined to have a higher probability of selection than the others, designate it as the default and display its button filled in.
  - When the control includes choices whose states cannot be predetermined, display all the buttons without setting a dot, or in the *indeterminate* state.
  - When a multiple selection includes choices whose states vary, display the buttons in another unique manner, or in the *mixed value* state.



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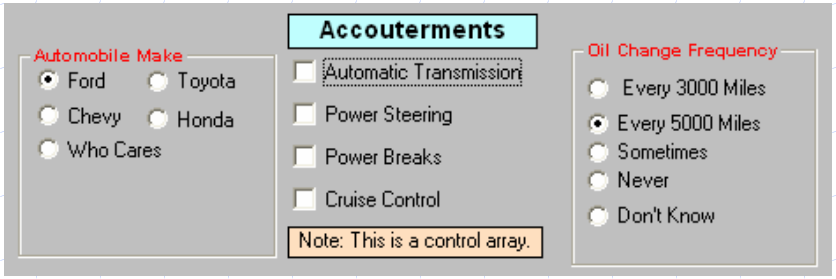
Radio Buttons (Continued)

- Structure:
  - A columnar orientation is preferred.
  - Left-align the buttons and choice descriptions.
  - If vertical space on the screen is limited, orient the buttons horizontally.
  - Provide adequate separation between choices so that the buttons are associated with the proper description. (A distance equal to 3 spaces is usually sufficient.)
  - Enclose the buttons in a border to visually strengthen the relationship they possess.



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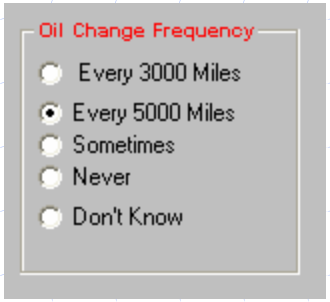
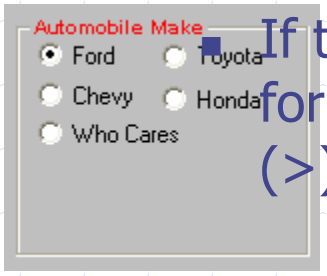
Radio Buttons (Continued)



- Organization:
  - Arrange selections in expected order or follow other patterns such as frequency of occurrence, sequence of use, or importance.
    - For selections arrayed top to bottom, begin ordering at the top.
    - For selections arrayed left to right, begin ordering at the left.
  - If a choice is not available, display it subdued or less brightly than the available choices.
- Related Control:
  - Position any control related to a radio button immediately to the right of the choice description
  - If the radio button choice description also acts as the label for the control that follows it, end the label with an arrow (>).



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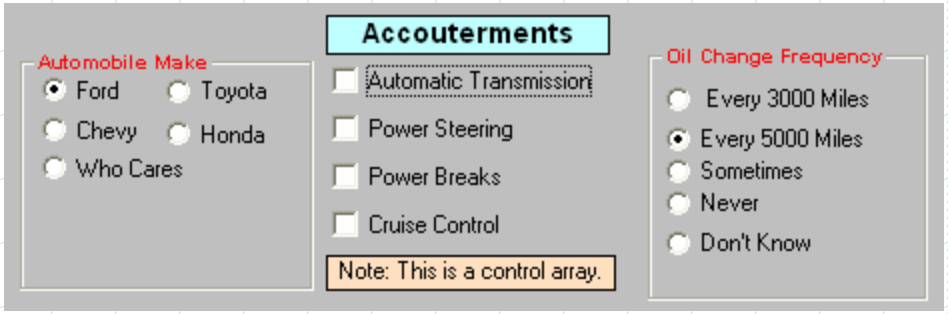
Radio Buttons (Continued)

- Captions:
  - Structure:
    - Provide a caption for each radio button control except if there is only one radio button.
  - Display:
    - Fully spelled out.
    - In mixed-case letters, capitalizing the first letter of all significant words.



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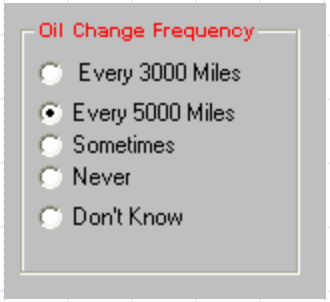
Radio Buttons (Continued)



- Captions (Continued):
  - Columnar orientation:
    - With a control border, position the caption:
      - Upper-left-justified within the border.
      - Alternatively, the caption may be located to the left of the topmost choice description
    - Without an enclosing control border, position the caption:
      - Left-justified above the choice descriptions, separated by one space line.
      - Alternatively, the caption may be located to the left of the topmost choice description.
  - Horizontal orientation:
    - Position the caption to the left of the choice descriptions.
    - Alternatively, with an enclosing control border, left-justified within the border.
    - Be consistent in caption style and orientation within a screen.

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Radio Buttons (Continued)

- Keyboard Equivalents:
  - Assign a keyboard mnemonic to each choice description.
  - Designate the mnemonic by underlining the applicable letter in the choice description.
- Selection Method and Indication:
  - Pointing:
    - The selection target area should be as large as possible.
    - Highlight the selection choice in some visually distinctive way when the cursor's resting on it and the choice is available for selection.
  - Activation:
    - When a choice is selected, distinguish it visually from the unselected choices. (A solid dark dot in the radio button.)
    - When a choice is selected, any other selected choice must be deselected.

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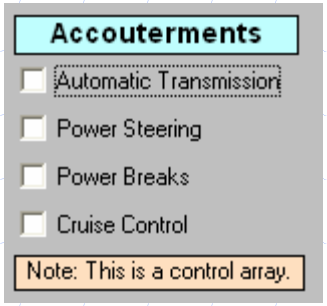
Check Boxes

- Description:
  - A two-part control consisting of a square box and choice description.
  - Each option acts as a switch and can be either "on" or "off."
    - When an option is selected (on), a mark such as an "X" or "check" appears within the square box, or the box is highlighted in some other manner.
    - Otherwise the square box is unselected or empty (off).
  - Each box can be:
    - Switched on or off independently.
    - Used alone or grouped in sets.
- Purpose:
  - to set one or more options as either on or off.



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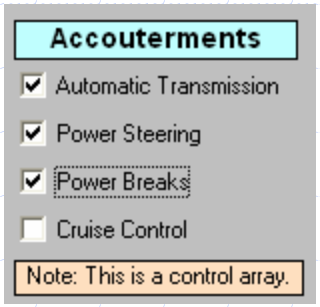
Check Boxes (Continued)

- Advantages:
  - Easy-to-access choices.
  - Easy-to-compare choices.
  - Preferred by users.
- Disadvantages:
  - Consume screen space.
  - Limited number of choices.
  - Single check boxes difficult to align with other screen controls.



