CMR INSTITUTE OF TECHNOLOGY, BENGALURU.
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

USER INTERFACE DESIGN

USN | | | | | | | | | | |

Internal Assessment Test 2 – DEC 2021

Sub:	USER INTERFACE DESIGN					Sub Code:	17CS832	Branch:	CSE	
Date:	04-06-2022	Duration:	90 mins	Max Marks:	50	Sem / Sec:	7th A/B/C		OBE	

Answer any FIVE FULL Questions

		MARKS	CO	RBT
1	With a neat diagrammatic representation explain the structure of menus in detail.	[10]	CO3	L2
2	Why do you think windows in designing user interface are importance? Explain clearly with its listing components.	[10]	CO3	L2
3 (a)	Differentiate between overlapping windows and tiled windows presentation styles with examples	[05]	CO2	L2
(b)	Write a short notes on Pop-Up Menus with diagram	[05]	CO3	L2
4	In designing Windows operations what are the general guidelines to be followed explain briefly	[10]	CO4	L2
5(a)	Explain Multiple Documents interface Scheme for Window Management	[2]	CO2	L2
(b)	With a neat diagram explain any two graphical menus in detail (Except popup menu)	[8]	CO3	L2
6	Demonstrate the selection of proper device based controls based on their characteristics and factors	[10]	CO4	L3

Scheme

Q1.With a neat diagrammatic representation explain the structure of menus in detail.
Scheme
Listing-2m
Diagram-3m
Explanation-5m

2.Why do you think windows in designing user interface are importance? Explain clearly with its listing components.
Scheme
Listing-2m
Diagram-3m
Explanation-5m

3 a Differentiate between overlapping windows and tiled windows presentation styles
with examples
Scheme
Diagram-2.5m
Explanation-2.5m

bWrite a short notes on Pop-Up Menus with diagram
Diagram-2.5m
Explanation-2.5m

4In designing Windows operations what are the general guidelines to be followed explain briefly
Window operations-5m
Explanation-5m

5aExplain Multiple Documents interface Scheme for Window Management
Scheme
Explain with diagram-2m
5bWith a neat diagram explain any two graphical menus in detail (Except popup menu)
Diagram-4m
Explanation-4m

6 Demonstrate the selection of proper device based controls based on their characteristics and factors

Scheme

Diagram with explanation-5m*2=10m

Scheme And solution

. Q1. With a neat diagrammatic representation explain the structure of menus in detail. [10]
Solution

A menu's structure defines the amount of control given to the user in performing a task. The most common structures are the following.

1. Single Menus
2. Sequential Linear Menus
3. Simultaneous Menus
4. Hierarchical Menus
5. Connected Menus
6. Event-Trapping Menus

Single Menus
In this simplest form of menu, a single screen or window is presented to seek the user's input or request an action to be performed, as illustrated in Figure 4.1.

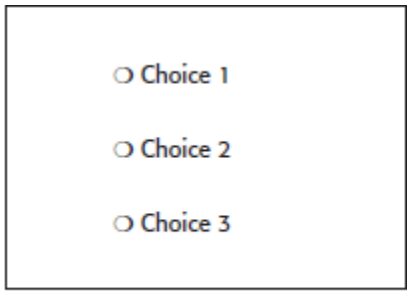


Figure 4.1 Single menu.

A single menu may be iterative if it requires data to be entered into it and this data input is subject to a validity check that fails.

Sequential Linear Menus
Sequential linear menus are presented on a series of screens possessing only one path. The menu screens are presented in a preset order, and, generally, their objective is for specifying parameters or for entering data.

