

UNIT-III

Microsoft entered the marketplace in August 1981 by releasing version 1.0 of the operating system Microsoft DOS (MS-DOS), a 16-bit command-line operating system.

Bill Gates and Paul Allen founded Microsoft and windows operating system has been its primary product.

Microsoft Windows is a multitasking operating system developed by Microsoft Corporation which uses Graphical User Interface to interact with the users. Microsoft was originally named “Traf-O-Data” in 1972, was renamed as “Micro-soft” in November 1975, then “Microsoft” on November 26, 1976

we will also clear you about the latest OS release of Windows is “Windows 10” which was launched in the year 2015.

below is how Microsoft windows evolved over time:

Windows 1.0 – Nov 1985

Windows 2.0 – Dec 1987

Windows 3.0 – May 1990

Windows 95 – Aug 1995

Windows 98 – June 1998

Windows ME – Sep 2000

Windows XP – Oct 2001

Windows Vista – Nov 2006

Windows 7 – July 2009

Windows 8.0 – Oct 2012

Windows 8.1 – Oct 2013

Windows 10 – July 2015

Main Components of Windows:

After learning about the Introduction to Windows, we are now going to study about the main components of Windows. The main components of the Windows Operating System are the following:

Configuration and maintenance

User interface

Applications and utilities

Windows Server components

File systems

Core components

Services

DirectX

Networking

Scripting and command-line

Kernel

NET Framework

Security

Deprecated components and apps

APIs

Features of Windows:

Windows Search: We can have numerous files and contents located on our system and sometimes we may run out of memory about the exact location of our file. Windows Search is a search function included with Windows that allows the user to search their entire computer.

Windows File Transfer: We may have the need to transfer in or transfer out the files and contents from our machine to other devices such as other computers or mobiles and tablets. We can do this by using an Easy Transfer Cable, CDs or DVDs, a USB flash drive, wireless Bluetooth, a network folder, or an external hard disk.

Windows Updates: Windows includes an automatic update feature with the intended purpose of keeping its operating system safe and up-to-date.

Windows taskbar: At the bottom most part of your windows, you will see a row which is known as the taskbar. It has the currently running applications, you can also pin applications that you frequently use by using an option Pin to Taskbar". The taskbar is the main navigation tool for Windows

Remote Desktop Connection: This feature of windows allows you to connect to another system and work remotely on another system.

the number of menu choices presented on a screen: -

Without logical groupings of elements, limit choices to 4 to 8. - With logical groupings of elements, limit choices to 18 to 24. Provide decreasing direction menus.

Consistency:

Provide consistency with the user's expectations.

Provide consistency in menu:

Formatting, including organization, presentation, and choice ordering.

Phrasing, including titles, choice descriptions, and instructions.

Choice selection methods.

Navigation schemes.

Display

If continual or frequent references to menu options are necessary, permanently display the menu in an area of the screen that will not obscure other screen data.

If only occasional references to menu options are necessary, the menu may be presented on demand

Critical options should be continuously displayed,

Presentation

Ensure that a menu and its choices are obvious to the user by presenting them with a unique and consistent structure, location, and/or display technique.

Ensure that other system components do not possess the same visual qualities as menu choices.

Organization

Provide a general or main menu.

Display:

All relevant alternatives.

Only relevant alternatives.

Delete or gray-out inactive choices

Match the menu structure to the structure of the task.

Organization should reflect the most efficient sequence of steps to accomplish a person's most frequent or most likely goals.

Minimize number of menu levels within limits of clarity.

For Web sites, restrict it to two levels (requiring two mouse clicks) for fastest performance.

STRUCTURES OF MENUS

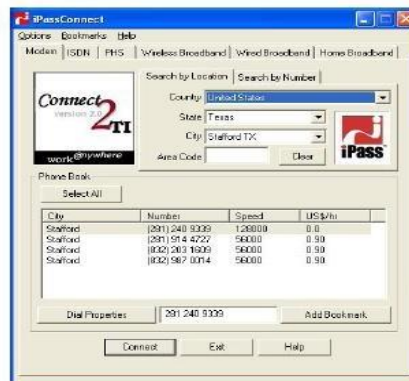
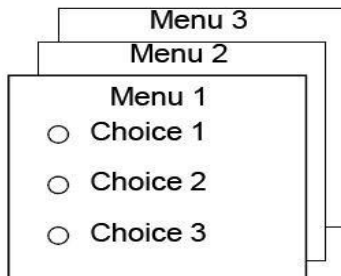
• Single Menus

– No other menus will follow necessitating additional user choices



- ☐ Novice
- ☐ Intermediate
- ☐ Expert

• Sequential Linear Menus

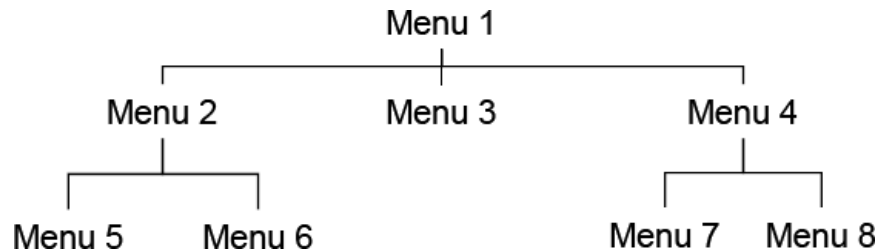


• Simultaneous Menus

ALTERNATIVE 1 <ul style="list-style-type: none"><input type="radio"/> Choice 1<input type="radio"/> Choice 2<input type="radio"/> Choice 3	ALTERNATIVE 3 <ul style="list-style-type: none"><input type="radio"/> Choice 1<input type="radio"/> Choice 2<input type="radio"/> Choice 3
ALTERNATIVE 2 <ul style="list-style-type: none"><input type="radio"/> Choice 1<input type="radio"/> Choice 2<input type="radio"/> Choice 3	ALTERNATIVE 4 <ul style="list-style-type: none"><input type="radio"/> Choice 1<input type="radio"/> Choice 2<input type="radio"/> Choice 3

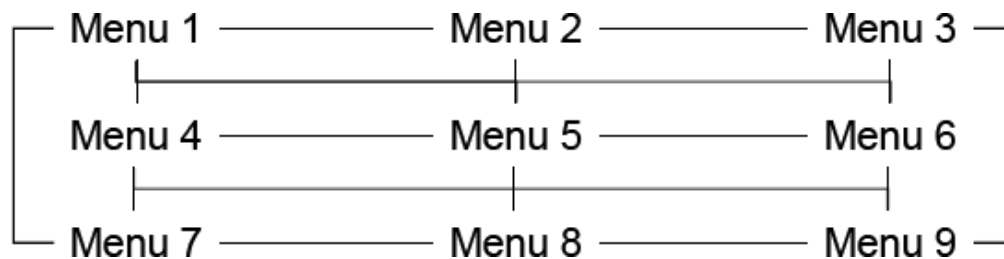
- **Hierarchical Menus**

- When many relationships exist between menu alternatives, and some menu options are only appropriate depending upon a previous menu selection, a hierarchical structure is the best solution.



- **Connected Menus**

- This menu gives you a full control over the navigation flow



- **Event-Trapping Menus**

- Provide ever-present background of control over the system's state and parameters while the user is working on a foreground task
 - Serve three functions
 - Immediately change some parameter in the current environment (bold text)
 - Take user out of current environment to perform function (spell check)
 - Exit and allow user to go to new environment (exit)

FUNCTIONS OF MENUS

- Navigation to a New Menu
- Execute an Action or Procedure
- Displaying Information
- Data or Parameter Input

CONTENT OF MENUS

- Menu Context
 - Provides information to keep the user oriented
- Menu Title
 - Provides the context for the current set of choices
- Choice Descriptions:
 - Descriptions can range from a mnemonic, numeric or alphabetized listing
- Completion Instructions
 - Tell users how to indicate their choices

FORMATTING OF MENUS

- Consistency
 - Provide consistency in menu
- Organization, presentation, and choice ordering
- Display
 - Frequent references
- Permanently display the menu in an area of the screen that will not obscure other screen data
 - Occasional references
- Presentation
 - Should be obvious with a unique and consistent structure
- Organization
 - Provide a main menu
 - Display
- All relevant alternatives (gray-out inactive choices)
 - Minimize number of menu levels
 - Number of menu choices presented on a screen
- 4-8 choices without logical grouping of elements

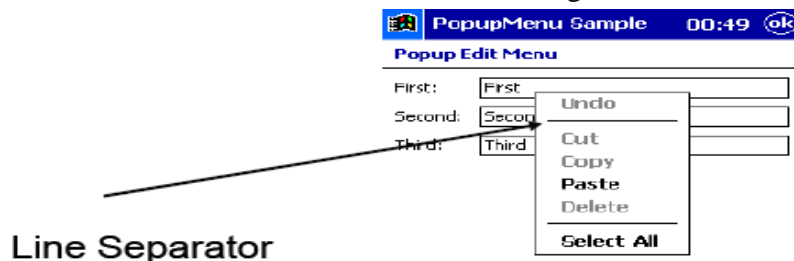
- 18-24 choices with logical groupings of elements with no more than 10 items within a group
 - Never require menus to be scrolled
- Complexity
 - Provide both simple and complex menus
- Item Arrangement
 - Orient for top-to-bottom reading
 - Left justify descriptions
 - Organize for left to right reading
- Ordering
 - Numeric order
 - Sequence/Frequency of occurrence
 - Importance
 - Semantic similarity

GROUPINGS

- Create grouping of items that are logical, unique, meaningful and mutually exclusive
- Present no more than six or seven groupings on screen
- Separate grouping created through either
 - Wider spacing, or a thin ruled line
- Provide immediate access to critical or frequently chosen items

LINE SEPARATOR

- Separate vertically arrayed grouping with subtle solid lines
- Separate vertically arrayed subgroupings with subtle dotted or dashed lines
- For independent groupings
 - Extend the line to the left and right menu borders



PHRASING THE MENU

- Menu Titles: Should be Short, Simple, Distinctive title
- Menu Choice Description:
 - Can be single, compound or multiple words
 - Use task-oriented not data-oriented wording
 - Must never use the same wording as its menu title
 - Identical choices on different menus should be worded identically
- Keyboard Accelerators
 - Ctrl +B or (Ctrl +B)
- Keyboard Equivalents
 - Normal, Bold, Italic
- Intent Indicators
 - To a cascade indicator: place a triangle or right pointing solid arrow following the choice
 - To a window indicator: place ellipsis (...) immediately follow the choice