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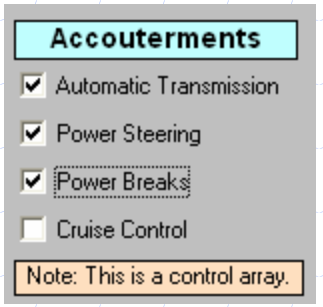
Check Boxes (Continued)



- Proper usage:
  - For setting attributes, properties, or values.
  - For nonexclusive choices.
  - Where adequate screen space is available.
  - Most useful for data and choices that are:
    - Discrete.
    - Small and fixed in number.
    - Not easily remembered.
    - In need of textual description to describe meaningfully.
    - Most easily understood when the alternatives can be seen together and compared to one another.
    - Never changed in content.
  - Can be used to affect other controls.
  - Use only when both states of a choice are clearly opposite and unambiguous.

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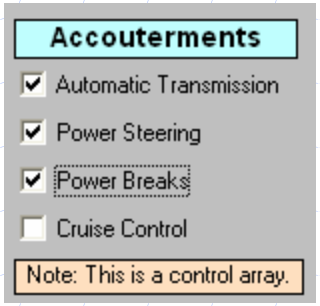
Check Boxes (Continued)



- Choice Descriptions
  - Provide meaningful, fully spelled-out choice descriptions clearly describing the values or effects set by the check boxes.
  - Display them in a single line of text.
  - Display them using mixed-case letters in sentence style.
  - Position descriptions to the right of the check box. Separate by at least one space from the box.
  - When a choice is unavailable for selection under a certain condition, display the choice description visually dimmed.
- Size
  - Show a minimum of one choice, a maximum of eight.
- Defaults
  - When a control possess a state or affect that has been preset, designate it as the default and display its check box marked.

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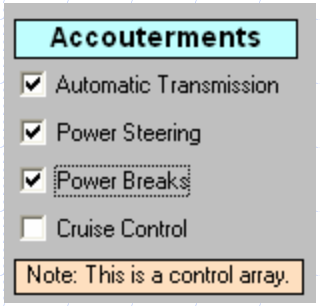
Check Boxes (Continued)



- Defaults (Continued)
  - When a multiple selection includes choices whose states vary, display the buttons in another unique manner.
- Structure
  - Provide groupings of related check boxes.
  - A columnar orientation is the preferred manner of presentation for multiple related check boxes.
  - Left-align the check boxes and choice descriptions.
  - If vertical space on the screen is limited, orient the boxes horizontally.
  - Provide adequate separation between boxes so that the buttons are associated with the proper description. (A distance of 3 spaces is usually sufficient.)
  - Enclose the boxes in a border to visually strengthen the relationship they possess.

(Continued on Next Page)

Check Boxes (Continued)

- Organization
  - Arrange selections in logical order or follow other patterns such as frequency of occurrence, sequence of use, or importance.
    - For selections arrayed top to bottom, begin ordering at the top.
    - For selections arrayed left to right, begin ordering at the left.
  - If, under certain conditions, a choice is not available, display it subdued or less brightly than the available choices.
- Related Control
  - Position any control related to a check box immediately to the right of the choice description.
    - If a check box choice description also acts as the label for the control that follows it, end the label with an arrow (>).

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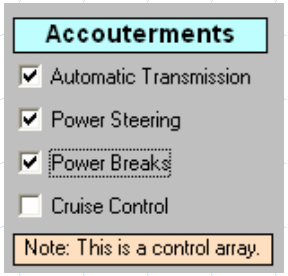
Check Boxes (Continued)



- Captions
  - Structure:
    - Provide a caption for each grouping of related check boxes except where there is only one check box.
    - Display fully spelled out and in mixed-case letters capitalizing the first letter of all significant words.
  - Columnar orientation:
    - With a control border, position the caption:
      - Upper-left-justified within the border.
      - Alternatively, the caption may be located to the left of the topmost choice description.
    - Without an enclosing control border, position the caption:
      - Left-justified above the choice descriptions separated by one space line.
      - Alternatively, the caption may be located to the left of the topmost choice description.

(Continued on Next Page)

Check Boxes (Continued)

- Captions (Continued)
  - Horizontal orientation:
    - Position the caption to the left of the choice descriptions.
      - Alternatively, with an enclosing control border, it should be left-justified within the border
    - Be consistent in caption style and orientation within a screen.
- Keyboard Equivalents
  - Assign a keyboard mnemonic to each check box.
  - Designate the mnemonic by underlining the applicable letter in the choice description.

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Check Boxes (Continued)

- Selection Method and Indication
  - Pointing:
    - The selection target area should be as large as possible.
    - Highlight the selection choice in some visually distinctive way when the cursor's resting on it and the choice is available for selection.
  - Activation:
    - When a choice is selected, distinguish it visually from the non-selected choices. (Fill in the check box.)
  - Defaults:
    - If a check box is displayed that contains a choice previously selected or default choice, display the selected choice as set in the control.
  - Select/deselect all:
    - Do not use Select All and Deselect All check boxes.

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Check Boxes (Continued)

- Selection Method and Indication (Continued)
  - Mixed -value state:
    - When a check box represents a value, and a multiple selection encompasses multiple value occurrences set in both the on and off state, display the check box in a mixed value state. (fill the check box with another easily differentiable symbol or pattern.)
    - Toggle the check box as follows:
      - Selection 1: Set the associated value for all elements. Fill the check box with an "X" or "check."
      - Selection 2: Unset the value for all associated elements. Blank-out the check box.
      - Selection 3: Return all elements to their original state. Fill the check box with the mixed value symbol or pattern.

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Palettes

- Description:
  - A control consisting of a series of graphical alternatives. The choices themselves are descriptive, being composed of colors, patterns, or images.
  - In addition to being a standard screen control, a palette may also be presented on a pull-down or pop-up menu or a toolbar.
- Purpose:
  - To set one of a series of mutually exclusive options presented graphically or pictorially.
- Advantages:
  - Pictures aid comprehension.
  - Easy-to-compare choices.
  - Usually consume less screen space than textual equivalents.

(Continued on Next Page)

Palettes (Continued)

- Disadvantages:
  - A limited number of choices can be displayed.
  - Difficult to organize for scanning efficiency.
  - Requires skill and time to design meaningful and attractive graphical representations.
- Proper Usage:
  - For setting attributes, properties, or values.
  - For mutually exclusive choices.
  - Where adequate screen space is available.

(Continued on Next Page)

Palettes (Continued)

- Proper Usage (Continued)
  - Most useful for data and choices that are:
    - Discrete.
    - Frequently selected.
    - Limited in number.
    - Variable in number.
    - Not easily remembered.
    - Most easily understood when the alternatives may be seen together and compared to one another.
    - Most meaningfully represented pictorially or by example.
    - Can be clearly represented pictorially.
    - Rarely changed in content.

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Palettes (Continued)

- Proper Usage (Continued)
  - Do not use:
    - Where the alternatives cannot be meaningfully and clearly represented pictorially.
    - Where words are clearer than images.
    - Where the choices are going to change.
- Graphical Representations
  - Provide meaningful, accurate, and clear illustrations or representations of choices.
  - Create images large enough to:
    - Clearly illustrate the available alternatives.
    - Permit ease in pointing and selecting.
  - Create images of equal size.
  - Always test illustrations before implementing them.

(Continued on Next Page)

Palettes (Continued)

- Size
  - Present all available alternatives within the limits imposed by:
    - The size of the graphical representations.
    - The screen display's capabilities.
- Layout
  - Create boxes large enough to:
    - Effectively illustrate the available alternatives.
    - Permit ease in pointing and selecting.
  - Create boxes of equal size.
  - Position the boxes adjacent to, or butted up against, one another.
  - A columnar orientation is the preferred manner.
  - If vertical space on the screen is limited, orient the choices horizontally.

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Palettes (Continued)

- Organization
  - Arrange palettes in expected or normal order.
    - For palettes arrayed top to bottom, begin ordering at the top.
    - For palettes arrayed left to right, begin ordering at the left.
  - If an expected or normal order does not exist, arrange choices by frequency of occurrence, sequence of use, importance, or alphabetically (if textual).
  - If, under certain conditions, a choice is not available, display its subdued or less brightly than the other choices.

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Palettes (Continued)

- Captions
  - Provide a caption for each palette except on screens containing only one palette.
  - Display the caption fully spelled out using mixed-case letters.
  - Columnar orientation:
    - The field caption may be positioned left-aligned above the palette.
    - Alternatively the caption may be positioned to the left of the topmost alternative.
  - Horizontal orientation:
    - The field caption may be positioned above the palette.
    - Alternately, the caption may be positioned to the left of the alternatives.

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Palettes (Continued)

- Selection Method and Indication
  - Pointing:
    - Highlight the choice in some visually distinctive way when the pointer or cursor is resting on it and the choice is available for selection.
  - Activation:
    - When a choice is selected, distinguish it visually from the unselected choices by highlighting it in a manner different from when it is pointed at, or by placing a bold border around it.
  - Defaults:
    - If a palette is displayed with a choice previously selected or a default choice, display the currently active choice in the manner used when it was selected.

List Boxes

- Description:
  - A permanently displayed box-shaped control containing a list of attributes, or objects from which:
    - A single selection is made (mutually exclusive), or
    - Multiple selections are made (non-mutually-exclusive).
  - The choice may be text, pictorial representations, or graphics.
  - Selections are made by using a mouse to point and click.
  - Capable of being scrolled to view large lists of choices.
  - No text entry field exists in which to type text.
  - A list box may be associated with a summary list box control, which allows the selected choice to be displayed or an item added to the list.

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List Boxes (Continued)

- Purpose:
  - To display a collection of items containing:
    - Mutually exclusive options
    - Non-mutually-exclusive options.
- Advantages:
  - Unlimited number of choices.
  - Reminds users of available options.
  - Box always visible.

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List Boxes (Continued)

- Disadvantages:
  - Consumes screen space.
  - Often requires an action (scrolling) to see all list choices.
  - The list content may change, making it hard to find items.
  - The list may be ordered in an unpredictable way, making it hard to find items.
- Proper Usage:
  - For selecting values or setting attributes.
  - For choices that are:
    - Mutually exclusive.
    - Non-mutually-exclusive.

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List Boxes (Continued)

- Proper Usage (Continued)
  - Where screen space is available.
  - For data and choices that are:
    - Best represented textually.
    - Not frequently selected.
    - Not well known, easily learned , or remembered.
    - Ordered in an unpredictable fashion.
    - Frequently changed.
    - Large in number.
    - Fixed or Variable in list length.
  - When screen space or layout considerations make radio buttons or check boxes impractical.

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List Boxes (Continued)

- List Box General Guidelines
  - Selection Descriptions
    - Clearly and meaningfully describe the choices available. Spell them out as fully as possible.
    - Present in mixed case, using the sentence style structure.
    - Left-align into columns.
  - List Size
    - Not actual limit in size.
    - Present all available alternatives.
    - Require no more than 40 page-downs to search a list.

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List Boxes (Continued)

- List Box General Guidelines (Continued)
  - Box Size
    - Must be long enough to display 6 to 8 choices without requiring scrolling.
      - Exceptions:
        - If screen space constraints exist, the box may be reduced in size to display at least three items.
        - If it is the major control within a window, the box may be larger.
      - If more items are available than re visible in the box, provide vertical scrolling to display all items.
    - Must be wide enough to display the longest possible choice.
      - When box cannot be made wide enough to display the longest entry:
        - Make it wide enough to permit entries to be distinguishable, or,
        - Break the long entries with an ellipsis (…) in the middle, or,
        - Provide horizontal scrolling.

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List Boxes (Continued)

- List Box General Guidelines (Continued)
  - Organization
    - Order in a logical and meaningful way to permit easy browsing.
      - Consider using separate controls to enable the user to change the sort order of filter items displayed in the list.
    - If a particular choice is not available in the current context, omit it from the list.
      - Exception: If it is important that the existence and unavailability of a particular list item be communicated, display the choice dimmed or grayed out instead of deleting it.
  - Layout and Separation
    - Enclose the choices in a box with a solid border the same color as the choice descriptions.
    - Leave one blank character position between the choice descriptions and the left border.
    - Leave one blank character position between the longest choice description in the list and the right border, if possible.

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List Boxes (Continued)

- List Box General Guidelines (Continued)
  - Captions
    - Use mixed-case letters.
    - The preferred position of the control caption is above the upper-let corner of the list box.
      - Alternately, the caption may be located to the left of the topmost choice description.
      - Be consistent in caption style and orientation within a screen, and related screens.
  - Disabling
    - When a list box is disabled, display its caption and show its entries as grayed out or dimmed.