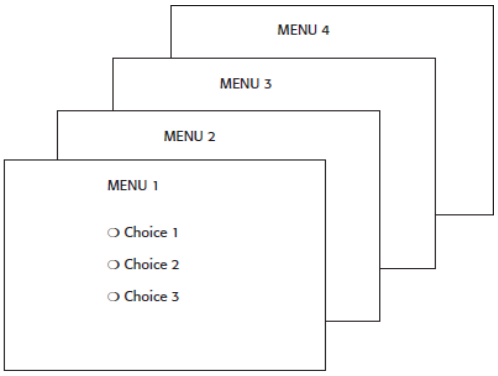


Figure 4.2 Sequential linear menus.

Simultaneous Menus

Instead of being presented on separate screens, all menu options are available simultaneously, as illustrated in Figure 4.3. The menu may be completed in the order desired by the user, choices being skipped with simultaneous menus are that for large collections of menu alternatives screen clutter can easily occur, and screen paging or scrolling may still be necessary to view all the choices.

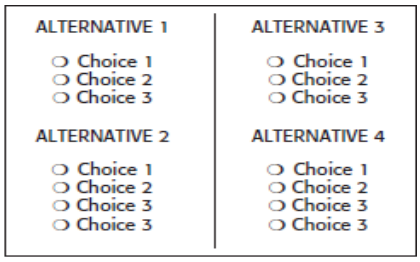


Figure 4.3 Simultaneous menus.

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.

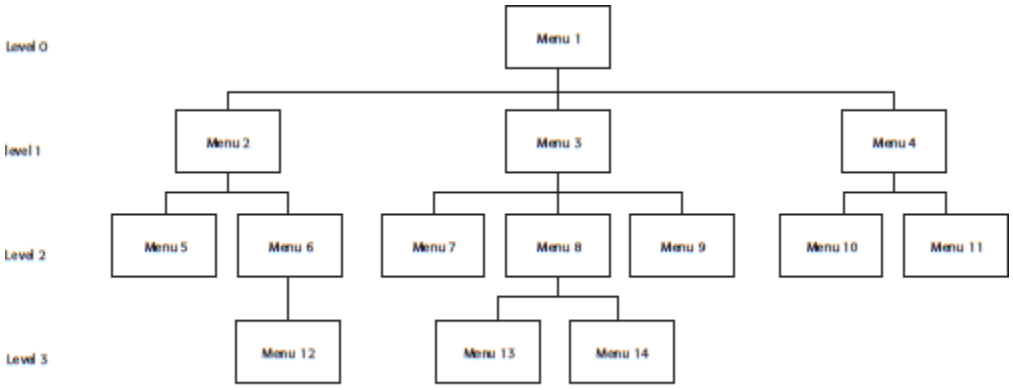


Figure 4.4 Hierarchical menus.

Connected Menus

Connected menus are networks of menus all interconnected in some manner.

Event-Trapping Menus

Event Trapping menus provide an ever-present background of control over the system's state and parameters while the user is working on a foreground task. They are, in essence, a set of simultaneous menus imposed on hierarchical menus.

2 Why do you think windows in designing user interface are importance? Explain clearly with its listing components. [10]

Solution

A window is an area of the screen, usually rectangular in shape, defined by a border that contains a particular view of some area of the computer or some portion of a person's dialog with the computer.
Window components are

1. **Frame**
2. **Title Bar**
3. **Title Bar Icon**
4. **Window Sizing Buttons**
5. **What's This? Button**
6. **Menu Bar**
7. **Status Bar**
8. **Scroll Bars**
9. **Split Box**
10. **Toolbar**
11. **Command Area**
12. **Size Grip**
13. **Work Area**

1. *Frame*

A window will have a frame or border, usually rectangular in shape, to define its boundaries and distinguish it from other windows.

2. Title Bar

The title bar is the top edge of the window, inside its border and extending its entire width. This title bar is also referred to by some platforms as the *caption*, *caption bar*, or *title area*.

3. *Title Bar Icon*

Located at the left corner of the title bar in a primary window, this button is used in Windows to retrieve a pull-down menu of commands that apply to the object in the window.

What's This? Button

The *What's This?* Button, which appears on secondary windows and dialog boxes, is used to invoke the What's This? Windows command to provide contextual Help about objects displayed within a secondary window.

Figure 5.2 What's This? button.

4. *Menu Bar*

5. Status Bar

Information of use to the user can be displayed in a designated screen area or areas. They may be located at the top of the screen in some platforms and called a *status*

6. Scroll Bars

When all display information cannot be presented in a window, the additional information must be found and made visible.

7. Split Box

A window can be split into two or more pieces or panes by manipulating a *split box* located above a vertical scroll bar or to the left of a horizontal scroll bar.

8. Command Area

In situations where it is useful for a command to be typed into a screen, a command area can be provided. The desired location of the

9. Size Grip

A size grip is a Microsoft Windows special handle included in a window to permit it to be resized.

10. Work Area

The work area is the portion of the screen where the user performs tasks. It is the open area inside the window's border and contains relevant peripheral screen components such as the menu bar, scroll bars, or message bars.

3 a) Differentiate between overlapping windows and tiled windows presentation styles with examples [5]

Solution

I) Tiled Windows

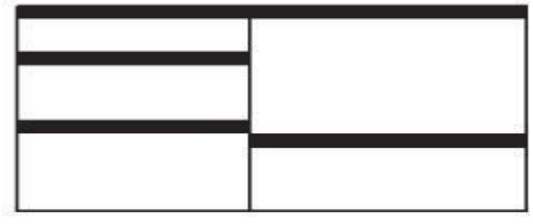


Figure 5.4 Tiled windows.

Tiled windows, the first and oldest kind of window, are felt to have these **advantages**:

- The system usually allocates and positions windows for the user, eliminating the necessity to make positioning decisions.
- Open windows are always visible, eliminating the possibility of them being lost and forgotten.

Perceived **disadvantages** include the following:

- 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.

II) Overlapping Windows

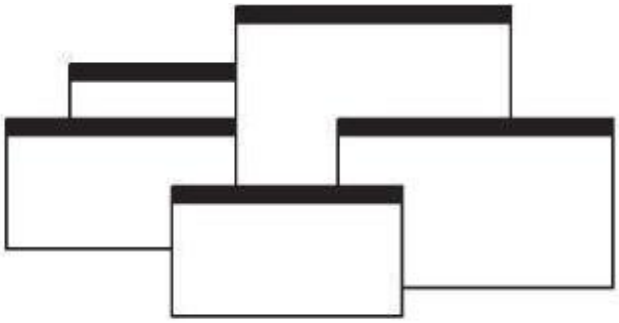


Figure 5.5 Overlapping windows.

Overlapping windows, illustrated in Figure 5.5, may be placed on top of one another likepapers on a desk. They possess a three-dimensional quality, appearing to lie on different planes.They have the following **advantages**:

- Visually, their look is three-dimensional, resembling the desktop that is familiar to the user.
- Greater control allows the user to organize the windows to meet his or her needs.

Disadvantages include the following:

- They are operationally much more complex than tiled windows. More control functions require greater user attention and manipulation.
- It provides simplicity in visual presentation and cleanness.

3 b) Write a short notes on Pop-Up Menus with diagram

Solution

Solution

1. Active Window

- A window should be made active with as few steps as possible.
- Visually differentiate the active window from other windows.
- Performance was slower with multiple open windows

General Guidelines

- Easy to use
- Minimize number
- Easy navigation

2. Opening a Window

■ Provide an iconic representation or textual list of available windows.

— If opening with an expansion of an icon, animate the icon expansion.

3. Sizing Windows

■ Provide large-enough windows to:

— Present all relevant and expected information for the task.

4. Window Placement

■ General:

— Position the window so it is entirely visible.

— If the window is being restored, place the window where it last appeared.

— If the window is new, and a location has not yet been established, place it:

- At the point of the viewer's attention, usually the location of the pointer or cursor.
- In a position convenient to navigate to.
- So that it is not obscuring important or related underlying window information.

— For multiple windows, give each additional window its own unique and discerniblelocation.

• A cascading presentation is recommended.

5. Window Separation

■ Crisply, clearly, and pleasingly demarcate a window from the background of the screenon which it appears.

— Provide a surrounding solid line border for the window.

—

6. Moving a Window

■ Permit the user to change the position of all windows.

7. 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 toprovidemore information.

8. Other Operations

■ Permit primary windows to be maximized, minimized, and restored.

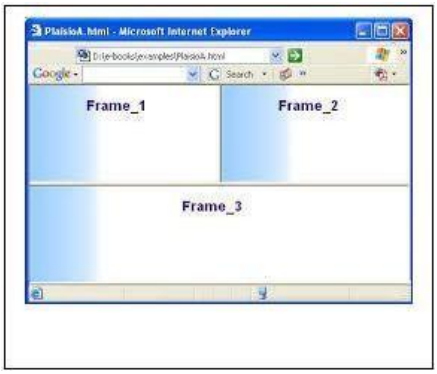
5. Explain Multiple Documents interface Scheme for Window Management [2]

Solution

— Multiple Web screen panes that permit the displaying of **multiple documents on a page.**

— These documents can be **independently viewed, scrolled, and updated.**

— The documents are presented in a **tiled format.**



■ Proper usage:

— For content expected to **change frequently.**

— To allow users to **change partial screen content.**

To permit users to **compare multiple pieces of information**

4 b)With a neat diagram explain any two graphical menus in detail (Except popup menu) [8]

5 Solution

1. Menu Bar

■ Proper usage:

— To identify and provide access to common and frequently used application actions that take place in a widevariety of different windows.

— A menu bar choice by itself should not initiate an action.

Figure 4.19 Menu bar composed of text.

Figure 4.20 Menu bar composed of buttons.

The *advantages* of menu bars are that they:

- Are always visible, reminding the user of their existence.
- Are easy to browse through.
- Allow for use of keyboard equivalents.The *disadvantages*

of menu bars are that:

- They consume a full row of screen space.
- They require looking away from the main working area to find.

Display

- 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.

— Most frequent choices to the left.
— Related information grouped together.

- Choices found on more than one menu bar should be consistently positioned.
- Left-justify choices within the line.
- When choices can be logically grouped, provide visual logical groupings, if possible.
- Help, when included, should be located at the right side of the bar.

Figure 4.21

Layout

- Indent the first choice one space from the left margin.
- Leave at least three spaces between each of the succeeding choices (except for Help which will be right-justified).
- Leave one space between the final choice and the right margin.

Figure 4.22

Separation

- Separate the bar from the remainder of the screen by:

— A different background, or
— Solid lines above and below.

Other Components

- Keyboard equivalent mnemonics should be included on menu bars.
- Keyboard accelerators, to a window indicators, and cascade indicators need not be included.

Selection Indication

- Keyboard cursor:

— Use a reverse video, or reverse color, selection cursor to surround the choice.
— Cover the entire choice, including one blank space before and after the choice word.

Figure 4.23

- Pointer:

— Use reverse video, or reverse color, to highlight the selected choice.

2. Pull-Down Menu

- Proper usage:

— To initiate frequently used application actions that take place on a wide variety of different windows.
— A small number of items.
— Items best represented textually.
— Items whose content rarely changes. The ***advantages*** of

pull-down menus are:

- The menu bar cues a reminder of their existence.
- They may be located relatively consistently on the screen.

The ***disadvantages*** of pull-down menus are:

- They require searching and selecting from another menu before seeing options.
- They require looking away from main working area to read.
- The may obscure the screen working area.