SELECTING MENU CHOICES

- Initial Cursor Positioning
- Choice Selection
 - Pointers
 - Keyboards
 - Selection/Execution

- Combining techniques
- Defaults
 - Provide a default whenever possible (as Bold Text)
- Unavailable Choices
 - Should be dimmed or “grayed out”

MARK TOGGLES OR SETTING

- Purpose
 - Use to designate that an item or feature is active over a relatively long period of time
 - Use to provide a reminder that an item or feature is active or inactive
 - Position the indicator to the left of the option
 - For situations where several nonexclusive choices may be selected, consider including one alternative that deselects all items and reverts the state to the normal condition

Bold old Ctrl+B

Italic Ctrl+I

TOGGLED MENU ITEMS

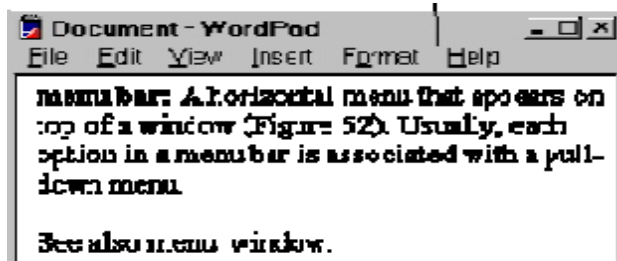
- Purpose
 - Use to designate two opposite commands that are accessed frequently
 - Use when the menu item displayed will clearly indicate that the opposite condition currently exists
 - Provide a meaningful, fully spelled-out description of action
 - Begin with a clear verb
 - Use mixed-case letter

View	View
Hide Grid	Show grid

KINDS OF GRAPHICAL MENUS

- Menu Bar
- Pull-Down Bar
- Cascading Menu Bar
- Pop-Up Menu
- Iconic Menu

Menu Bar



- Advantage
 - Always visible
 - Easy to browse
 - Do not obscure the screen working area
 - Allow for use of keyboard equivalents
- Disadvantage
 - Consume a full row of screen space
 - Require looking away from the main working area to find
 - Require moving pointer from the main working area to select
 - Horizontal orientation is less efficient for scanning
- All primary windows must have a menu bar
- All menu bars must have an associated pull-down menu containing at least two choices
- Do not allow the user to turn off the display of the menu bar
- Locate at the top of the screen, just below the screen title
- Use single-word choices whenever possible
- Order choices left-to-right with
 - Most frequent choices to left/ related information grouped together
- Help, when included should be located at the right side
- Layout: x File xxx Edit xxx Options Help x
- Separate the bar from the remainder of the screen by
 - A different background or Solid lines above and below
- Use reverse color selection cursor to surround the choice

Pull-Down Menu

- Proper Usage
 - A small number of items
 - Items best represented textually
 - Items whose content rarely changes

- Advantages
 - No window space is consumed when they r not used
 - Allow for display of both keyboard equivalents and accelerators
 - Vertical orientation permits more choices to be displayed
- Disadvantage
 - Require searching and selecting
 - Require moving the pointer out of working area to select
- May obscure the screen working area
- Gray-out or dim items that can not be chosen
- Position the pull-down directly below the selected menu bar choice
- Restrict to no more than 5-10 choices
- Place frequent or critical items at the top
- Multicolumn menus are not desirable
- Align the first character of the pull-down descriptions under the second character of the applicable menu bar choice
- If a menu item establishes or changes the attributes of data or properties of the interface, mark the pull down choice or choices whose state is current or active “On”
- Grouping:
 - Mark Toggles or Setting
 - Cascade and Leading to other windows indicator
 - Keyboard Equivalents and Accelerators

Cascading Menus



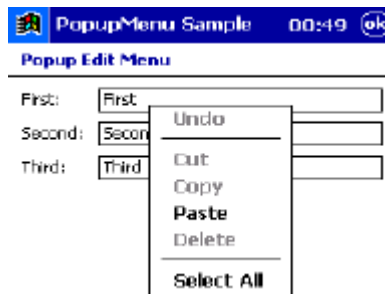
- **Advantage:**

- Top-level menus are simplified because some choices are hidden
- More first-letter mnemonics are available because menus possess fewer alternatives
- High-level command browsing is easier because subtopics are hidden

- **Disadvantage**

- Access to submenu items requires more steps
- Access to submenu items require a change in pointer movement
- Place an arrow or right-pointing triangle to the right of each menu
- Leave the choice leading to the cascading menu highlighted
- Do not exceed three menu levels (two cascades)

Pop Up Menu



- Choices may be also presents alternatives or choices within the context of the task
- Pop-up menus may be requested when the mouse pointer is positioned over a designated or hot area of screen (a window border) or over a designed icon

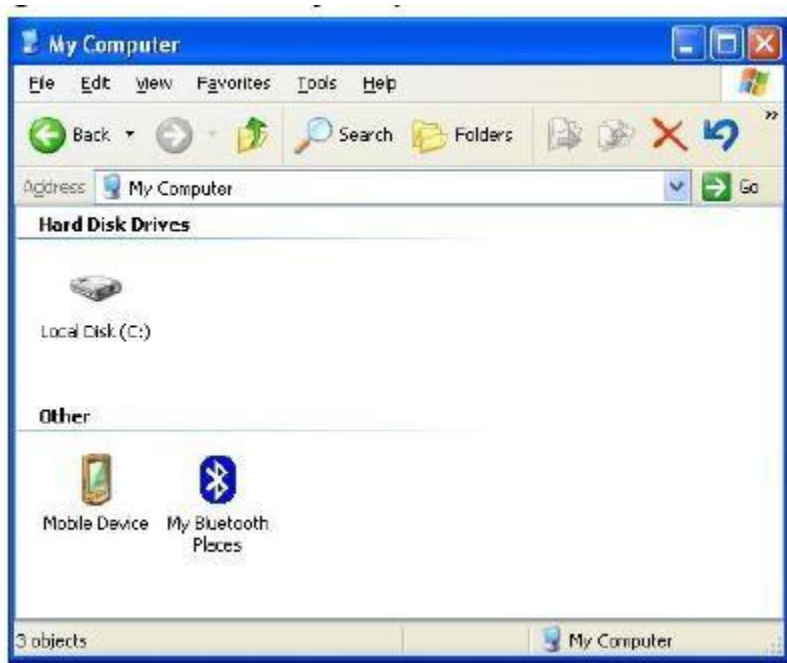
- **Advantage**

- They do not use window space when not displayed
- They appear in the working area

- **Disadvantage**

- They existence must be learned and remembered
- May obscure the screen working area
- Require a special action to see the menu (Mouse click)

Iconic Menu



- Use to remind user of the functions, commands, application choices
- Create icons that
 - Help enhance recognition and hasten option selection
 - Meaningful and clearly represent choices

SELECT THE PROPER KINDS OF WINDOWS

A window is an area of the screen that contains a particular view of some area of the computer or some portion of a person's dialog with the computer.

Content

- A window's characteristics
- A window's components
- A window's presentation styles
- The types of windows available
- Organizing window system functions
- A window's operations
- Web system frames and pop-up windows

Window Characteristics

- A name or title, allowing it to be identified
- A size in height and width (which can vary)
- Only active windows can have their contents altered
- A window may be partially or fully hidden behind another window
- Information within a window may extend beyond window's display area
- Presentation is arranged in relation to other windows (tiled, overlapping, or cascading)
- Methods for manipulation of the window on the screen
- Its highlight, that is, the part that is selected

Windows are useful in the following

- Presentation of Different Levels of Information
- Presentation of Multiple Kinds of Information
- Sequential Presentation of Levels or Kinds of Information
- Access to Different Sources of Information
- Combining Multiple Sources of Information
- Perform More Than One Task
- Reminding
- Monitoring
- Multiple Representations of the Same Task

Components of a Window

- Frame (Border)
- Title Bar
- Title Bar Icon
- Window Sizing Buttons
- What's This Button
- Menu Bar
- Status Bar
- Scroll Bars
- Split Box(Split Bar)
- Toolbar
- Command Area
- Size Grip
- Work Area

Window Presentation Styles

- Tiled Windows
 - They are easier, according to studies, for novice or inexperienced people to learn

- Yield better user performance for tasks where the data requires little window manipulation to complete the task
- Only a limited number can be displayed in the screen area available
- As windows are opened or closed, existing windows change in size. This can be annoying
- As the number of displayed windows increases, each window can get very tiny

- Overlapped Windows

- Visually, their look is 3-D, resembling the desktop that is familiar to the user
- Windows can maintain larger sizes
- Windows can maintain consistent sizes, position
- They are operationally much more complex than tiled windows.

More control functions require greater user attention and manipulation

- Windows themselves can be lost behind other windows and be resumed not to exist
- Cascading Windows (Special type of overlapping window)
 - No window is ever completely hidden
 - Bringing any window to the front is easier
 - It provides simplicity in visual presentation and cleanness