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List Boxes (Continued)

- List Box General Guidelines (Continued)
  - Selection Method and Indication
    - Pointing:
      - Highlight the selection choice in some visually distinctive way when the pointer or cursor is resting on it and the choice is available for selection.
    - Selection:
      - Use a reverse video or reverse color bar to surround the choice description when it is selected.
      - The cursor should be as wide as the box itself.
      - Mark the selected choice in a distinguishing way.
    - Activation:
      - Require the pressing of a command button when an item, or items, is selected.

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List Boxes (Continued)

- Single-Selection List Boxes
  - Purpose:
    - To permit selection of only one item from a large listing.
  - Design Guidelines
    - Related text box
      - If presented with an associated text box control:
        - Position the list box below and as close as possible to the text box.
        - The list box caption should be worded similarly to the text box caption.
        - If the related text box and the list box are very close in proximity, the caption may be omitted from the list box.
        - Use the same background color for the text box as is used in the list box.
    - Defaults
      - When the list box is first displayed:
        - Present the currently active choice highlighted or marked with a circle or diamond to the left of the entry.
        - If a choice has not been previously selected, provide a default choice and display it in the same manner that is used in selecting it.
        - If the list represents mixed values for a multiple selection, do not highlight an entry.

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List Boxes (Continued)

- Extended and Multiple-Selection List Boxes
  - Purpose:
    - To permit selection of more than one item in a long listing.
      - Extended list box: Optimized for individual item or range selection.
      - Multiple-selection list box: Optimized for independent item selection.
  - Design Guidelines:
    - Selection indication:
      - Mark the selected choice with an X or check mark to the left of the entry.
      - Consider providing a summary list box.
        - Position it to the right of the list box.
        - Use the same colors for the summary list box as are used in the list box.
        - Provide command buttons to *Add* (one item) or *Add All* (items) to the summary list box, and *Remove* (one item) or *Remove All* (items) from the summary list box.
      - Consider providing a display-only text control indicating how many choices have been selected.
        - Position it justified upper-right above the list box.

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List Boxes (Continued)

- Extended and Multiple-Selection List Boxes (Continued)
  - Select All and Deselect All buttons
    - Provide command buttons to accomplish fast Select All and Deselect All actions, when these actions must be frequently or quickly performed.
  - Defaults:
    - When the list box is first displayed:
      - Display the currently active choices highlighted.
      - Mark with an X or check mark to the left of the entry.
      - If the list represents mixed values for a multiple selection, do not highlight an entry.

List View Controls

- Description:
  - A special extended-selection list box that displays a collection of items, consisting of an icon and a label.
  - The contents can be displayed in four different views:
    - Large Icon: Items appear as a full-sized icon with a label below.
    - Small Icon: Items appear as a small icon with label to the right.
    - List: Items appear as a small icon with label to the right.
      - Arrayed in a columnar, sorted layout.
    - Report: Items appear as a line in a multicolumn format.
      - Leftmost column includes icon and its label.
      - Subsequent columns include application-specific information.
- Purpose and usage:
  - Where the representation of objects as icons is appropriate.
  - To represent items with multiple columns of information.

Drop-down/Pop-up List Boxes

- Description:
  - A single rectangular control that shows one item with a small button to the right side
    - The button provides a visual cue that an associated selection box is available but hidden
  - When the button is selected, a larger associated box appears, containing a list of choices from which one may be selected.
  - Selections are made by using the mouse to point and click.
  - Text may not be typed into the control.
- Purpose:
  - To select one item from a large list of mutually exclusive options when screen space is limited.

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Drop-down/Pop-up List Boxes (Continued)

- Advantages:
  - Unlimited number of choices.
  - Reminds users of available options.
  - Conserves screen space.
- Disadvantages:
  - Requires an extra action to display the list of choices.
  - When displayed, all choices may not always be visible, requiring scrolling.
  - The list may be ordered in an unpredictable way, making it hard to find items.

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Drop-down/Pop-up List Boxes (Continued)

- Proper usage:
  - For selecting values or setting attributes.
  - For choices that are mutually exclusive.
  - Where screen space is limited.
  - For data and choices that are:
    - Best represented textually.
    - Infrequently selected.
    - Not well known, easily learned, or remembered.
    - Ordered in an unpredictable fashion.
    - Large in number.
    - Variable or fixed in list length.

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Drop-down/Pop-up List Boxes (Continued)

- Proper Usage (Continued):
  - Use drop-down/pop-up lists when:
    - Screen space or layout considerations make radio buttons or single-selection list boxes impractical.
    - The first, or displayed, item will be selected most of the time.
  - Do not use a drop-down list if it is important that all options be seen together.
- Prompt Button
  - Provide a visual cue that a box is hidden by including a downward pointing arrow, or other meaningful image, to the right side of the selection field.
    - Position the button directly against, or within, the selection field.

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Drop-down/Pop-up List Boxes (Continued)

- Selection Descriptions
  - Clearly and meaningfully describe the choices available. Spell them out as fully as possible.
    - Graphical representations must clearly represent the options.
    - Left-align them in columns.
    - Display the descriptions using mixed-case letters.
- List Size
  - Not limited in size.
  - Present all available alternatives.

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Drop-down/Pop-up List Boxes (Continued)

- Box Size
  - Long enough to display 6 to 8 choices without scrolling.
  - Wide enough to display the longest possible choice.
  - When a box cannot be made wide enough to display the longest entry:
    - Make it wide enough to permit entries to be distinguishable, or,
    - Break long entries with ellipses (…) in the middle, or,
    - Provide horizontal scrolling.
- Organization
  - Order in a logical and meaningful way to permit easy browsing.
  - If a particular choice is not available in the current context, omit it from the list.
    - Exception: If it is important that the existence and unavailability of a particular list item be communicated, display the choice dimmed or grayed out instead of deleting it.

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Drop-down/Pop-up List Boxes (Continued)

- Layout and Separation
  - Enclose the choices in a box composed of a solid line border.
    - The border should be the same color as the choice descriptions.
    - Leave one blank character position between the choices and the left border.
    - Leave one blank character position between the longest choice description in the list and the right border, if possible.
- Captions
  - Display using mixed-case letters.
  - Position the caption to the left of the box or left-justified above the box.

(Continued on Next Page)

Drop-down/Pop-up List Boxes (Continued)

- Defaults
  - When the drop-down/pop-up listing is first presented, display the currently set value.
  - If a choice has not been previously selected, provide a default choice.
- Disabling
  - When a drop-down/pop-up list box is disabled, display its caption and entries as disabled or dimmed.
- Selection Method and Indication
  - Pointing:
    - Highlight the selection choice in some visually distinctive way when the pointer or cursor is resting on it and the choice is available for selection.
  - Activation:
    - Close the dorp-down/pop-up list box when an item is selected.

Combination Entry/Selection Controls

- Spin Boxes
- Combo Boxes
- Drop-down/Pop-up Combo Boxes

Spin Boxes

- Description:
  - A single-line field followed by two small, vertically arranged buttons.
    - The top button has an arrow pointing up.
    - The bottom button has an arrow pointing down.
  - Selection/entry is made by:
    - Using the mouse to point at one of the directional buttons and clicking. Items will change by one unit or step with each click.
    - Keying a value directly into the field itself.
- Purpose:
  - To make a selection by either scrolling through a small set of meaningful predefined choices or typing text.

(Continued on Next Page)

Spin Boxes (Continued)

- Advantages:
  - Consumes little screen space.
  - Flexible, permitting selection or typed entry.
- Disadvantages:
  - Difficult to compare choices.
  - Can be awkward to operate.
  - Useful only for certain kinds of data.
- Proper Usage
  - For setting attributes, properties, or values.
  - For mutually exclusive choices.
  - When the task requires the option of either key entry or selection from a list.
  - When the user prefers the option of either key entry or selection from a list.
  - Where screen space is limited.

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Spin Boxes (Continued)

- Proper Usage (Continued)
  - Most useful for data and choices that are:
    - Discrete.
    - Infrequently selected.
    - Well known, easily learned or remembered, and meaningful.
    - Ordered in a predictable, customary, or consecutive fashion.
    - Infrequently changed.
    - Small in number.
    - Fixed or variable in list length.
- List Size
  - Keep the list of items relatively short.
  - To reduce the size of potentially long lists, break the listing into subcomponents, if possible.

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Spin Boxes (Continued)

- List Organization
  - Order the list in the customary, consecutive, or expected order of the information contained within it.
    - Ensure that the user can always anticipate the next (not-yet-visible) choice.
  - When first displayed, present a default choice in the box.
- Other Spin Box Guidelines
  - Box Size
    - The spin box should be wide enough to display the longest entry or choice.
  - Caption:
    - Display it using mixed-case letters.
    - Position the caption to the left of the box or left-justified above the box.

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Spin Boxes (Continued)

- Other Spin Box Guidelines (Continued)
  - Entry and Selection methods:
    - Permit completion by:
      - Typing directly into the box.
      - Scrolling and selecting with a mouse.
      - Scrolling and selecting with the up/down arrow keys.
    - For alphabetical values:
      - Move down the order using the down arrow.
      - Move up the order using the up arrow.
    - For numeric values:
      - Show a larger value using the up arrow.
      - Show a smaller value using the down arrows.

Combo Boxes

- Description:
  - A single rectangular text box entry field, beneath which is a larger rectangular list box (resembling a drop-down list box) displaying a list of options.
  - The text box permits choice to be keyed within it.
  - The larger box contains a list of mutually exclusive choices from which one may be selected for placement in the entry field.
    - Selections are made by using a mouse to point and click.
  - As text it typed into the text box, the list scrolls to the nearest match.
  - When an item in the list box is selected, it is placed into the text box, replacing the existing content.
  - Information keyed may not necessarily have to match the list items.

(Continued on Next Page)

Combo Boxes (Continued)

- Purpose:
  - To allow either typed entry in a text box r selection from a list of options in a permanently displayed list box attached to the text box.
- Advantages:
  - Unlimited number of entries and choices.
  - Reminds users of available options.
  - Flexible, permitting selection or typed entry.
  - Entries not necessarily restricted to items selectable from list box.
  - List box always visible.

Combo Boxes (Continued)

- Disadvantages:
  - Consumes some screen space.
  - All list box choices not always visible, requiring scrolling.
  - Users may have difficulty recalling sufficient information to type entry, making text box unusable.
  - The list may be ordered in an unpredictable way, making it hard to find items.
- Proper usage:
  - For entering or selecting objects or values of setting attributes.
  - For information that is mutually exclusive.
  - When users may find it practical to, or prefer to, type information rather than selecting it from a list.
  - When users can recall and type information faster than selecting it from a list.

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Combo Boxes (Continued)

- Proper Usage (Continued)
  - When it is useful to provide the users a reminder of the choices available.
  - Where data must be entered that is not contained in the selection list.
  - Where screen space is available.
  - For data and choices that are:
    - Best represented textually.
    - Somewhat familiar or known.
    - Ordered in an unpredictable fashion.
    - Frequently changed.
    - Large in number.
    - Variable or fixed in list length.
- Combo Box Guidelines
  - Same as the Text Box/Single Line and Drop-Down/Pop-Up List Box guidelines.

Drop-down/Pop-up Combo Boxes

- Description:
  - A single rectangular text box with a small button to the side and an associated hidden list of options.
    - The button provides a visual cue that an associated selection box is available but hidden.
  - When requested, a larger associated rectangular box appears, containing a scrollable list of choices from which one is selected.
  - Selections are made by using the mouse to point and click.
  - Information may also be keyed into the field.
  - As text is typed into the text box, the list scrolls to the nearest match.
  - When an item in the list box is selected, it is placed into the text box, replacing the existing content.
  - The information keyed does not necessarily have to match list items.
  - Combines the capabilities of both a text box and a drop-down/pop-up list box.

Drop-down/Pop-up Combo Boxes (Continued)

- Purpose:
  - To allow either typed entry or selection from a list of options in a list box that may be closed and retrieved as needed.
- Advantages:
  - Unlimited number of entries and choices.
  - Reminds users of afvfailable options.
  - Flexible, permitting selection or typed entry.
  - Entries not restricted to items selectable from list box.
  - Conserves screen space.

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Drop-down/Pop-up Combo Boxes (Continued)

- Disadvantages:
  - Requires an extra step to display the list of choices.
  - When displayed all box choices may not always be visible, requiring scrolling.
  - User may have difficulty in recalling what to type.
  - The list content may change, making it hard to find items.
  - The list may be ordered in a unpredictable way, making it hard to find items.
- Proper Usage:
  - For entering or selecting objects or values or setting attributes.
  - For information that is mutually exclusive.
  - When users may find it practical to, or prefer to, type information rather than selecting it from a list.

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Drop-down/Pop-up Combo Boxes (Continued)

- Proper Usage (Continued)
  - When users can recall and type information faster than selecting from a list.
  - When it is useful to provide the users with an occasional reminder of the choices available.
  - Where data must be entered that is not contained in the selection list.
  - Where screen space is limited.
  - For data and choices that are:
    - Best represented textually.
    - Somewhat familiar or known.
    - Ordered in an unpredictable fashion.
    - Frequently changed.
    - Large in number.
    - Variable or fixed in list length.

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Drop-down/Pop-up Combo Boxes (Continued)

- Prompt Button
  - Provide a visual cue that a list box is hidden by including a downward-pointing arrow to the right of the test box.
  - Separate the button from the text box by a small space.
- Other Guidelines
  - Same as for the “Text Box/Single Line” and “Drop-down/Pop-up List Box”

Other Operable Controls

- Slider
- Tabs
- Date-Picker
- Tree View
- Scroll Bars

Slider

- Description:
  - A scale exhibiting degrees of a quality on a continuum.
  - Includes the following:
    - A shaft or bar.
    - A range of values with appropriate labels.
    - An arm indicating relative setting through its location on the shaft.
    - Optionally, a pair of buttons to permit incremental movement of the slider arm.
    - Optionally, a text box for typing or displaying an exact value.
    - Optionally, a detent position for special values.
  - May be oriented vertically or horizontally.
  - Selected by using the mouse to:
    - Drag a slider across the scale until the desired value is reached.
    - Point a the buttons at one end of the scale and clicking to change the value.
    - Keying a value in the associated text box.

(Continued on Next Page)

Slider (Continued)

- Purpose:
  - To make a setting when a continuous qualitative adjustment is acceptable, it is useful to see the current value relative to the range of possible values.
- Advantages:
  - Spatial representation of relative setting.
  - Visually distinctive.
- Disadvantages:
  - Not as precise as an alphanumeric indication.
  - Consumes screen space.
  - Usually more complex than other controls.

(Continued on Next Page)

Slider (Continued)

- Proper usage:
  - To set an attribute.
  - For mutually exclusive choices.
  - When an object has a limited range of possible settings.
  - When the range of values is continuous.
  - When graduations are relatively fine.
  - When the choices can increase or decrease in some well-known, predictable, and easily understood way.
  - When a spatial representation enhances comprehension and interpretation.
  - When using a slider provides sufficient accuracy.

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Slider (Continued)

- General
  - Use standard sliders whenever available.
- Caption and Labels
  - Caption:
    - Provide meaningful, clear, and consistent captions.
    - Display them using mixed-case letters.
    - Position the caption to the left of the box or left-justified above the slider.
  - Labels:
    - Provide meaningful and descriptive labels to aid in interpreting the scale.

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Slider (Continued)

- Scale
  - Show a complete range of choices.
  - Mark the low, intermediate, and high ends of the scale.
  - Provide scale interval markings, where possible.
  - Provide consistent increments.
  - Permit the user to change the units of measure.
  - If the precise value of a quantity represented is important, display the value set in an adjacent text box.
- Slider Arm
  - If the user cannot change the value shown in a slider, do not display a slider arm.

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Slider (Continued)

- Slider Buttons
  - Provide slider buttons to permit movement by the smallest increment.
  - If the user cannot change the value shown in a slider, do not display slider buttons.
- Detents
  - Provide detents to set values that have special meaning.
  - Permit the user to change the detent value.
- Proportions
  - To indicate the proportion of a value being displayed, fill the slider shaft in some visually distinctive way.
    - Fill horizontal sliders from left to right.
    - Fill vertical sliders from bottom to top.

Tabs

- Description:
  - A window containing tabbed dividers that create pages or sections.
  - Navigation is permitted between the pages or sections.
- Purpose:
  - To present information that can be logically organized into pages or sections within the same window.
- Advantages:
  - Resembles their paper-based cousins.
  - Visually distinctive.
  - Effectively organize repetitive, related information.
- Disadvantages:
  - Visually complex.

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Tabs (Continued)

- Proper usage:
  - To present discrete, logically structured, related, information.
  - To present the setting choices that can be applied to an object.
  - When a short tab label can meaningfully describe the tab's contents.
  - When the order of information use varies.
- Sections and Pages
  - Place related information within a page or section.
  - Order them meaningfully.
  - Arrange pages so they appear to go deeper, left to right and top to bottom.
  - Provide pages of equal size.

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Tabs (Continued)

- Location, Size, and Labels
  - Place the tabs at the top of the page or section.
  - Provide fixed-width tabs for pages or sectios of related information.
  - Provide textual labels.
    - Use system fonts.
    - Keep information brief and the same general length.
    - Use mixed case, capitalizing each significant word.
    - Assign a keyboard equivalent for keyboard access.
  - Center the labels within the tabs.
  - Re3strict tabs to only one row.
  - Arrange tabs so that they appear to go deeper, left to right and top to bottom.

Tabs (Continued)

- Command Buttons
  - If they affect only a page or section, locate the buttons on the page or section.
  - If they affect the entire tabbed control, locate the buttons outside the tabbed pages.

Date Picker

- Description:
  - A drop-down list box that displays a 1-month calendar in the drop-down list box.
  - The displayed month can be changed through pressing command buttons with left- and right-pointing arrows.
    - The left arrow moves backward through the monthly calendars.
    - The right arrow moves forward through the monthly calendars.
  - A date for the list box can be selected from the drop-down calendar.
- Purpose:
  - To select a date for inscribing in a drop-down list box.

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Date Picker (Continued)

- Advantages:
  - Provides a representation of a physical calendar, a meaningful entity.
  - The calendar listing is ordered in a predictable way.
  - Visually distinctive.
- Disadvantages:
  - Requires an extra step to display the calendar.
  - When displayed, all month choices are not visible, requiring a form of scrolling to access the desired choice.
- Proper usage:
  - To select and display a single date in close monthly proximity to the default month presented on the dorp-down list box.

Tree View

- Description:
  - A special list box control that displays a set of objects as an indented outline, based on the objects logical hierarchical relationship.
  - Includes, optionally, buttons that expand and collapse the outline.
    - A button inscribed with a plus (+) expands the outline.
    - A button inscribed with a minus (-) collapses the outline.
  - Elements that can optionally be displayed are:
    - Icons.
    - Graphics, such as a check box.
    - Lines to illustrate hierarchical relationships.
- Purpose and proper usage:
  - To display a set of objects as an indented outline to illustrate their logical hierarchical relationship.