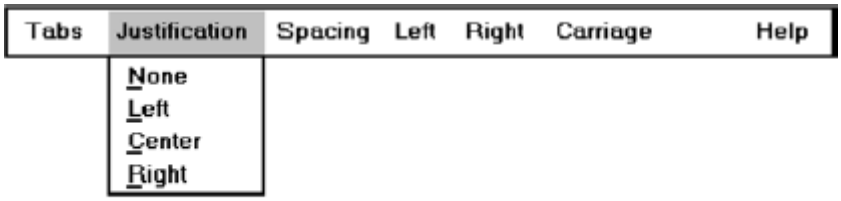


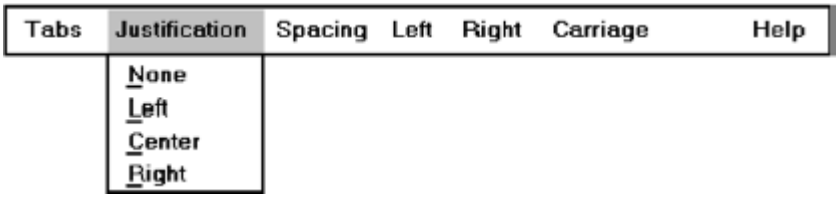
Figure 4.24 Menu bar pull-down.

Display

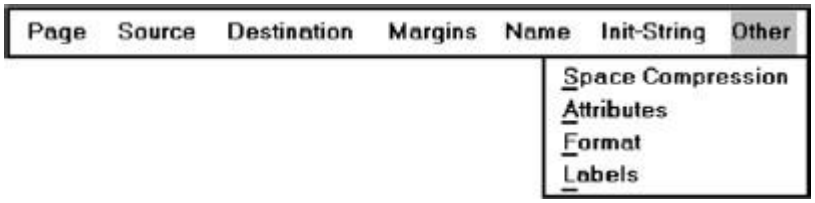
▪ Display all possible alternatives.
▪ Gray-out or dim items that cannot be chosen due to the current state of an application.

Location

▪ Position the pull-down directly below the selected menu bar choice.



— Pull-downs for choices on the far right side of the menu bar, or long pull-down descriptions, may requirealignment to the left of their menu bar choice to maintain visibility and clarity



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6. Demonstrate the selection of proper device based controls based on their characteristics and factors [10]

Solution

Trackball

■ Description:

— A spherical object (ball) that rotates freely in all directions in its socket.

— Direction and speed is tracked and translated into cursor movement.

■ Advantages:

— Direct relationship between hand and pointer movement in terms of directio and speed.

— Does not obscure vision of screen.

— Does not require additional desk space (if mounted on keyboard).

■ Disadvantages:

— Movement is indirect, in a plane different from the screen.

— No direct relationship exists between hand and pointer movement in terms of distance.

— Requires a degree of eye-hand coordination.
— Requires hand to be removed from keyboard keys.
— Requires different hand movements.
— Requires hand to be removed from keyboard (if not mounted on keyboard).
— Requires additional desk space (if not mounted on keyboard).
— May be difficult to control.
— May be fatiguing to use over extended time.

Joystick

▪ Description:
— A stick or bat-shaped device anchored at the bottom.
— Variable in size, smaller ones being operated by fingers, larger ones requiring the whole hand.
— Variable in cursor direction movement method, force joysticks respond to pressure, movable ones respond to movement.
— Variable in degree of movement allowed, from horizontal-vertical only to continuous.

- Advantages:

— Direct relationship between hand and pointer movement in terms of direction

— Does not obscure vision of screen.

— Does not require additional desk space (if mounted on keyboard).

- Disadvantages:

— Movement indirect, in plane different from screen.

— Indirect relationship between hand and pointer in terms of speed and dis

— Requires a degree of eye-hand coordination.

— Requires hand to be removed from keyboard keys.

— Requires different hand movements to use.

— Requires hand to be removed from keyboard (if not mounted on keyboa

— Requires additional desk space (if not mounted on keyboard).

— May be fatiguing to use over extended time.

— May be slow and inaccurate.