Picking a Presentation Style

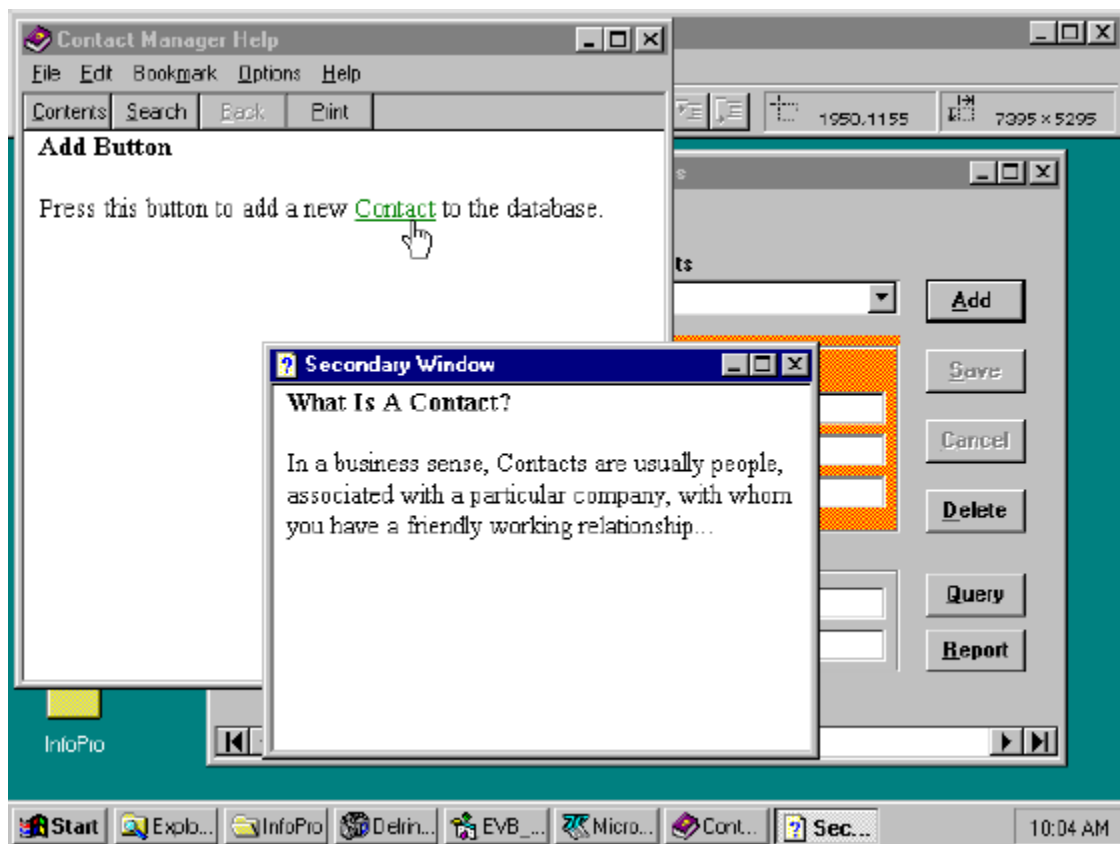
- Use tiled window for:
 - Single task activities
 - Data that needs to be seen simultaneously
 - Tasks requiring little window manipulation
 - Novice or inexperienced users
- Use overlapping windows for:
 - Switching between tasks
 - Tasks necessitating a greater amount of window manipulation
 - Expert or experienced users
 - Unpredictable display contents

Type of Windows

- Primary Window
 - Should represent an independent function or application
 - Use to present constantly used window components and controls
 - Use for presenting information that is continually updated (Date and time)
 - Often called main window or application window
 - Do not divide independent function into two or more primary windows.

- Secondary Windows
 - A dependent secondary
- It can only be displayed from a command on the interface of its primary window
 - A independent secondary
- Can be opened independently of a primary window (property sheet)
- Microsoft Windows possesses several types of secondary type of secondary windows called
 - Dialog boxes
 - Property sheet
 - Property inspectors
 - Message boxes
 - Palette windows
 - Pop-up windows

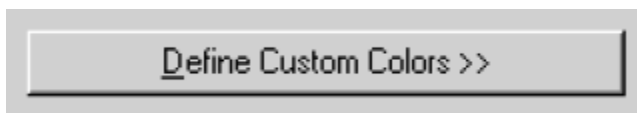
• Secondary Windows



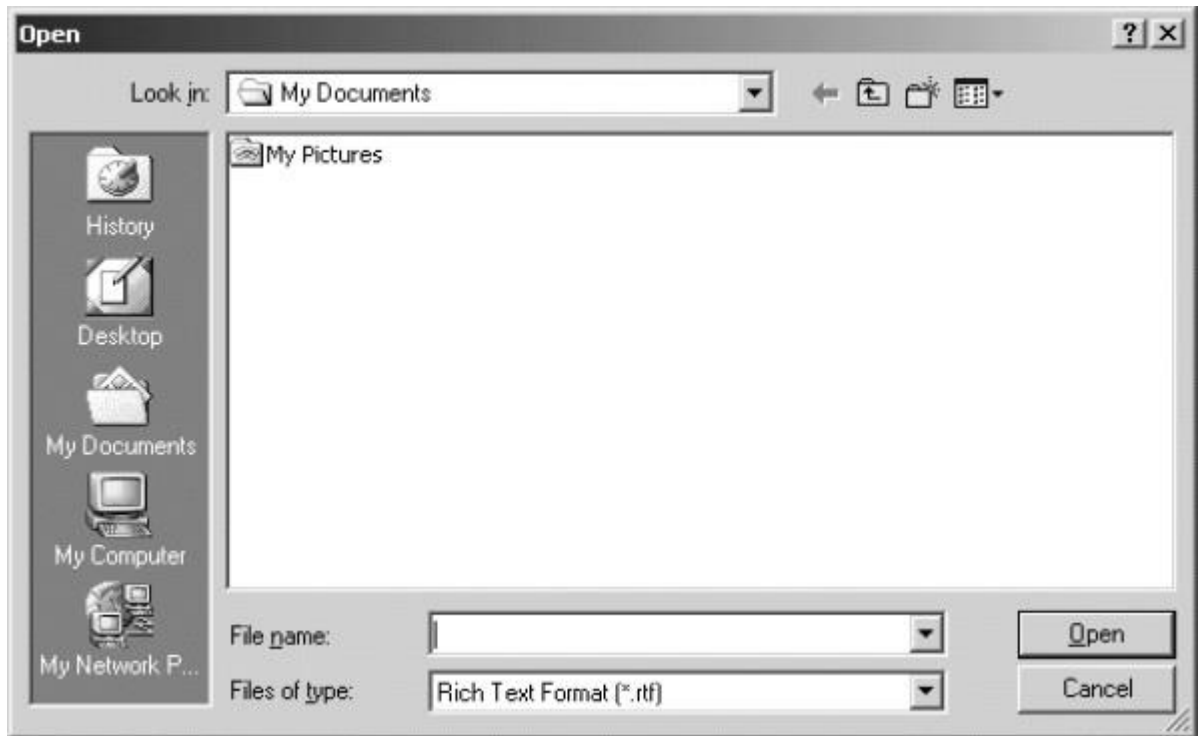
Modal and Modeless

- Modal window
 - Will not permit interaction with another window until the current dialog is completed

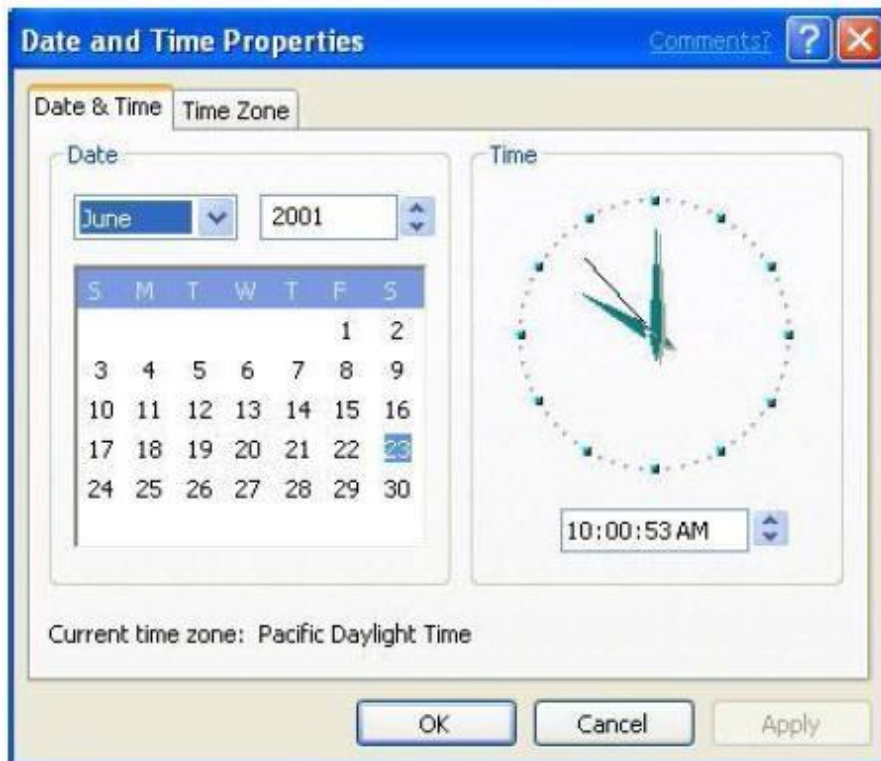
- Remain displayed until the appropriate action is taken after which it is removed
 - Modal dialog boxes typically request critical information or actions
- Modeless window
 - Switching between the box and its associated is permitted
- Cascading
 - To provide advanced options at a lower level in a complex dialog
 - Provide a command button leading to the next dialog box with ...
 - Provide no more than two cascades in a given path
 - Don not cover previous critical information
- Relevant information
- Title Bar
- Unfolding
 - To provide advanced options at the same level in a complex dialog
 - Provide a command button with an expanding dialog symbol >>
 - Expand to right or downward



- Dialog Boxes
 - Use for presenting brief messages
 - Use for requesting specific, temporary actions
 - Use for performing actions that
 - Take a short time to complete
 - Are not frequently changed
 - Usually be those that do not occur frequently
 - Command button to include
 - OK
 - Cancel
 - Others as necessary



Property Sheets and Property Inspectors



- Property sheets
 - Use for presenting the complete set of properties for an object
 - Categorize and group within property pages, as necessary
 - Command buttons to include
- Ok
- Cancel
- Apply
- Reset
- Others as necessary
 - For single property sheets, place the command on the sheet
 - For tabbed property pages, place the commands outside the tabbed pages

Property Inspectors

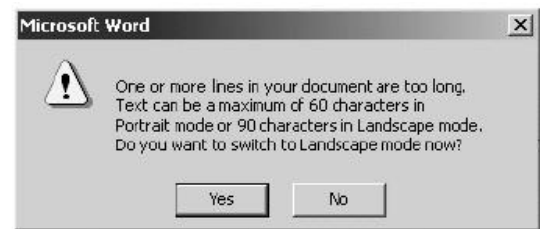


- **Property Inspectors**
 - Use for displaying only the most common or frequently accessed object properties
 - Properties of an object are displayed by using a dynamic viewer or browser that reflects the properties of the current selection
 - Property value in the selected object should be changed as soon as the user makes the change in the related property control
- Message Boxes
- If a message requires no choices to be made but only acknowledgement, include an ok button and optionally a help menu
- If the message requires the user to make a choice, include a command button for each option
- Include OK and Cancel buttons only when the user has the option of continuing or stopping the action
- Use Yes and No buttons when the user must decide how to continue
- If the choices are too ambiguous, label the command buttons with the names of specific actions, for example,

Save and Delete



Progress message box



Yes No message box



Information



Warning



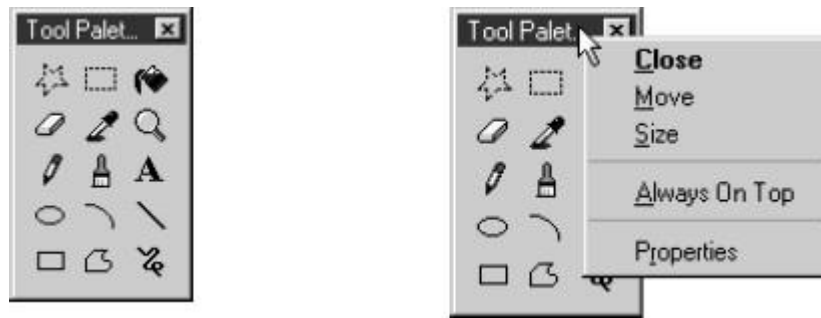
Critical



Message box choices

Palette and Pop-Up Windows

- Palette windows are modeless secondary windows that present a set of controls.
- Palette windows are distinguished by their visual appearance, a collection of images, colors or patterns
- The title bar for a palette window is shorter and includes only a close button
- Use pop-up windows to display
 - Additional information when an abbreviated form of the information is the main presentation
 - Textual labels for graphical controls
 - Context-sensitive Help information
 - Pop-up windows do not contain standard secondary window components such as a title bar and close button



Select the Proper Device-Based Controls

Device-based controls, often called input devices, are the mechanisms through which people communicate their desires to the system.

Identify the characteristics and capabilities of device-based control

- Trackball
- Joystick
- Graphic tablet
- Light pen
- Touch screen
- Voice
- Mouse
- Keyboard

Trackball

- Description
 - A ball that rotates freely in all directions in its socket
- **Advantages**
 - Direct relationship between hand and pointer movement in terms of direction and speed
 - Does not obscure vision of screen
 - Does not require additional desk space (if mounted on keyboard)
- **Disadvantage**
 - Movement indirect, in plane different from screen
 - Requires hand to be removed from keyboard keys
 - Requires different hand movements
 - May be difficult to control
 - May be fatiguing to use over extended time

Joystick

- **Advantages**

- Direct relationship between hand and pointer movement in terms of direction and speed
- Does not obscure vision of screen
- Does not require additional desk space (if mounted on keyboard)

- **Disadvantage**

- Movement indirect, in plane different from screen
- Requires hand to be removed from keyboard keys
- Requires different hand movements
- May be difficult to control
- May be fatiguing to use over extended time
- May be slow and inaccurate.

Graphic (*Touch*) Tablet

- **Description**

- Pressure-, heat-, light-, or light-blockage-sensitive horizontal surfaces that lie on the desktop or keyboard
- May be operated with fingers, light pen, or objects like pencil

- **Advantages**

- Direct relationship between hand and pointer movement in terms of direction and speed
- Does not obscure vision of screen
- More comfortable horizontal operating plane

- **Disadvantage**

- Movement is indirect, in a plane different from screen
- Requires hand to be removed from keyboard
- Requires different hand movements to use
- Finger may be too large for accuracy with small objects

Touch Screen

- **Advantages**

- Direct relationship between hand and pointer movement in terms of direction and speed
- Movement is direct, in the same plane as screen
- Requires no additional desk space

- **Disadvantage**

- Finger may obscure part of screen
- Finger may be too large for accuracy with small objects
- Requires moving the hand far from the keyboard to use
- Very fatiguing to use for extended period of time
- May Damage the screen

Light Pen

- **Description**

- A special surface on a screen sensitive to the touch of a special stylus or pen

- **Advantage**

- Direct relationship between hand and pointer movement in terms of direction, distance, and speed
- Movement is direct, in the same plane as screen
- Requires minimal additional desk space
- Stands up well in high-use environments
- More accurate than finger touching

- **Disadvantage**

- Hand may obscure part of screen
- Requires picking it to use
- Requires moving the hand far from the keyboard to use
- Very fatiguing to use for extended period of time

Voice

- **Description**

- Automatic speech recognition by the computer

- **Advantage**

- Simple and direct
- Useful for people who cannot use a keyboard
- Useful when the user's hands are occupied

- **Disadvantage**

- High error rates due to difficulties in

- Recognizing boundaries between spoken words

- Blurred word boundaries due to normal speech patterns

- Slower throughput than with typing
- Difficult to use in noisy environment
- Impractical to use in quiet environment

Mouse

- **Advantage**

- Direct relationship between hand and pointer movement in terms of direction, distance, and speed.
- Permit a comfortable hand resting position
- Selection mechanisms are included on mouse
- Does not obscure vision of the screen

- **Disadvantage**

- Movement is indirect, in a plane different from screen
- Requires hand to be removed from keyboard
- Requires additional desk space
- May require long movement distances
- Requires a degree of eye-hand coordination

Mouse Usage Guidelines

- Provide a “hot zone” around small or thin objects that might require extremely fine mouse positioning
- Never use double-clicks or double-drags as the only means of carrying out essential operations
- Do not use mouse plus keystroke combinations
- Do not require a person to point at a moving target

Keyboard

- **Advantage**
 - Familiar
 - Accurate
 - Does not take up additional desk space
 - Very useful for
- Entering text and alphanumeric data
- Inserting in text and alphanumeric data
- Keyed shortcuts accelerators
- Keyboard mnemonics equivalents
- **Disadvantage**
 - Slow for non-touch-typists
 - Slower than other devices in pointing
 - Requires discrete actions to operate
 - No direct relationship between finger or hand movement.

Keyboard Guidelines

- Provide keyboard accelerators
 - Assign single keys for frequently performed, small-scale tasks
 - Use standard platform accelerators
 - Assign Shift-key combinations for actions that extend or are complementary to the actions of key or key combination used without the Shift-key
 - Assign Ctrl-key combinations for
- Infrequent actions
- Tasks that represent larger-scale versions of the task assigned to the unmodified key
- Provide keyboard equivalents
 - Use standard platform equivalents
 - Use the first letter of the item description
 - Provide window navigation through use of keyboard keys

Selecting the Proper Device-Based Control

- Provide keyboard accelerators
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Selecting the Proper Device-Based Controls

- Provide keyboards for tasks involving
 - Heavy text entry and manipulation
 - Movement through structured arrays consisting of few discrete objects
- Provide an alternative pointing device for graphical or drawing tasks
 - Mouse: pointing, selecting, drawing, and dragging
 - Joystick: selecting and tracking
 - Trackball: pointing, selecting and tracking
 - Touch screen pointing and selecting
 - Graphic tablet pointing selecting, drawing, and dragging
- Provide touch screens under the following conditions
 - The opportunity for training is minimal
 - Targets are large, discrete and spread out
 - Frequency of use is low
 - Desk space is at a premium
 - Little or no text input requirement exists
- Consider user characteristics and preferences
 - Provide keyboards for touch typists
- Minimize eye and hand movements between devices

Pointer Guidelines

- The pointer
 - Should be visible at all times
 - Should contrast well its background
 - Should maintain its size across all screen locations and during movement
- Shape of pointer
 - Should clearly indicate its purpose and meaning
 - Should be constructed of already defined shapes
 - Should not be used for any other purpose other than its already defined meaning
- Use only as many shapes as necessary to inform the user about current location and status
- Animation should not distract

Choose the Proper Screen Based Controls

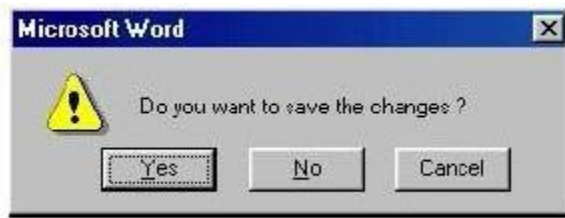
Screen Based controls, often simply called controls and sometimes called widgets. By definitions, they are graphic objects that represent the properties or operations of other objects.

Operable Controls

- Operable controls are those that permit the entry, selection, changing, or editing of a particular value, or cause a command to be performed.
 - Buttons
 - Text entry/read-only, selection, combination entry/selection
 - 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
- Command Buttons
- Toolbars

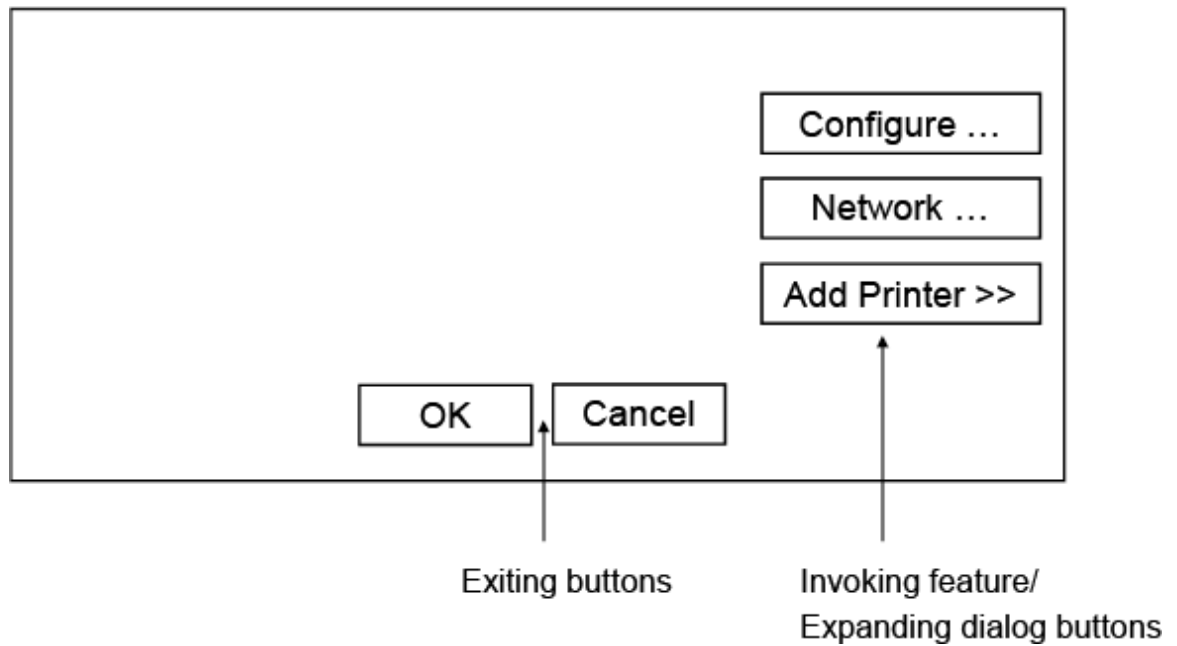


Command Buttons (Usage and Label)

