Human Machine Interaction
B.E Sem VIII

Window Operations

Learning Objective: To understand guidelines and study various Window Operations

Window Operations

- **Active Window**
  - A window should be made active with as few steps as possible.
  - Visually differentiate the active window from other windows.

- **General Guidelines**
  - Design easy to use and learn windowing operations.
  - Direct manipulation seems to be a faster and more intuitive interaction style than indirect manipulation for many windowing operations.
  - Minimize the number of window operations necessary to achieve a desired effect.
  - Make navigating between windows particularly easy and efficient to do.
  - Make the setting up of windows particularly easy to remember.
  - In overlapping systems, provide powerful commands for arranging windows on the screen in user-tailorable configurations.

Window Operations(Conti..)

Opening a Window

- Provide an iconic representation or textual list of available windows.
- When opening a window:
  - Position the opening window in the most forward plane of the screen.
  - Adapt the window to the size and shape of the monitor on which it will be presented.
  - Designate it as the active window.
  - Set it off against a neutral background.
  - Ensure that its title bar is visible.
- When a primary window is opened or restored, position it on top.
- When a dependent secondary window is opened, position it on top of its associated primary window
- When a dependent secondary window is activated, its primary window and related peer windows should also be positioned at the top.
- Display a window in the same state as when it was last accessed.
- With tiled windows, provide an easy way to resize and move newly opened windows.

Window Operations(Conti..)

Sizing Windows

- Provide large-enough windows to:
  - Present all relevant and expected information for the task..
  - Avoid hiding important information.
  - Avoid crowding or visual confusion.
  - Minimize the need for scrolling.
- If a window is too large, determine:
  - Is all the information needed?
  - Is all the information related?
- Otherwise, make the window as small as possible.
  - Optimum window sizes: for text, about 12 lines, for alphanumeric information, about seven lines.

Window Operations(Conti..)

Window Placement

- In placing a window on the display, consider:
  - The use of the window.
  - The overall display dimensions.
  - The reason for the window's appearance.
- Position the window so it is entirely visible..
- If the window is being restored, place the window where it last appeared.
- For multiple windows, give each additional window its own unique and discernible location.
  - A cascading presentation is recommended.
- In a multiple-monitor configuration, display the secondary window on the same monitor as its primary window.
- If none of the above location considerations apply, then:
  - Horizontally centre a secondary window within its primary window just below the title bar, menu bar, and any docked toolbars.
- Do not let the user move a window to a position where it cannot be easily repositioned.

Window Operations(Conti..)

- **Window Separation**
  - Crisply, clearly, and pleasingly demarcate a window from the background of the screen on which it appears.
    - Provide a surrounding solid line border for the window.
    - Provide a window background that sets the window off well against the overall screen background.
    - Consider incorporating a drop shadow beneath the window.

Window Operations(Conti..)

- **Moving a Window**
  - Permit the user to change the position of all windows.
  - Change the pointer shape to indicate that the move selection is successful.
  - Move the entire window as the pointer moves.
    - If it is impossible to move the entire window, move the window outline while leaving the window displayed in its original position.
  - Permit the moving of a window without its being active.

Window Operations(Conti..)

Resizing a Window

- Permit the user to change the size of primary windows.
  - Unless the information displayed in the window is fixed or cannot be scaled to provide more information.
- Change the pointer shape to indicate that the resizing selection is successful.
- The simplest operation is to anchor the upper-left corner and resize from the lower right corner.
  - Also permit resizing from any point on the window.
- Show the changing window as the pointer moves.
- When window size changes and content remains the same:
  - Change image size proportionally as window size changes.
- Permit resizing a window without its being active.

Window Operations(Conti..)

Window Shuffling

- Window shuffling must be easy to accomplish.
- permit the toggling of the two most recently displayed windows
- permit rapid window shuffling and the swapping of the front window and the second or back window.

Keyboard Control/Mouse less Operation

- Window actions should be capable of being performed through the keyboard as well as with a mouse.
- Keyboard alternatives should be designated through use of mnemonic codes as much as possible.
- Keyboard designations should be capable of being modified by the user.

Window Operations(Conti..)

- **Other Operations**
  - Permit primary windows to be maximized, minimized, and restored.
  - Maximizing
    - Maximizing a window increases the size of the window to its largest optimum size. The system default setting for the maximum size is as large as the display. This should be adjustable, as necessary.
  - Minimizing
    - Minimizing a window reduces it to its smallest size.
  - Restoring
    - Restoring returns a window to its previous size and position after the user has maximized or minimized it.

Window Operations(Conti..)

Closing a Window

- Close a window when:
  - The user requests that it be closed.
  - The user performs the action required in the window.
  - The window has no further relevance.
- If a primary window is closed, also close all of its secondary windows.
- When a window is closed, save its current state, including size and position, for use when the window is opened again.

References:

- The Essential Guide to User Interface Design Second Edition, Wiley.
- An Introduction to GUI Design Principles and Techniques ,Wilbert O. Galitz