Scroll Bars

- Description:
  - An elongated rectangular container consisting of:
    - A scroll area.
    - A slider box or elevator inside.
    - Arrows or anchors at either end.
  - Available, if needed, in primary and secondary widows, some controls, and Web pages.
  - May be oriented vertically or horizontally at the window or page edge.
- Purpose:
  - To find and view information that takes more space than the allotted display space.

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Scroll Bars (Continued)

- Advantages:
  - Permits viewing data of unlimited size.
- Disadvantages:
  - Consumes screen space.
  - Can be cumbersome to operate.
- Proper use:
  - When more information is available than the window space for displaying it.
  - Do not use to set values.

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Scroll Bars (Continued)

- Scroll Bar Design Guidelines
  - General:
    - Provide a scroll bar when invisible information must be seen.
  - Scroll area or container:
    - To indicate that scrolling is available, a scroll area or container should be provided.
      - Construct it of a filled in bar displayed in a technique the visually contrasts with the window and screen body background.
  - Scroll slider box or handle:
    - To indicate the location and amount of information being viewed, provide a slider box or handle.
      - Constructed of a movable and sizable open area of the scroll area, displayed in a technique that contrasts with the scroll area.
      - By its position, spatially indicate the relative location in the file of the information being viewed.
      - By its size, indicate, proportionately, the percentage of the available information in the file being viewed.

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Scroll Bars (Continued)

- Scroll Bar Design Guidelines (Continued)
  - Scroll Directional arrows:
    - To indicate the direction in which scrolling may be performed, directional arrows should be provided.
      - Construct them as arrows in small boxes, with backgrounds tha contrast with the scroll area.
  - Selection:
    - When the slider box/handle has been selected, highlight it in some visually distinctive way.
  - Location
    - Position a vertical (top-to-bottom) scroll bar to the right of the window.
    - Position a horizontal (left-to-right) scroll bar at the bottom the the window.:

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Scroll Bars (Continued)

- Scroll Bar Design Guidelines (Continued)
  - Size:
    - A vertical scroll bar should be the height of the scrollable portion of the window body.
    - A horizontal scroll bar should be at least one-half the width of the scrollable portion of the window body.
  - Current State Indication:
    - Whenever the window's size or the position of the information changes, the scroll bar components must also change, reflecting the current state.
    - Include scroll bars in all sizable windows
      - If no information is currently available by scrolling in a particular direction, the relevant directional arrow should be subdued or grayed out.

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Scroll Bars (Continued)

- Scroll Bar Usage Guidelines
  - Scroll Bar Style:
    - Stick with standard, proven design styles.
  - Directional preference:
    - Use vertical (top-to-bottom) scrolling.
    - Avoid horizontal (left-to-right) scrolling.

Custom Controls

- Implement custom controls with caution.
- If used, make the look and behavior of custom controls different from that of standard controls.

Presentation Controls

- Static Text Fields
- Group Boxes
- Column Headings
- Tool Tips
- Balloon Tips
- Progress Indicators
- Sample Box
- Scrolling Tickers

Static Text Fields

- Description:
  - Read-only textual information.
- Purpose:
  - To identify a control by displaying a control caption.
  - To clarify a screen by providing instructional or prompting information.
  - To present descriptive information.
- Proper usage:
  - To display a control caption.
  - To display instructional or prompting information.
  - To display descriptive information.

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Static Text Fields (Continued)

- Static Text Field Guidelines
  - Captions:
    - Include a colon (:) as part of the caption.
    - Include a mnemonic for keyboard access.
    - When the associated control is disabled, display it dimmed.
    - Follow all other presented guidelines for caption presentation and layout.
  - Instructional or prompting information:
    - Display it in a unique and consistent font style for easy recognition and differentiation.
    - Follow all other presented guidelines for prompting and instructional information.
  - Descriptive information:
    - Follow all other guidelines for required screen or control descriptive information.

Group Boxes

- Description:
  - A rectangular frame that surrounds a control or group of controls.
  - An optional caption may be included in the frame's upper-left corner.
- Purpose:
  - To visually relate the elements of a control.
  - To visually relate a group of related controls
- Proper usage:
  - To provide a border around radio button or check box controls.
  - To provide border around two or more functionally related controls.

Static Text Fields (Continued)

- Guidelines:
  - Label or heading:
    - Typically, use a noun or noun phrase for the label or heading.
    - Provide a brief label or heading, preferably one or two words.
    - Relate label or heading's content to the group box's content.
    - Capitalize the first letter of each significant word.
    - Do not include an ending colon (:).
  - Follow all other guidelines presented for control and section borders.

Column Headings

- Description:
  - Read-only textual information that serves ad a heading above columns of text or numbers.
  - Can be divided into two or more parts.
- Purpose:
  - To identify a column of information contained in a table.
- Proper usage:
  - To display a heading above a column of information contained in a table.

Static Text Fields (Continued)

- Guidelines:
  - Heading:
    - Provide a brief heading.
    - Can include text and a graphic image.
    - Capitalize the first letter of each significant word.
    - Do not include and ending colon (:)
  - The width of the column should fit the average size of the column entries.
  - Does not support keyboard access.

ToolTips

- Description:
  - A small pop-up window containing descriptive text that appears when a pointer is moved over a control or element either:
    - Not possessing a label.
    - In need of additional descriptive or status information.
- Purpose:
  - To provide descriptive information about a control or screen element.
- Advantages:
  - Identifies and otherwise unidentified control.
  - Reduces possible screen clutter caused by control captions and descriptive information.
  - Enables control size to be reduced.

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ToolTips (Continued)

- Disadvantages:
  - Not obvious, must be discovered.
  - Inadvertent appearance can be distracting.
- Proper usage:
  - To identify a control that has no caption.
  - To provide additional descriptive or status information about a screen element.
- ToolTip Guidelines
  - Display after a short time-out.
  - For toolbars, provide a brief word as a label.
    - Use mixed case in the headline style of presentation with no ending punctuation.

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ToolTips (Continued)

- ToolTip Guidelines (Continued)
  - For other elements, provide a brief phrase presenting descriptive or status information.
    - Use mixed case in the sentence style of presentation.
  - Present ToolTips at the lower-right edge of the pointer.
    - Display them fully on the screen.
    - For text boxes, display ToolTips centered under the control.
  - Display them in the standard system ToolTip colors.
  - Remove the ToolTip when the control is activated or the pointer is moved away.
  - Don’t substitute ToolTips for good design.

Balloon Tips

- Description:
  - A small pop-up window that contains information in a word balloon.
  - Components can include:
    - Title.
    - Body text.
    - Message Icons.
  - Appear adjacent to the item to which they apply, generally above or to the left.
  - Only one tip, the last posted, is visible at any time.
  - Tips are removed after a specified time period.

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Balloon Tips

- Purpose:
  - To provide additional descriptive or status information about a screen element.
- Advantages:
  - Provides useful reminder and status information.
- Disadvantages:
  - If overused they lose their attention-getting value.
  - If overused in situations the user considers not very important, their continual appearance can be aggravating.

(Continued on Next Page)

Balloon Tips

- Proper usage:
  - To display noncritical:
    - Reminder information.
    - Notification information.
  - Do not use tips to display critical information.
- Balloon Tip Guidelines
  - General:
    - Use a notification tip to inform the user about state changes.
    - Use a reminder tip for state changes that the user might not usually notice.
    - Point the tip of the balloon to the item it references.
    - Do not use them to replace ToolTips.
    - Do not overuse balloon tips.

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Balloon Tips

- Balloon Tip Guidelines
  - Content:
    - Restrict them to a length of 100 characters, including title and body text.
    - Title text should:
      - If the tip refers to an icon or other image representing a specific object, include:
        - The object's name, using its normal capitalization.
        - The object's status, using sentence-style presentation without ending punctuation.
      - Be presented in bold.
    - Body text should:
      - Include a description of the situation in one or two brief sentences.
      - Include a brief suggestion for correcting the situation.
      - Be presented using mixed-case in the sentence style.

Progress Indicators

- Description:
  - A rectangular bar that fills as a process is being performed, indicating the percentage of the process that has been completed.
- Purpose:
  - To provide feedback concerning the completion of a lengthy operation.
- Proper Usage:
  - To provide an indication of the proportion of a process completed.

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Progress Indicators (Continued)

- Progress Indicator Guidelines
  - When filling the indicator:
    - If horizontally arrayed, fill it from left to right.
    - If vertically arrayed, fill it from bottom to top.
  - Fill it with a color or a shade of gray.
  - Include descriptive text for the process, as necessary.
  - Place text outside of the control.

Sample Box

- Description:
  - A box illustrating what will show up on the screen based upon the parameter or parameters selected.
  - May include text, graphics, or both.
- Purpose:
  - To provide a representation of actual screen content based upon the parameter or parameters selected.
- Guidelines:
  - Include a brief label.
  - Use mixed case in the headline style.
  - Locate it adjacent to the controls upon which it is dependent.

Scrolling Tickers

- Description:
  - Text that scrolls horizontally through a container window.
- Advantages:
  - Consume less screen space than full text.
- Disadvantages:
  - Hard to read.
  - Time-consuming to interpret.
  - Distracting.
- Guideline:
  - Do not use.

Selecting the Proper Controls

- Entry Versus Selection - A comparison
  - Choosing a Type of Control
    - For familiar, meaningful data choose the technique that, in theory, requires the fewest number of keystrokes to complete.
    - If the data is unfamiliar or prone to typing errors, choose a selection technique.
  - Aided versus Unaided Entry
    - Provide aided entry whenever possible.
      - Absorb any extra and unnecessary keystrokes.
      - Provide an auditory signal that autocompletion has been performed.
- Comparison of GUI Controls
  - Mutually Exclusive Choice Controls
    - For a small set of options Radio buttons are fastest, most accurate, and most preferred by users.
    - For medium and large sets of options, Radio buttons are not recommended but may be used if sufficient screen space exists.
    - Scrolling controls seem to significantly impede selection speeds.

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Selecting the Proper Controls (Continued)

- Comparison of GUI Controls (Continued)
  - Nonexclusive Choice Controls
    - For a small set of options , check boxes were significantly faster than the other controls as well as the most preferred.
    - For medium and large set sizes, check boxes are not recommended but may be used if sufficient screen space exists.
    - Scrolling controls seem to significantly impede selection speeds.
  - Combination Selection and Entry Controls
    - Radio buttons with a text entry field are the fastest, most accurate, and preferred choice.
  - Controls for Selecting a Value within a Range
    - Making all options always visible will enhance performance.
    - Requiring additional actions to make further options visible slows performance.
    - For longer lists, scrolling tends to degrade performance more than the action associated with retrieving a hidden list.

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Selecting the Proper Controls (Continued)

- Control Selection Criteria
  - Data Considerations:
    - Is the property or data mutually exclusive or nonexclusive? Does entry/selection require single or multiple items?
    - Is the property or data discrete or continuous? Discrete data can be meaningfully specified and categorized, while continuous data cannot.
    - Is the property or data limited or unlimited in scope? If limited, how many items will the data normally not exceed?
    - Is the property or data fixed or variable in list length? Are there always a fixed number of items, or wil it vary?
    - Is the property of data ordered in a predictable or unpredictable fashion? If predictable, will the user be able to anticipate the next, unseen, item?
    - Can the property or data be represented pictorially? Will a picture or graphic be as meaningful as a textual description?

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Selecting the Proper Controls (Continued)

- Control Selection Criteria (Continued)
  - Task considerations:
    - How often is an item entered or selected?
    - How often is an item changed?
    - How precisely must the item the entered or selected?
  - User considerations:
    - How much training in control operation will be provided?
    - How meaningful or known is the property or data to the user? How easily remembered or learned by the user is the property or date?
    - How frequently used will the system be? Is the user an experienced typist?
  - Display considerations:
    - How much screen space is available to display the various controls?

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Selecting the Proper Controls (Continued)

- Choosing a Control Form
  - When to Permit Text Entry
    - Permit text entry if any of the following questions can be answered Yes:
      - Is the data unlimited in size and scope?
      - Is the data familiar?
      - I the data not conducive to typing errors?
      - Will typing be faster than choice selection?
      - Is the user an experienced typist?
  - What Kind of Control to Choose
    - See Table 7.2 and 7.3 (pages 503 and 504 in the text)

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Selecting the Proper Controls (Continued)

- Choosing a Control Form (Continued)
  - Choosing between Buttons and Menus for Commands
    - The following considerations are involved in choosing the correct command form:
      - Whether or not the command part of a standard tool set.
      - The total number of commands in the application.
      - The complexity of the commands.
      - The frequency with which commands are used.
      - Whether or not the command is used in association with another control.