HMI Module - 6

Q1. What are the window characteristics?

Ans:

- 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.
- It can be moved and rendered independently on the screen.
- A window may be small, containing a short message or a single field, or it may be large, consuming most or all of the available display space.
- Window characteristics:
- A window is seen to possess the following characteristics:
    1. A name or title, allowing it to be identified.
    2. A size in height and width (which can vary).
    3. A state, accessible or active, or not accessible. (Only active windows can have their contents altered.)
    4. Visibility: The portion that can be seen. (A window may be partially or fully hidden behind another window, or the information within a window may extend beyond the window's display area.
    5. A location, relative to the display boundary.
    6. Presentation, that is, its arrangement in relation to other windows. It may be tiled, overlapping, or cascading.
    7. Management capabilities, methods for manipulation of the window on the screen.
    8. Its highlight, that is, the part that is selected.
    9. The function, task, or application to which it is dedicated.

Q2. List out components of the window.

Ans:

1. Frame:
- A window will have a frame or border, usually rectangular in shape, to define its boundaries and distinguish it from other windows.
- While a border need not be rectangular, this shape is a preferred shape for most people.
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.
- The title bar contains a descriptive title identifying the purpose or content of the window.
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.
- It is 16 X 16 version of the icon of the object being viewed

4. Window Sizing Buttons:

- It is located at the right corner of the title bar, these buttons are used to manipulate the size of a window.
- The leftmost button, the minimize button (Inscribed with a short horizontal line toward the bottom of the button) is used to reduce a window to its minimum size, usually an icon. It also hides all associated windows.
- The maximize button (typically inscribed with a large box) enlarges a window to its maximum size, usually the entire screen. When a screen is maximized, the restore button replaces the maximize button, since the window can no longer be increased in size.

5. Menu Bar:

- A menu bar is used to organize and provide access to actions.
- It is located horizontally at the top of the window, just below the title bar.
- A menu bar contains a list of topics or items that, when selected, are displayed on a pull-down menu beneath the choice.

6. 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 area, or at the screen's bottom.
- Microsoft recommends the bottom location and refers to this area as the status bar.
- It is also referred to by other platforms as a message area or message bar.

7. Scroll Bars:

- When all display information cannot be presented in a window, the additional information must be found and made visible.
- This is accomplished by scrolling the display's contents through use of a scroll bar.
- A scroll bar is an elongated rectangular container consisting of a scroll area or shaft, a slider box or elevator, and arrows or anchors at each end.
- For vertical scrolling, the scroll bar is positioned at the far right side of the work

Q3. Explain tiled windows with its advantages and disadvantages.

Ans:

- Tiled windows derive their name from common floor or wall tile.
- Tiled windows appear in one plane on the screen and expand or contract to fill up the display surface, as needed.
- Most systems provide two-dimensional tiled windows, adjustable in both height and width.
- Advantages:

1. Windows are positioned automatically, so there is no need for the user to decide on positioning.

2. Open windows are always visible, eliminating the possibility of them being lost and forgotten.
3. Every window is always completely visible, eliminating the possibility of information being hidden.
4. They are easier, according to studies, for novice or inexperienced people to learn and use.
5. They yield better user performance for tasks.

- Disadvantages:

1. Only a limited number can be displayed in the screen area available.
2. As windows are opened or closed, existing windows change in size. This can be annoying.
3. As windows change in size or position, the movement can be disconcerting.
4. As the number of displayed windows increases, each window can get very tiny.
5. The changes in sizes and locations made by the system are difficult to predict.
6. They permit less user control because the system actively manages the windows.

Q4. Write a short note on color.

Ans:

- Colours play an important role in adding dimensions, reality and life to the screen vision.
- Colour is the aspect of things that is caused by differing qualities of light being reflected or emitted by
- them.
- To see colour, you have to have light.
- Colour attracts the attention of the user's eye.
- Our eyes only see the colours that are bounced off or reflected.
- Types of colours:

1. RGB:
    - The RGB colour model is an additive colour model.
    - RGB stands for red, green, and blue.
    - The main purpose of the RCB colour model is for the sensing, representation, and display of images in electronic systems, such as televisions and computers.
2. HSV & HSL:
    - HSL stands for Hue-Saturation-Lightness and HSV stands for Hue-Saturation-Value.
    - These are the two most common cylindrical-coordinate representations of points in an RGB colour model.
    - It was developed in the 1970s for computer graphics applications.

    - HSL and HSV are used today in colour pickers, in image editing software, and less commonly in image analysis and computer vision.
- Uses of colours:
    1. Use colour to assist in formatting:
        - Use colour for relating elements into grouping.
        - Use colour for breaking apart separate groupings of information.
        - It is also used in highlighting or calling attention to important information.
    2. Use colour as visual code to identify:
    - Use to identify Screen captions and data.
    - Used to obtain Information from different sources.
    - Used to identify Status of information.
    3. Use colour to:
        - Realistically portray natural objects.
        - Increase screen appeal.
- Problems with colours:
    1. High Attention-Getting Capacity:
        - Viewer might associate, tie together, screen elements of same colour
        - Result in confusing, slower reading
    2. Interference with Use of Other Screens.
    3. Varying Sensitivity of the Eye to Different Colours:
        - Viewing red and blue → Eye fatigue
    4. Colour-Viewing Deficiencies:
        - It can lead to colour blindness, i.e. protanopia, tritanopia & deuteranopia. (RGB deficiency)
        - 8% of males & 0.4 % of females have this deficiency.
    5. Cross-Disciplinary and Cross-Cultural Differences:
        - For financial managers - Corporate qualities or reliability
        - For nuclear reactor monitors - Coolness or water
        - For American movie audiences - Tenderness