UNIT-III

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.

Navigation Goals:

- A well designed navigation system facilitates quick & easy navigation between components whose structure & relationship are easily comprehensible.
- For the user, answers to the following questions must be obvious at all times during an interaction: Where am I now? Where did I come from? Where can I go from here? How can I get there quickly?
- General system navigation guidelines include the following.
- Control

For multilevel menus, provide one simple action to:

Return to the next higher-level menu.

Return to the main menu.

Provide multiple pathways through a menu hierarchy whenever possible. Menu Navigation Aids

To aid menu navigation & learning, provide an easily accessible: o Menu map or overview of the menu hierarchy.

A "look ahead" at the next level of choices, alternatives that will be presented when a currently viewed choice is selected.

Navigation history.

Web Site Navigation: In designing a Web Site Navigation scheme there are two things to take in consideration: Never assume that users know as much about a site as the site designers do.

Any page can be an entry point into the website. Web site navigational design includes:

Web site organization Divide content into logical fragments, units or chunks.

Establish a hierarchy of generality or importance:

Components of a Web Navigation System to move between Web site information fragments necessitates the creation of navigation links.

General link guidelines are:

-Sensible

-Available

-Obvious & Distinctive

-Consistent

-Textual

-Provide multiple navigation paths

Browser Command Buttons Hide the split between the browser & the Web site application by including navigational controls within the application.

- Web Site Navigation Bars
- Provide a global navigation bar at the top of each page.
- Provide a local category or typical links navigation bar on the left side of a page.
- Textual Phrases
- Provide a mix of textual phrase links: -In explicit menus. -Embedded within page text.
- Graphical Images or Icons
- Graphical images or icons may appear in an array in the form of a navigation bar or be individually

- located at relevant points in a page.
- Command Buttons
- Command buttons may appear in an array in the form of a navigation bar or be individually located at
- relevant points in a page.

Selection of Window:

Window Characteristics

- A name or title, allowing it to be identified.
- A size in height & width (which can vary).
- A state, accessible or active or not accessible.
- Visibility–the portion can be seen.
- A location relative to the display boundary.
- Presentation–its arrangement with respect to other windows.
- Management capabilities.
- Highlighting

The function, task or application to which it is dedicated.

1.Attraction of Windows

- 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.
- Performing More Than One Task.
- Reminding.
- Monitoring.
- Multiple Representations of the Same Task.

2. Constraints in Window System Design

- Historical Considerations
- Hardware Limitations
- Human Limitations

3. Window Management

- Single-Document Interface
- It's a single primary window with a set of secondary windows.

4. Multiple-Document Interface

It's a technique for managing a set of windows where documents are opened into windows.

Contains:

-A single primary window called the parent.

-A set of related document or child windows, each also essentially a primary window.

4. Organizing Window Functions

- Window Organization–organize windows to support user tasks.
- Number of Windows–minimize the number of windows needed to accomplish an objective.

5. Window Operations

I. Active window

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

ii. Opening a window
- Provide an iconic representation or textual list of available windows.
- If more than one object is selected & opened, display each object in a separate window. Designate the last window selected as the active window.

iii. Sizing windows
- Provide large-enough windows to present all relevant & expected information for the task.

iv. Window placement
- Position the window so it is entirely visible.

v. Window separation
- Crisply, clearly & pleasingly demarcate a window from the background of the screen on which it appears.

vi. Moving a window
- Permit the user to change the position of all windows.

Vii .Resizing a window
- Permit the user to change the size of primary windows

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 onscreen
– 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 on 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 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 over time
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 proceeding the message text
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 options 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
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

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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

• Syntactic 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 enough to illustrate?
• Syntactic, 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
– Discriminate able from others
• Also consider the
– Context in which the icon issued
– Expectancies of users
– Complexity of task

Choosing Icons

• A Successful Icon
– Looks different from all other icons

Window Navigation Schemes:

Windows operating systems typically provide a graphical user interface (GUI) that includes windows for different applications. Users navigate through these windows using a mouse or keyboard.