- Use to provide fast access to frequently used or critical commands (for windows with a menu bar)
- Use to provide access to all necessary commands (for windows without a menu bar)
- Use single-word labels whenever possible (Use two –three words for clarity, if necessary)
- Use mixed-case letters with the first letter of each significant label word capitalized.
- Do not number labels
- Center the label within the button borders
- Provide consistency in button labeling across all screens
- Restrict the number of buttons on a window to six or fewer
- Provide as large as button as feasible and maintain consistent button heights and widths

Command Buttons (Location and Layout)

- Buttons exiting a dialog, and usually closing the window, should be positioned horizontally and centered across the lower part of the window
- For a button invokes a dialog or expands the dialog, position it centered and aligned vertically along the right side of the window
- Do not provide alignment with other screen controls. Maintain alignment and spacing only within the buttons themselves
- Position the buttons within windows before locate the other window controls



Command Buttons (Location and Layout)

- If a button has a *contingent* relationship to another control, position it adjacent to the related control
- Buttons found on more than one window should be consistently positioned

Consistent positioning

Groceries : 0 selected

Select All →

- ☐ Bread
- ☐ Cereal
- ☐ Dairy Foods
- ☐ Desserts
- ☐ Drinks

Command Buttons (Organization)

- Most frequent actions to the left or top
- Keep related buttons grouped together
- Exception: Buttons containing excessively long labels may be wider
- Windows Recommends
 - An affirmative action the left or above
 - The default first
 - OK and Cancel next to each other
 - Help last

Command Buttons (Intent Indicators)

- No intent indicator is necessary, when a button causes an action to be immediately performed

Apply

- When a button leads to a cascading dialog, include an ellipsis (...)

Open ...

- When a button leads to a menu, include a triangle pointing in the direction the menu will appear after the label

Menu >

- When a button leads to an expanding dialog, include a double arrow (>>)

Options >>

- When a button has a contingent relationship to another control, include a single arrow pointing at the control

← Clear

Command Buttons (Expansion and Defaults)

- Gray buttons after Expansion or when not applicable
- When a window is first displayed, provide a default action, if practical
- A default should be the most likely action:
 - A confirmation
 - An application of the activity being performed
 - A positive action such as OK
 - If a destructive action is performed (such as a deletion) the default should be Cancel
- Indicate the default action by displaying the buttons with a bold or double border

Command Buttons (Keyboard Equivalents, Accelerators)

- The mnemonic should be the first character of the button's label
- If duplication exists in first characters, use another character in the label
- Designate the mnemonic character by underlining it

- Assign a keyboard accelerator to each button to facilitate keyboard selection

Command Buttons (Scrolling and Button Activation)

- Use buttons to move between multi-page forms, not scroll bars Label buttons Next and Previous
- Highlight the button in some visually distinctive manner when the point is resting on it and the button is available for selection

Toolbars (Usage, Structure and size)



- Provide easy and fast access to most frequently used commands or options across multiple screens
- Provide buttons of equal size
- Create a meaningful and unique icon
- Center the image within the button
- Create a meaningful label
- Provide the smaller size as the default size with a user option to change it

Toolbars (Organization and Location)

- Place the most frequently used actions to the left or the top
- Keep related buttons grouped together
- Separate potentially destructive buttons from frequently chosen selections
- Permit user to reconfigure the button organization
- Position main features and functions bar horizontally across top of window just below menu bar
- Position subtask and sub features bars along sides of window
- Permit the location of the bar to be changed by the user

Toolbars (Active items, Button Activation and Customization)

- Make only currently available toolbar items available
- Temporarily not available items by displaying grayed out

- Highlight the button in some visually distinctive manner when the pointer is resting on it
- Call attention to the button in another visually distinctive manner when it has been activated or pressed
- Permit toolbars to be turned off by user
- Allow the customizing of toolbars

Text Entry/Read-Only Controls (Captions)

For entry boxes

- Place a colon (:) immediately following the caption
- For single fields, caption can be located in front of upper left corner of the box
- For multiple fields, position the caption upper left of the box

For read-only boxes

- If the data field is long or about the same length, center the caption above the displayed text box
- If the data is alphanumeric, short, or quite variable in length, left-justify the caption above the displayed
- If the data field is numeric and variable in length, right justify the caption above the displayed

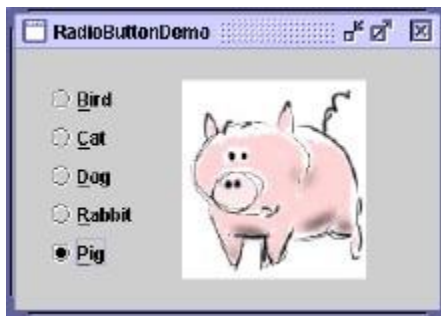
Text Entry/Read-Only Controls (Fields)

- To visually indicate that it is an enterable field, present the box in a recessed manner
- Present read-only text boxes on the window background
- Break up long text boxes through incorporation of slashes(/), dashes (-), spaces, or common delimiters
- Call attention to text box data through a highlighting technique
- Gray-out temporarily unavailable text boxes

Selection Controls

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

Radio Buttons



- A two part control consisting of the following
 - Small circles, diamonds, or rectangles
 - Choice descriptions
- When a choice is selected
 - The option is highlighted
 - Any existing choice is automatically un highlighted and deselected
- Purpose
 - To set one item from a small set of option (2 to 8)
- For mutually exclusive choices (that is, only can be selected)
- Most useful for data and choices that are
 - Discrete
 - Small and fixed in number
 - Not easily remembered
 - Most easily understood when the alternatives can be seen together and compared to one another
 - Never change in content

- Do not use
 - For commands

Radio Buttons (Defaults and Structure)

- If there is a default selection, designate it as the default and display its button filled in. Else, display all the buttons without setting a dot
- When a multiple selection includes choices, display the buttons in another unique manner, such as gray shadow
- Left-align the buttons and choice descriptions
- A columnar orientation is the preferred unless vertical space on the screen is limited
- Enclose the buttons in a border to visually strengthen the relationship

Radio Buttons (Organization, Related Control)

- Arrange selection in expected order or follow other patterns (frequency of occurrence, sequence of use, or importance)
- Position any control related to a radio button immediately to the right of the choice description. End the label with an arrow

Radio Buttons (Captions)

- Display full spelled out 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, to the left of the topmost choice description with (:)
 - Without a control border position the caption:
- Left-justified above the choice description with (:)
 - Alternatively, the caption may be located to the left of the topmost choice description with (:)
 - Position the caption to the left of the choice
 - Alternatively, with a control border, left-justified within the border
- Horizontal orientation
 - Position the caption to the left of the choice
 - Alternatively, with a control border, left-justified within the border

Radio Buttons (Keyboard Equivalents and Selection and Indication)

- Assign a keyboard mnemonic to each choice description by underlining the applicable letter in the choice description
- Highlight the selection choice in some visually distinctive way when the cursor's resting on it
- When a choice is selected, distinguish it visually from the unselected choices
- If there is a default choice, display the selected choice as set in the control

Radio Buttons

Color

☐ Red
☐ Yellow
☐ Green

Color:

☐ Red
☐ Yellow
☐ Green

Color: ☐ Red
☐ Yellow
☐ Green

Color:
☐ Red
☐ Yellow
☐ Green

Color: ☐ Red ☐ Yellow ☐ Green

Color

☐ Red ☐ Yellow ☐ Green

☐ Red

Check Boxes



- Each option acts as a switch and can be either “on” or “off”
 - When an option is selected, a mark (X) appears within the square box, or the box is highlighted in some other manner
 - Otherwise the square is unselected or empty (off)
- Each box can be
 - Switched on or off independently
 - Used alone or grouped in sets

!!Other properties are similar to the radio button’s properties!!

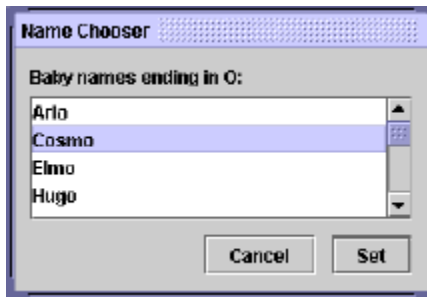
Palettes



- A control consisting of a series of graphical alternatives. The choices themselves are descriptive, being composed of colors, patterns, or images
- To set one of a series of mutually exclusive options presented graphically or pictorially
- Usually consume less screen space than textual equivalents
- 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
- Create boxes of equal size
- Position the boxes adjacent to, or butted up against another
- A columnar orientation is the preferred manner
- Top to bottom, Left to right ordering by expected order, frequency of occurrence, sequence of use or alphabetically
- Display it less brightly than the other choices, if a choice is not available

- Highlight the choice in some visually distinctive way when the pointer is resting
- When a choice is selected, distinguish it visually from the unselected choices

List Boxes



- 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)
- Unlimited number of choices
- If the list content change, items will be hard to find
- Good for data that are
 - Best represented textually
 - Not frequently selected
 - Large in number
 - Fixed in list length
- Clearly and meaningfully describe the choices available
- Present in mixed case
- Left-align into columns
- Require no more than 40 page-downs to search a list
 - If more are required, provide a method for using criteria
- Must be long enough to display 6-8 choices
 - If it is the major control within a window, the box may be larger
- When box can't made wide enough to display longest entry
 - Break the long entries with an ellipsis (...)
 - Provide horizontally scrolling

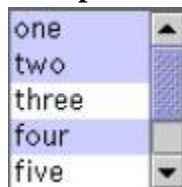
- Order in a logical and meaningful way to permit easy browsing (allow user to change the sort order will be great)
- If a particular choices is not available in the current context, omit , gray or dim it
- Enclose the choices in a box with a solid border
- Use mixed-case
- Preferred position of the control caption is above upper-left
- When a list box is disabled, display its caption as gray out
- Highlight the selection choice when the pointer is resting on

Single-Selection List Boxes



- 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, the caption may be omitted from the list box
- 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

Multiple-Selection List Boxes



- 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 color for 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
- Provide command buttons for *Select All* and *Deselect All*
- When the list box is first displayed
 - Display the currently active choices
 - Mark with an X or check mark to the left of the entry

Drop-Down/Pop-up List Boxes



- Unlimited number of choices
- When displayed, all choices may not always be visible, requiring scrolling
- Use drop-down/pop-up when
 - Screen space or layout consideration makes radio buttons or single-selection list boxes impractical
 - Do not use a drop-down list if it is important that all options be seen together.
- Provide a visual cue that a box is hidden by including a downward pointing arrow, or other meaningful image
- !Other properties are the same as List boxes!

Combination Entry/Selection Controls and Other Operable Controls

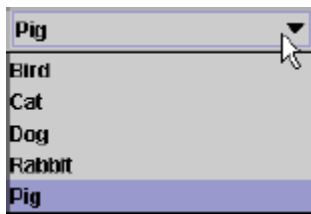
- Spin Boxes
- Combo Boxes
- Drop-down/Pop-up Combo Boxes
- Slider

Spin Boxes



- A single line field followed by two small, vertically arranged buttons (pointing up and pointing down arrow)
- Selection/entry is made by
 - Using the mouse to point at one of directional buttons
 - Keying a value directly into field itself
- Consumes little screen spaces
- Useful only for certain kinds of data
- Proper usage for
 - For mutually exclusive choices
 - Where screen space is limited
 - Small in number
 - Infrequently changed, selected
- To reduce the size of potentially long lists, break the listing into subcomponents (break a date into dd mm yy)
- When first displayed, present a default choice in the box
- The spin box should be wide enough to display the longest entry or choice
- Caption is mixed-case letters
- Position the caption to the left of the box
 - Alternatively, left-justified above the box
- For numeric values
 - Show a larger value using the up arrow

Combo Boxes



- A single rectangular text box entry field, beneath which is a larger rectangular list box (resembling a drop-down list box)
- The text box permits a choice to be keyed within it
- As text is typed into the text box, the list scrolls to the nearest match
- Also, when an item in the list box is selected, that item is placed within the text box

Drop-down/Pop-up combo Boxes



- A single rectangular text box with a small button to the side and an associated hidden list of options
- Selection are made by using the mouse or keyboard
- The information keyed doesn't not have to match
- Unlimited number of entries and choices
- Flexible, permitting selection or typed entry
- Requiring scrolling

- Proper usage
 - Where screen is limited
 - For data and choices that are
- Best represented textually
- Frequently changed
- Large in number

Drop-down/Pop-up combo Boxes

- Provide a visual cue that a list box is hidden by including a downward-pointing
- *Other properties are the same as Drop-down/Pop-up List Box!!*

Slider

- A scale exhibiting degrees of a quality on a continuum
- To make a setting when a continuous qualitative adjustment is acceptable
- Spatial representation of relative setting
- Not as precise as an alphanumeric indication
- Proper usage:
 - When an object has a limited range of possible settings
 - When the range of values is continuous
 - When graduations are relatively fine



Custom Controls

- Presentation controls
 - Provide details about other screen elements or controls or assist in giving the **screen structure**
- Static Text Fields
- Group boxes
- Column Headings
- ToolTips

- Balloon Tips
- Progress indicators

Task Best Control If screen Space Constraints Exist

- Mutually Exclusive Radio Buttons Drop-down/Pop-up List Box
- Not Mutually Exclusive Check Boxes Multiple-Selection List Box
- Select or Type a Value
- Text Entry Field
- Radio Buttons with “Other”
- Drop-down Combo Box
- Setting a Value within a Range
- Spin Button Text Box

Suggested Uses for Graphical Controls

IF: USE:

- Mutually exclusive alternative
- Best represented verbally
- Very limited in number (2 to 8)

AND:

- Typed entry is never necessary
- Content can never change
- Adequate screen space is available

Radio Buttons

OR:

- Typed entry is never necessary
- Content can never change
- Adequate screen space is not available

Drop-down/Pop-up List Box

OR:

- Typed entry may be necessary
- Content can change
- Adequate screen space is available

Combo box

Suggested Uses for Graphical Controls

IF: USE:

OR:

- Typed entry may be necessary
- Content can change
- Adequate screen space is not available

Drop-down/Pop-up Combo Box

Suggested Uses for Graphical Controls

IF: USE:

- Mutually exclusive alternative
- Best represented verbally
- Potentially large in number (9 or more)

AND:

- Typed entry is never necessary
- Content can never change
- Adequate screen space is available

Single-Selection List Box

OR:

- Typed entry is never necessary
- Content can never change
- Adequate screen space is not available

Drop-down/Pop-up List Box

OR:

- Typed entry may be necessary
- Content can change
- Adequate screen space is available

Combo box

Suggested Uses for Graphical Controls

IF: USE:

OR:

- Typed entry may be necessary
- Content can change
- Adequate screen space is not available

Drop-down/Pop-up Combo Box

Suggested Uses for Graphical Controls

IF: USE:

- Mutually exclusive alternative
- Best represented graphically
- Content rarely changes

- Small or large number of items

Palette

IF: USE:

- Mutually exclusive alternatives
- Not frequently selected
- Content does not change
- Predictable, consecutive data
- Typed entry sometimes desirable

And:

- Adequate screen space is not available Spin Box

OR:

- Adequate screen space is not available Combo Box

Suggested Uses for Graphical Controls

IF: USE:

- Mutually exclusive alternative
- Continuous data with a limited range of setting
- Value increases/decreases in a well-known, predictable way
- Spatial representation enhances comprehension

Slider

IF: USE:

- Nonexclusive alternatives
- Best represented verbally
- Typed entry is never necessary
- Content can never change
- Adequate screen space is available

And:

- Very limited in number (2 to 8) Check Boxes

OR:

- Potentially large in number (9 or more) Multiple-Selection List Box
- Revision

Write Clear Text and Message

Words

Do not use technical words, made-up words or terms filespec,abend, or spool, Ungroup or dearchive

- Do not use abbreviations or acronyms
 - Always use the fully spelled-out form the first time it is encountered in the interface
- Consider the usage of contradictions or short forms (won't vs will not, un-ness), Complete words is preferred

- Positive terms (avoid the prefix “ir-” “in-” “dis-” and “un-”)
- Simple action words (“Project status listing” □ “List”)
- Consistency
- Multiple-word phrases are more readable if the entire phrase is on one line
- Abbreviation, mnemonics, and acronyms should not include punctuation

Sentences and Messages

- Brief and simple
- Directly and immediately usable (Should not search through reference)
- Affirmative statement is easier to understand than negative statements
- Active voice is usually easier to understand than passive voice
- Main topic at the beginning
- Use the same grammatical structure for elements of sentences
- Imply that the system is awaiting the user’s direction, not that the system is directing the user
- Negative tones or actions, or threats are not very friendly (*“Numbers are illegal”* vs *“Months must be entered by name”*)
- Encouraging message would be better than insulting message
- Should remain factual and informative, and should not attempt humor or punishment

Messages

- Screen messages is classified into two categories
 - System messages:
 - Generated by the system to keep the user informed of the system’s state and activities
 - Instructional messages (prompting message) :
 - tell the user how to work with, or complete the screen displayed

System Messages

- Status messages
 - Providing information concerning the progress of a lengthy operation
 - Usually contains a progress indicator and a short message
- Informational messages (notification messages)
 - This kind of message is usually identified by an “I” icon to the left of the message
- Warning messages
 - They are usually identified by an “!”
 - The user must determine whether the situation is in fact a problem and may be asked to advise the system whether or not to proceed (A deletion request by a user is any action that commonly generates a warning messages)

System Messages

- Critical messages (Action messages)
 - Call attention to conditions that require a user action before the system can proceed
 - Some products use a “Do Not” symbol while others use a “Stop” sign. An X in a circle used by Microsoft Windows
- Question messages
 - A question message asks a question and offers a choice of options for selection
 - It is designated by a “?” icon preceding the message text

Writing Message Box Text

- Title bar: Clearly identify the source of the message
 - The name of the object to which it refers
 - The name of the application to which it refers
 - Do not include an indication of message type
 - Use mixed case in the headline style
- Message box: Provide a clear and concise description of the condition of the condition causing the message box to be displayed
 - Use complete sentences with ending punctuation
 - Show only message box about the cause of condition in single message

- Make the solution an option offered in the message
- Use the word “Please” conservatively
- Do not exceed two or three lines
- Center the message text in window
- Include the relevant icon identifying the type of message

Message Box Controls

- Command Buttons:
 - If a message requires no choices to be made, include an *OK* button
 - If a message requires a choice to be made
 - *OK* and *Cancel* buttons only when the user has the option to continue or cancel
 - *Yes* and *No* buttons when the user must decide how to continue
 - If these choices are too ambiguous, label with the name of specific actions
 - If a message describes an interrupted process, provide *Stop* button
 - If a message offer a chance to cancel a process, provide a *Cancel* button
 - If more details about a message must be presented, provide a *Help* button
 - Display only one message box for a specific condition
- Close Box:
 - Enable the title bar Close only if the message includes a *Cancel* button

Instructional Messages

- Provide instructional information at the depth of detail needed by the user
 - Accessing instruction through a *Help* function is the best solution
- Location it at strategic position on the screen
- Display it in a manner that visually differentiates it from other screen elements
- In writing, follow all relevant writing guideline for words, sentences, and messages

ERROR!

PLEASE HIT YOUR BACK BUTTON AND ENTER A SEARCH

THE SEARCH FIELD DID NOT CONTAIN AN ENTRY

PLEASE CLICK THE BACK BUTTON AND TYPE A SEARCH VALUE

Text for Web Pages

- Words
 - Avoid using words that are specific to the Web (A few Web-specific terms are “This Web site”, “Click here” and “Follow this link”)
 - A good test of this guideline is to print out a page, read it, and see if it makes as much sense on paper as it does on screen
- Error Messages
 - Provide helpful error messages for:
 - Incomplete or incorrectly keyed, entered, or selected data
 - Requests for documents that do not exist or cannot be found
 - Present them in a visually distinctive and noticeable manner
- Instructions
 - Make sure instructions are detailed enough to be understood without being specific to one browser version or brand
 - Don’t use “Return To”
 - Describe where an “Up” button leads where the user will go

Text for Web Pages

- Presentation
 - Provide text that contrasts highly with the background
- Writing
 - Write objectively
 - Use the inverted pyramid organization
 - Be concise, using only about half the number of words of conventional text
 - Each paragraph should be short and contain only one main idea
 - Make text more scannable by using bulleted listings, tables, headings and bold types
 - Too many links within text can disrupt reading continuity and content understanding
 - Place them at the beginning or end of paragraphs or section of text
 - Test for readability by printing out text to carefully proofread it

Links

- Create wording that make link that user can predict where the link leads
 - Descriptive
 - Differentiable
 - Predictive
- Create links that are brief and to the point, avoiding wordiness
- Write text containing embedded links as if there were no links in it
 - Choose the most relevant words or phrase as the active link
 - Link must not be continued over two lines
- Standalone links should not exceed one sentence in length
 - Paragraph with embedded links are sometimes useful for a variety of reasons
 - Paragraph with embedded links are sometimes useful for a variety of reasons
 - Embedded Links
Paragraph with embedded links are sometimes useful for a variety of reasons

Link Titles

- A short explanation of a link before the user selects the link
- Provide link titles that describes
 - The name of site the link will lead to
 - The name of subsection the link will lead to
 - The kind of information to be found at the destination
 - Warning about possible problems to be encountered at the other end
- Restrict them to no more than 60 characters

Page Title

- Should contain many keywords at possible
- Provide a page title
 - That possess meaningful keywords

- Whose first word is its most important descriptor
- That makes sense when viewed completely out of context
- That is different from other page titles
- Is written in mixed case using the headline
- Do not highlight keywords

Heading and Headlines

- Used to scan to find screen content of interest.
- Their wording must provide a strong clue as to the content they relate to
- Heading should be descriptive and straightforward
- No clever, cute or funny headline
- Skip leading articles (the and a)

Create Meaningful Graphics, Icons and Images

Creating Images

- ✓ Create familiar and concrete shapes
- ✓ Create visually and conceptually distinct shapes
- ✓ Incorporate unique features of an object
- ✓ Do not display within a border
- ✓ Clearly reflect object represented
- ✓ Simple reflect object represented, avoiding excessive detail
- ✓ Create as a set, communicating relationships to one another through common shapes
- ✓ Provide consistency in icon type
- ✓ Create shapes of the proper emotional tone

Creating Images

- Create familiar and concrete shapes
- Create visually and conceptually distinct shapes
- Incorporate unique features of an object
- Do not display within a border
- Clearly reflect object represented
- Simple reflect object represented, avoiding excessive detail
- Create as a set, communicating relationships to one another through common shapes

- Provide consistency in icon type
- Create shapes of the proper emotional tone

Multimedia:

Multimedia is a form of communication that combines different content forms such as text, audio, images, animations, or video into a single presentation, in contrast to traditional mass media, such as printed material or audio recordings. Popular examples of multimedia include video podcasts, audio slideshows and Animated videos.

Multimedia can be recorded for playback on computers, laptops, smartphones, and other electronic devices.

multimedia tools provide a unique opportunity to increase expansivity, usability, and enjoyment of computer interfaces, and this should be taken into account when designing them

A Multimedia Application is an Application which uses a collection of multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video. Hypermedia can be considered as one of the multimedia applications.

examples of recent applications of multimedia are electronic books and newspapers, electronic classroom presentation technologies, full-motion videoconferencing, sophisticated imaging, and graphics design tools.

In education, multimedia is used to produce computer-based training courses (popularly called CBTs) and reference books like encyclopedia and almanacs. A CBT lets the user go through a series of presentations, text about a particular topic, and associated illustrations in various information formats.

why should we use multimedia instruction?Multimedia assignments or projects allow your students to present their newly attained knowledge through images, audio and video instead of just textually. Find or create online games, tutorials or quizzes to facilitate an interactive learning environment.

Components of Multimedia

Following are the common components of multimedia:

- **Text-** All multimedia productions contain some amount of text. The text can have various types of fonts and sizes to suit the professional presentation of the multimedia software.
- **Graphics-** Graphics make the multimedia application attractive. In many cases people do not like reading large amount of textual matter on the screen. Therefore, graphics are used more often than text to explain a concept, present background information etc. There are two types of Graphics:
 - **Bitmap images-** Bitmap images are real images that can be captured from devices such as digital cameras or scanners. Generally bitmap images are not editable. Bitmap images require a large amount of memory.

- **Vector Graphics-** Vector graphics are drawn on the computer and only require a small amount of memory. These graphics are editable.
- **Audio-** A multimedia application may require the use of speech, music and sound effects. These are called audio or sound element of multimedia. Speech is also a perfect way for teaching. Audio are of analog and digital types. Analog audio or sound refers to the original sound signal. Computer stores the sound in digital form. Therefore, the sound used in multimedia application is digital audio.
- **Video-** The term video refers to the moving picture, accompanied by sound such as a picture in television. Video element of multimedia application gives a lot of information in small duration of time. Digital video is useful in multimedia application for showing real life objects. Video have highest performance demand on the computer memory and on the bandwidth if placed on the internet. Digital video files can be stored like any other files in the computer and the quality of the video can still be maintained. The digital video files can be transferred within a computer network. The digital video clips can be edited easily.
- **Animation-** Animation is a process of making a static image look like it is moving. An animation is just a continuous series of still images that are displayed in a sequence. The animation can be used effectively for attracting attention. Animation also makes a presentation light and attractive. Animation is very popular in multimedia application

Applications of Multimedia

Following are the common areas of applications of multimedia.

- **Multimedia in Business-** Multimedia can be used in many applications in a business. The multimedia technology along with communication technology has opened the door for information of global work groups. Today the team members may be working anywhere and can work for various companies. Thus the work place will become global. The multimedia network should support the following facilities:
 - Voice Mail
 - Electronic Mail
 - Multimedia based FAX
 - Office Needs
 - Employee Training
 - Sales and Other types of Group Presentation
 - Records Management
- **Multimedia in Marketing and Advertising-** By using multimedia marketing of new products can be greatly enhanced. Multimedia boost communication on an affordable cost opened the way for the marketing and advertising personnel. Presentation that have flying banners, video transitions, animations, and sound effects are some of the elements used in composing a multimedia based advertisement to appeal to the consumer in a way never used before and

promote the sale of the products.

- **Multimedia in Entertainment-** By using multimedia marketing of new products can be greatly enhanced. Multimedia boost communication on an affordable cost opened the way for the marketing and advertising personnel. Presentation that have flying banners, video transitions, animations, and sound effects are some of the elements used in composing a multimedia based advertisement to appeal to the consumer in a way never used before and promote the sale of the products.
- **Multimedia in Education-** Many computer games with focus on education are now available. Consider an example of an educational game which plays various rhymes for kids. The child can paint the pictures, increase reduce size of various objects etc apart from just playing the rhymes. Several other multimedia packages are available in the market which provide a lot of detailed information and playing capabilities to kids.
- **Multimedia in Bank-** Bank is another public place where multimedia is finding more and more application in recent times. People go to bank to open saving/current accounts, deposit funds, withdraw money, know various financial schemes of the bank, obtain loans etc. Every bank has a lot of information which it wants to impart to its customers. For this purpose, it can use multimedia in many ways. Bank also displays information about its various schemes on a PC monitor placed in the rest area for customers. Today on-line and internet banking have become very popular. These use multimedia extensively. Multimedia is thus helping banks give service to their customers and also in educating them about banks attractive finance schemes.
- **Multimedia in Hospital-** Multimedia best use in hospitals is for real time monitoring of conditions of patients in critical illness or accident. The conditions are displayed continuously on a computer screen and can alert the doctor/nurse on duty if any changes are observed on the screen. Multimedia makes it possible to consult a surgeon or an expert who can watch an ongoing surgery line on his PC monitor and give online advice at any crucial juncture.

In hospitals multimedia can also be used to diagnose an illness with CD-ROMs/ Cassettes/ DVDs full of multimedia based information about various diseases and their treatment. Some hospitals extensively use multimedia presentations in training their junior staff of doctors and nurses. Multimedia displays are now extensively used during critical surgeries.

- **Multimedia Pedagogues-** Pedagogues are useful teaching aids only if they stimulate and motivate the students. The audio-visual support to a pedagogue can actually help in doing so. A multimedia tutor can provide multiple numbers of challenges to the student to stimulate his interest in a topic. The instruction provided by pedagogue have moved beyond providing only button level control to intelligent simulations, dynamic creation of links, composition and collaboration and system testing of the user interactions.
- **Communication Technology and Multimedia Services-** The advancement of high computing abilities, communication ways and relevant standards has started the beginning of an era where you will be provided with multimedia facilities at home. These services may include:
 - Basic Television Services
 - Interactive entertainment
 - Digital Audio

- Video on demand
- Home shopping
- Financial Transactions
- Interactive multiplayer or single player games
- Digital multimedia libraries
- E-Newspapers, e-magazines

Icons

- Icons are most often used to represent objects and actions with which users can interact
- Icons may stand alone on a desktop or in a window, or be grouped together in a toolbar
- A secondary use of a icon is to reinforce important information, a warning icon in a dialog message box

Characteristics of Icons

- **Synthetics** refers to a icon's physical structure
 - Shape, Color, Size
 - Similar shapes and colors can be used to classify a group of related icons
- **Semantics** is the icon's meaning
 - What does it refer – a file, a waste basket, or some other objects?
- **Pragmatics** is how the icons are physically produced and depicted
 - Is the screen resolution sufficient to illustrate ?
- Syntactics, semantics and pragmatics determine an icon's effectiveness and usability

Influences on Icon Usability

- Provide icons that are
 - Familiar

- Clarity
- Simple
- Consistent
- Directness of the meaning
- Efficient
- Discriminable from others

Also consider the

- Context in which the icon is used
- Expectancies of users
- Complexity of task

Choosing Icons

- A Successful Icon
 - Looks different from all other icons
 - Is obvious what it does or represents
 - Is recognizable when no larger than 16 pixels square
 - Look as good in black and white as in color
- Size
 - 16x16, 24x24, 26x26, 32x32 pixels 16-and-256 color version
 - Use colors from the system palette
- Provide as large a hot zone as possible
 - With stylus or pen: 15 pixels square
 - With mouse: 20 pixels square
 - With finger: 40 pixels square

Choosing Images

- Use existing icons when available
- Use images for nouns, not verbs
- Use traditional images
- Consider user cultural and social norms

Creating Images

- Create familiar and concrete shapes
- Create visually and conceptually distinct shapes
 - Incorporate unique features of an object
 - Do not display within a border
- Clearly reflect object represented
- Simple reflect object represented, avoiding excessive detail
- Create as a set, communicating relationships to one another through common shapes
- Provide consistency in icon type
- Create shapes of the proper emotional tone

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Drawing Images

- Providing consistency in shape over varying sizes
- Do not use triangular arrows in design to avoid confusion with other system symbols
- When icons are used to reflect varying attributes, express these attributes as meaningfully as possible
- Provide proper scale and orientation
- Use perspective and dimension whenever possible
- Accompany icon with a label to assure intended meaning

Icon Animation and Audition

- Animation
 - Use
 - To provide feedback
 - For visual interest
 - Make it interruptible or independent of user's primary interaction
 - Do not use it for decoration
 - Permit it to be turned off by the user
 - For fluid animation, present images at 16++ frames /second
- Auditions
 - Consider auditory icons

The design Process

- Define the icon's purpose and use
- Collect, evaluate, and sketch ideas
- Draw in black and white
- Draw using an icon-editing utility or drawing package
- Test for users
 - Expectations
 - Recognition
 - Learning
- Test for clarity
- Register new icons in the system's registry

Graphics in Web

- Use Graphics to
 - Supplements the textual content, not as a substitute for it
 - Convey information that can't be effectively accomplished using text
 - Enhance navigation through
 - Presenting a site overview
 - Identifying site pages
 - Identifying content areas

Images

- Use standard images, image internationalization
- Provide descriptive text or labels with all images
- Distinguish navigational images from decorative images
- Minimize
 - The number of presented images
 - The size of presented images
 - Image animation
 - Number of colors
- GIF, JPEG is prefer

Photographs/Pictures

- Use when every aspect of the images is relevant
- Use JPEG format
- On the initial page
 - Display a small version
 - A thumbnail
 - Zoom-in on most relevant detail
 - Link to larger photos showing as much detail as needed

Video

- To show the proper way to perform a task
- To provide a personal message
- To grab attention
- Never automatically download a video into a page
- Provide controls (playing, pausing, and stopping)

- Considering using
 - Existing video
 - Audio only
 - A slide show with audio

Diagrams

- To show the structure of objects
- To show the relationship of objects
- To show the flow of a process or task
- To reveal a temporal or spatial order

Animation

- To explain ideas involving a change in
 - Time
 - Position
- To illustrate the location or state of a process
- To show continuity in transitions
- To enrich graphical representations
- To aid visualization of 3-D structures
- Provide a freeze frame and stop mode
- Avoid distracting animation

Audition

- Uses as a supplement to text and graphics
- To establish atmosphere
- To create a sense of place
- To teach
- To sample

- The content should be simple
- Provide audio controls

Combining Mediums

- Use sensory combination that work best together
 - Auditory text with visual graphics
 - Screen text with visual graphics
- Both the visual and auditory information should be totally relevant to the task being performed
- Visual and auditory textual narrative should be presented simultaneously
- Considering downloading times when choosing a media
- Testing
 - Legibility
 - Comprehensibility
 - Acceptance

Choose the Proper Colors

Color Uses

- Use color to assist in formatting
 - Relating elements into grouping
 - Breaking apart separate groupings of information
 - Highlighting or calling attention to important information
- Use color as visual code to identify
 - Screen captions and data
 - Information from different sources
 - Status of information
- Use color to
 - Realistically portray natural objects

- Increase screen appeal

Possible Problems with Color

- High Attention-Getting Capacity
 - Viewer might associate, tie together, screen elements of same color
 - Result in confusing, slower reading
- Interference with Use of Other Screens
- Varying Sensitivity of the Eye to Different Colors
 - Viewing red and blue □ Eye fatigue
- Color-Viewing Deficiencies
- Cross-Disciplinary and Cross-Cultural Differences
 - For financial managers - Corporate qualities or reliability
 - For health care professionals – Death
 - For nuclear reactor monitors – Coolness or water
 - For American movie audiences – Tenderness or Pornography

Choosing Colors for Categories of Information

- Color chosen to organize information or data on a screen must aid the transfer of information from the display to the user, Some examples of using color code
 - If decisions are made based on the status of information on the screen, color-code the types of status the information
 - Screen searching is performed to locate information of particular kind, color-code for contrast
 - If the sequence of information use is constrained or ordered, use color to identify the sequence
 - If the information on a screen is crowded, use color to provide visual grouping
- Never rely on color as the only way of identifying a screen element
- Always consider how spatial formatting, highlighting, and messages may also be useful

Color in Context

- Color are subject to contextual effects
- Small adjacent colored images may appear to the eye to merge or mix

- A color on a dark background will look lighter and brighter than the same color on a light background
- Colors also change as light levels change

Usage

- Design for monochrome first or in shades of black, white and gray
- Doing this will permit the screen to be effectively used:
 - By people with a color-viewing deficiency
 - On monochrome displays
 - In conditions where ambient lighting distorts the perceived color
 - If the color ever fails
- Use colors conservatively
 - Do not use color where other identification techniques, such as location, are available

Discrimination and Harmony

- Select 4-5 colors for best absolute discrimination
 - Red, yellow, green, blue, and brown
- Select 6-7 colors for best comparative discrimination
 - Orange, yellow-green, cyan, violet, and magenta
- Choose harmonious colors
 - One color plus two colors on either side of its complement
 - Three colors at equidistant point around the color circle
- For extended viewing or older viewers, use brighter colors

Emphasis

- To draw attention or to emphasize elements, use bright or highlighted colors or use less bright colors for deemphasize
 - The perceived brightness of colors from most to least is white, yellow, green, blue, red

- To emphasize separation, use contrasting colors
 - Red and green, blue and yellow
- To convey similarity, use similar colors
 - Orange and yellow, blue and violet

Common Meanings

- To indicate that actions are necessary, use warm colors
 - Red, orange, yellow
- To provide status or background, use cool colors
 - Green, blue, violet, purple
- Conform to human expectation
 - Red: Stop, fire, hot, danger
 - Yellow: Caution, slow, test
 - Green: Go, OK, clear, vegetation, safety
 - Blue: Cold, water, calm, sky, neutrality
 - Gray, White: Neutrality
 - Warm colors: Action, response required, spatial closeness
 - Cool colors: Status, background information, spatial remoteness
- Typical implications of color with dramatic portrayal are
 - High illumination: Hot, active, comic situations
 - Low illumination: Emotional, tense, tragic, romantic situations
 - High saturation: Emotional, tense, hot, comic situations
 - Warm colors: Active, leisure, recreation, comic situations
 - Cool colors: Efficiency, work, tragic and romantic situations
- Proper use of color also requires consideration of the experiences and expectation of the screen viewers

Location and Ordering

- In the center of the visual field, use red and green

- For peripheral viewing, use blue, yellow, black, and white
- Use adjacent colors that differ by hue and value or lightness for a sharp edge and maximum differentiation
- Order colors by their spectral position
 - Red, orange, yellow, green, blue, indigo, violet

Foregrounds and Backgrounds

- Foregrounds
 - Use colors that highly contrast with the background color
 - For text or data
 - Black on light-color background of low intensity (no bright white)
 - Desaturated spectrum colors such as white, yellow, or green on dark background
 - Warmer more active colors
 - To emphasize an element, highlight it in a light value of the foreground color, pure white, or yellow
 - To deemphasize an element, lowlight it in a dark value of the foreground color

Foregrounds and Backgrounds

- Backgrounds
 - Use colors that do not compete with the foreground
 - Use
 - Light-colored backgrounds of low intensity: Off-white or light gray
 - Desaturated colors
 - Cool, dark colors such as blue or black
 - Colors on the spectral extreme end
 - Blue, black, gray, brown, red, green, and purple

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Gray Scale

- For fine discrimination use a black-gray-white scale
 - Recommend values
 - White: Screen background, text located in any black area
 - Light gray: Background of a Pushbutton area
 - Medium gray: Icon background area, Menu drop shadow, Window drop shadow, Inside area of system icons, Filename bar
 - Dark gray: Window boarder
 - Black: Text, Window title bar, Icon border, Icon elements, Ruled lines

Text in Color

- Text in color is not as visible as it is in black
- When switching text from black to color
 - Double the width of lines
 - Use bold or larger type:
 - If originally 8 to 12 points, increase by 1 to 2 points
 - If originally 14 to 24 points, increase by 2 to 4 points

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- Check legibility by squinting at text
 - Too-light type will recede or even disappear

Choosing color for web pages

- Always minimize the number of presented colors for faster downloading
- Always consider color in context, never in isolation
- Use similar or same color schemes throughout a Web site □ help the user maintain a sense of place
- Foreground colors should be as different as possible from background colors
- The most recommended foreground text color is black presented on a light-colored background of low intensity (off white or light gray)
- Use dark backgrounds when establishing contrast between an area of the screen and the main screen body
- Choosing color for web pages
- High intensity colors as back-ground such as red, magenta and bright green) must be avoided
- When choosing foreground and background colors, ensure that contrasting combinations are selected
- Use a uniform color in large screen areas
- Large areas of the same color download faster
- For smaller element, the more contrast is required
- Use flat Web-safe colors
- Select color that can be easily reproduced in black and white

Use of Color to Avoid

- Relying exclusively on color (Spatial Formatting and component locations)
- Too many colors at one time
- Highly saturated, spectrally extreme colors together
- Red/blue and yellow/purple
- Yellow/blue, green/blue and red/green
- Low-brightness color for extended viewing or older viewer
- Colors of equal brightness
- Colors lacking contrast
- Fully saturated colors for frequently read screen components
- Use of Color to Avoid
- Pure blue for text, thin lines, and small shapes
- Colors in small areas
- Colors for fine details
- Black, gray, and white will provide better resolution
- Other colors for large area or attracting attention
- Non-opponent colors
- Red/yellow or green/blue
- Recommend: Red/green or yellow/blue
- Red and green in the periphery of large-scale displays

- Yellow and blue are much better

Use of Color to Avoid

- Adjacent colors only differing in the amount of blue they possess
- Single color distinctions for color-deficient user
- Using colors in unexpected ways
- Using color to improve readability of densely packed text
 - Recommend to use space lines