Windows have various controls such as buttons, menus, and tabs, allowing users to interact with the content and features of applications.

Selection of Devices:

When it comes to selecting devices, Windows supports a wide range of hardware. This includes input devices like mice, keyboards, touchscreens, and output devices such as monitors and printers.

Device drivers play a crucial role in enabling communication between the operating system and various hardware components.

Screen-based Controls:

Screen-based controls refer to the user interface elements displayed on the screen. These can include buttons, sliders, checkboxes, and other interactive elements.

Modern Windows interfaces often use a combination of touch-friendly controls for devices like tablets and traditional controls for desktop users.

Components – Text and Messages:

Text and messages are essential components of any user interface. Windows displays text for labels, buttons, error messages, and other communication with the user.

Consistent and clear messaging helps users understand the actions they are performing and any issues that may arise.

Icons and Images:

Icons are visual representations of actions, applications, or files. They help users quickly identify and interact with different elements.

High-quality and meaningful icons contribute to a user-friendly experience.

Multimedia:

Windows supports multimedia features, including audio and video playback. Multimedia applications and codecs allow users to enjoy a wide range of content.

Colors and Color Selection:

Color plays a significant role in user interface design. Windows allows for the customization of color schemes, and users can choose their preferred color settings.

Designers should consider accessibility and readability when selecting colors to ensure a positive user experience.

Choosing Colors Material:

The choice of colors in user interface design should align with the application's purpose and brand identity.

Consideration should be given to color contrast, accessibility standards, and the emotional impact of different colors on users.

Usability Problems:

Usability problems can arise from inconsistent design, confusing navigation, unclear messaging, or poor color choices.

User testing and feedback play a crucial role in identifying and resolving usability issues.

Multimedia in HCI:

Enhanced Communication:

Multimedia elements, such as images, videos, and audio, can enhance communication by providing additional channels for conveying information.

They are particularly useful for presenting complex data or instructions in a more intuitive and engaging manner.

Engagement and Interactivity:

Multimedia elements can enhance user engagement and interactivity, making the interaction with the system more dynamic and enjoyable.
Storytelling and Context:
Multimedia can be employed to create a narrative or provide contextual information, aiding in a better understanding of the content or tasks at hand.

Colors in HCI:

Aesthetic Appeal:
Colors contribute to the overall aesthetic appeal of an interface, influencing users' perceptions and emotions.
Visual Hierarchy:
Different colors can be used to establish a visual hierarchy, guiding users' attention to important elements and helping them navigate through the interface more efficiently.
Branding and Consistency:
Consistent use of colors contributes to brand identity and recognition. It helps users associate certain colors with specific actions or elements.
Common Problems in HCI Related to Multimedia and Colors:
Accessibility:
Inappropriate use of colors or relying solely on multimedia can create accessibility issues. It's crucial to consider users with color vision deficiencies or those who rely on screen readers.

Cognitive Load:

Excessive use of multimedia or a wide range of colors can lead to cognitive overload. It's important to strike a balance and ensure that the design doesn't overwhelm users with too much information.
Inconsistent Design:
Inconsistency in color schemes and multimedia elements across different parts of the interface can confuse users. Consistency is key for a seamless user experience.
Clashing Colors:
Poorly chosen color combinations can result in low readability and visual discomfort. Designers need to consider color contrast and legibility to ensure readability for all users.

Choosing Colors in HCI:

Color Psychology:
Understand the psychological impact of colors. For example, warm colors (reds, oranges) can evoke energy and excitement, while cool colors (blues, greens) can promote calmness.
Contrast and Readability:
Ensure sufficient contrast between text and background colors to enhance readability. This is especially important for users with visual impairments.
Consistency:
Establish a consistent color scheme throughout the interface to create a cohesive and user-friendly design.
User Testing:
Conduct user testing to gather feedback on color choices. Different users may have varied preferences and sensitivities to certain colors.

UNIT IV

HCI IN THE SOFTWARE PROCESS: