1. The controls on a device panel are designed by the designer in such a way that a user is not able to press or push the buttons since they are either too small or too close. This constraint is called as
A: Positional

2. Human Memory is viewed as consisting of two components:
C: Long Term Memory and Short Term Memory

3. Three basic ways to define a color palette for mobile design are
A: Sequential , Adaptive, Inspired

4. Mobile platforms that are sold to device makers for nonexclusive distribution on devices are called as_____.
C: Licensed platforms

5. Technically games are really just native applications that use the similar platform SDKs to create immersive experiences. But they are different from native applications for the reason:
A: They cannot be easily duplicated with web technologies

6. Economy in visual pleasing composition refers to-
C: Frugal and judicious use of display elements

7. The most immediate level of processing level that deals with audio, visual and other aspects of a product before experiencing it is :
D: Visceral level

8. As an interface designer, to ensure that emphasized screen elements stand out, which of the following techniques you will avoid?
C: Screen Clutter

9. Which of the following is the correct color association?
B: Red — Stop, fire, hot, danger

10. The use of pop-up windows is to_____.
A: Display additional information when an abbreviated form of the information is the main presentation technique.

11. _____ is excluded in 'Direct manipulation'.
D: Incremental actions are not reversible.

12. A pie chart allows you to easily see _____.
A: Information about the proportion of parts relative to the whole.

13. The message which calls attention to conditions that require a user action before the system can proceed is :
C: Critical message

14. Java, BREW, S60 comes under which layer of mobile ecosystem-
B: Application frameworks

15. To reduce screen complexity, Choose correct option.
Option A: Optimize the number of elements on a screen

16. Good _____ Model provides Affordance, Mapping and Feedback.
D: Conceptual

17. Technically games are really just native applications that use the similar platform SDKs to create immersive experiences. But they are different from native applications for the reason:
A: They cannot be easily duplicated with web technologies

18. A window will have a _____, usually rectangular in shape, to define its boundaries and distinguish it from other windows.
B: Frame or border

19. SMS applications can be both _____ or _____.
A: free , premium

20. When you move the mouse towards the right pointer it will move towards right. This is an example of…….
C: Mapping

21. Analogical mapping becomes difficult if domains are _____.
A: Semantically different

22. If a dial of the microwave is not able to fit on the washing machine controller panel, the constraint faced by designer is_____.
B: Physical

23. Find an odd one out regarding fundamental principles of interaction given by Don Norman.
A: Heuristics

24. User drags a folder and animation appears on screen showing files moving from one location to another. This is an example of:
B: Visibility of status

25. People's requirements always take precedence over technical requirement. This defines :
B: Trade-offs

26. Disadvantages of a Web interface includes____.
C: User control and slow download time.

27. The remarkable principle of Mobile 2.0 is :
A: Recognising that we are not only the consumers.

28. Which will be appropriate statistical graphics used to show relationships among individual data points in a two-dimensional array?
A: Scatterplots

29. Browsers use colors that succeed on a variety of browsers and platforms, a palette of___ colors.
B: 216

30. Which of the following is the correct color association?
B: Red — Stop, fire, hot, danger

31. _____ appear in one plane on the screen and expand or contract to fill up the display surface, as needed.
B: Tiled windows

32. Android is an example of _____.
A: Open sourced platforms

33. As an interface designer, to ensure that emphasized screen elements stand out, which of the following techniques you will avoid?
C: Screen Clutter

34. In the web interface, navigation can be done through_____.
C: Links

35. Which of the following refers to context SMS, Mobile websites, Mobile web widgets, Mobile web applications, Native applications?
B: Mobile application medium types

36. A field of research called _____, a technology can manipulate our sense of touch.
A: Haptics

37. Which interaction style is based on the user's memory retention ability?
A: Command Language

38. The within-text links should always be placed ____.
B: At the beginning or end of paragraphs or sections of text.

39. To reduce screen complexity, Choose correct options.
A: Optimize the number of elements on a screen.

40. A special type of overlapping window that has the windows automatically arranged in a regular progression is ____
B: Cascading Windows.

Mobile 2.0:

- Mobile 2.0 has made many things possible which were earlier not possible; users can not only connect by voice, but also control various devices online.
- Web is transformed into a more agile and user focused medium, which can very swiftly deliver information to masses, users can share personalized content on the mobile and web.
- Social media connectivity has become easier due to mobile 2.0, accesses have become easier, interlinked and just a touch away.
- Wireless connectivity has improved significantly, texting, sending, listening, capturing and viewing have become easier to access.
- All these multimedia features allow us to convey rich multimedia content.

> Enablers of Mobile 2.0:

- Easy availability of high-speed mobile Broadband Access
- Open access, affordable access to various software platforms, tools and technologies.
- Monetization opportunities due to huge demand.

> Characteristics of Mobile 2.0

- Social networking has become mobile.
- The users are the generator of content, the site is run by the content created its users and contributors
- Syncing various platforms, applications and devices to supply a very immersive and rich user experience
- It's Personal, Always available, always connected.

Following is a recap of the original seven principles of Mobile 2.0:
(I) The Web as a platform for the mobile context, this means "write once, deploy everywhere, moving away from the costly native applications deployed over multiple frameworks and networks.

(II) Harnessing collective intelligence this isn't something the mobile community has done much of, but projects like WURFL-an open source repository of device profiles provided by the community-is exactly what mobile needs more of.

(III) Data is the next Intel inside Mobile takes this principle several steps further. It can include the data we seek, the data we create, and the data about or around our physical locations.

(IV) End of the software release cycle Long development and testing cycles heavily weigh on mobile projects, decreasing all hopes of profitability. Shorter agile cycles are needed to make mobile development work as a business. Releasing for one device, iterating, improving, and then releasing for another is a great way to ensure profitability in mobile.

(v) Lightweight programming models because mobile technology is practically built on enterprise Java. The notion of using lightweight models is often viewed with some skepticism. But decreasing the programming overhead required means more innovation occurs faster.

(vi) Software above the level of a single device this effectively means that software isn't just about computers anymore. We need to approach new software as though the user will demand it work in multiple contexts, from mobile phones to portable gaming consoles and e-book readers.

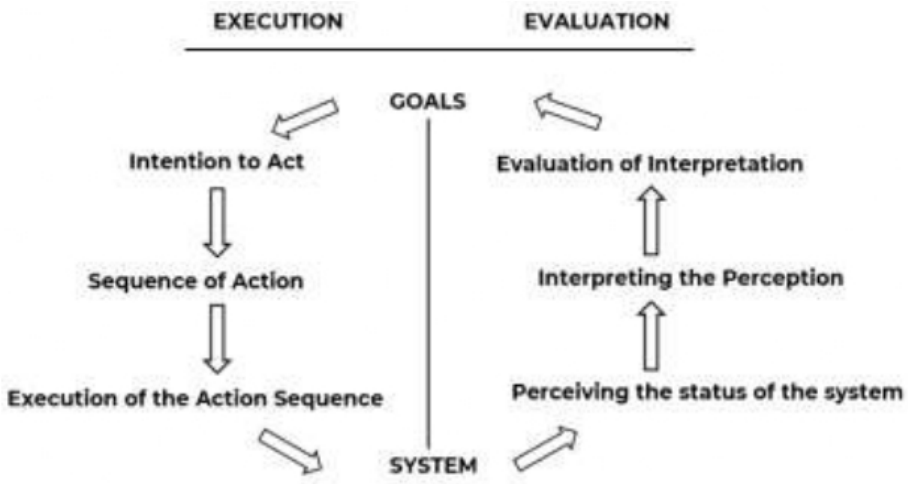
(vii) Rich user experiences a great and rich user experience helps people spend less time with the software and more time living their lives. Mobile design is about enabling users to live their lives better.

Choosing color for web pages:

- Always use minimum colors for faster downloading.
- Always consider color in overall context and never in isolation.
- Using a similar or same color scheme throughout a Website helps the user maintain a sense of place.
- Background & Foreground colors should be as different as possible.
- Black color is the most recommended foreground text color, a light-colored background of low intensity (off white or light gray).
- Dark backgrounds are used when establishing contrast between an area of the screen and the main screen body.
- High intensity colors used as back-ground such as red, magenta and bright green must be avoided.
- Contrasting combinations must be selected while choosing foreground & background colors.
- Uniform color should be used in large screen areas
- Large areas of the same color can download faster
- Contrast can be used for smaller element
- Use of flat Web-safe colors is recommended
- Select easily reproducible color while converting to black and white

NORMAN'S MODEL OF INTERACTION:

1. Seven stages of action is a term coined by the usability consultant Donald Norman.
2. As per Norman, human actions will have two basic aspects:
    a. Execution.
    b. Evaluation.
3. The task which is performed by humans is referred to as action i.e. execution.
4. Once action is performed that must be analyzed for improvement i.e. evaluation.
5. So the model is divided into an execution phase and a phase of the evaluation.
6. Figure 1.1 represents seven stages of action.



7. The model belongs to one of the most famous Interaction theories that have been used to model user behavior, evaluation, and to set up policies like to create user-friendly interfaces.
8. It starts with the execution part:
    a. Setting a goal of action. (mental action)
    b. Setup plan of action. (mental action)
    c. Selecting an action or a sequence of actions that will lead you to your set of goals. (mental action)
    d. Execution of the action(s). (physical action)
9. After the execution part, the evaluation part begins:
    a. Identify the state of the external world. (mental action)
    b. Interpreting the state of the external world. (mental action)
    c. Evaluating the outcome: Is the evaluation successful the problem is solved, goal reached and so on (mental action)

EXAMPLE:

Need: Documenting work done.

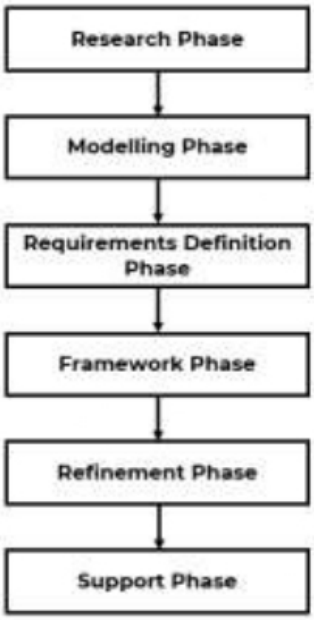
Task: Save My Sketch.

Goal: Safely store the sketch in a place which I can fetch it from.

Figure 1.2: Example

GOAL DIRECTED DESIGN PROCESS:

1. Goal Directed Design is a user-centered methodology.
2. It was developed by Alan Cooper.
3. Goal Directed Design identifies the goals and behaviors of users.
4. Goal Directed Design combines:
    a. Techniques of ethnography.
    b. Stakeholder's interviews.
    C. Market Research.
    d. Detailed user models.
    e. Scenario based design.
    f. A core set of interaction principles and patterns.
5. The process is broken down into the following steps:



I) Research Phase:

1. Research Phase mainly focuses on market survey, conducting user interviews and user observation.
2. This phase will help to understand the gap between user and developer.
3. This phase will generate actual user information.

II) Modelling Phase:

1. The output of the research phase is converted to a user model.
2. User model includes information flow and workflow.
3. This phase will help to understand users in detail.

III) Requirement Definition Phase:

1. This phase is a very important phase.
2. This phase is used for requirement collection.
3. This phase is used to provide the connectivity between the user, models and product framework.

IV) Framework Phase:

1. Framework Phase is used to provide actual product design and framework for the system behavior.
2. It also proposes a product interaction framework.

V) Refinement Phase:

1. Refinement Phase mainly emphasizes on details of system and product implementation.
2. It helps to create a storyboard at a very high level of details.

VI) Support Phase:

1. This phase tries to meet all future requirements.
2. Application and design level support is provided.
3. This phase will perform UAT to make sure that all developmental goals are fulfilled.

STATISTICAL GRAPHS:

1. A statistical graphic is data presented in a graphical format.
2. A well-designed statistical graphic, also referred to as a chart or graph, consists of complex ideas communicated with clarity, precision, and efficiency.
3. It gives its viewer the greatest number of ideas, in the shortest time, and in the smallest space, and with least possible clutter.
4. It will also induce the viewer to think of substance, not techniques or methodology.
5. A well designed statistical graphic display also avoids distortions by telling the truth about the data.

Use of Statistical Graph:

1. Reserve for material that is rich, complex or difficult.
2. Data Presentation.
3. Emphasize the data.
4. Minimize non data elements.
5. Minimize redundant data.
6. Fill the graph's available area with data.
7. Show data variation.

TYPES:

I) Curve and Line Graphs:

- Curves and line graphs can be used to show relationships between sets of data defined by two continuous variables.
- They are especially useful showing data changes over time.
- With a curve, the data relations are summarized by a smoothed line.
- With a line, straight line segments connect the data plots.

II) Surface Charts:

- A surface chart shows a three-dimensional surface that connects a set of data points.
- A surface chart is useful when you want to find optimum combinations between two sets of data.
- As in a topographic map, the colors and patterns in a surface chart indicate areas that contain the same range of values.
- Unlike other chart types, a surface chart does not use colors to distinguish the data series - colors are used to distinguish the values instead.

III) Bar Graphs:

- A Bar Graph (also called Bar Chart) is a graphical display of data using bars of different heights.
- The bars can be plotted vertically or horizontally.
- A vertical bar chart is sometimes called a column bar chart.
- A bar graph is a chart that uses either horizontal or vertical bars to show comparisons among categories.

IV) Segmented or Stacked Bars:

- Bar graph represents the frequencies of categories of one variable; a stacked (segmented) bar graph represents the frequencies of combinations of categories of two variables.
- In a stacked (or segmented) bar graph:

a. The horizontal axis still represents one variable, with each bar representing one of the categories of the variable.
b. Each bar is segmented according to the categories of the second variable.

V) Scatter Plots:

- A Scatter (XY) Plot has points that show the relationship between two sets of data.
- A scatter plot or scatter graph is a type of mathematical diagram using Cartesian coordinates to display values for two variables for a set of data.
- The data is displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis.
- This kind of plot is also called a scatter chart, scatter gram, scatter diagram or scatter graph.

VI) Pie Charts:

- A pie chart (or a circle chart) is a circular statistical graphic.
- It is divided into slices to illustrate numerical proportion.
- In a pie chart, the arc length of each slice is proportional to the quantity it represents.
- Pie charts are very widely used in the business world and the mass media.
- Pie charts should be used with cautions.

ORGANIZING SCREEN ELEMENTS:

1. Visual clarity is achieved when the display elements are organized and presented in meaningful and understandable ways.
2. A clear and clean organization makes it easier to recognize the screen's essential elements.
3. Clarity is influenced by a multitude of factors: consistency in design, a visually pleasing composition, a logical and sequential ordering & groupings.
4. It includes consistency such as providing real world consistency & internal consistency.

ORDERING OF SCREEN DATA & CONTENT:

1. Ordering of screens can be considered as dividing information into units that are logical, meaningful and sensible.
2. It should be organized by the degree of interrelationships between data or information.
3. It should provide an ordering of screen units of elements depending on priority.
4. It ensures that information is visible.
5. It consists of form groups that cover all possibilities.
6. Possible ordering schemes include:
   a. Conventional.
   b. Sequence of use.
   c. Frequency of use.
   d. Function.
   e. Importance.
   f. General to specific.

THREE LEVELS OF PROCESSING:

1. Three Levels of Processing is used in Usability Design.
2. Usability Design is a measure of the interactive user experience associated with a user interface.
3. User Interface can be a website or software application.
4. Three levels of processing was suggested by Donald Norman.

I) Level-1 (Visceral Level):

1. It is the initial level of processing.
2. In this step of processing, humans react to visual and other sensory aspects of a product before they actually interact with it.
3. It helps to make rapid decisions about what is good, bad, safe or dangerous.
4. Visceral design often refers to enhancing visual appearance.

II) Level-2 (Behavioral Level):

1. It is the middle level of processing.
2. Behavioral Level is used to manage simple, everyday behaviors.
3. Behavioral design tells us how to "behave" or "respond" to messages the products give us.
4. That is how to use or interact with the product in a certain way.
5. For Example: A simple push plate on a glass door tells us that this door can be opened by pushing, not pulling.

III) Level-3 (Reflective Level):

1. It is the final level of processing.
2. In this step of processing, the analysis and reflection of all experiences done in the past is stored.
3. It is stored in the human brain.
4. Using these past experiences, the future requirements to plan for a goal is done.
5. For Example: Reflective design can tell us about the owner's taste in products.
6. Since the products that people allow others to see themselves possessing can be a reflection of what he/she wants to be in life.

USER INTERFACE DESIGN:

1. User Interface Design is also known as User Interface Engineering.
2. User Interface Design is the design of user interfaces for machines and software, such as computers, home appliances, mobile devices, and other electronic devices.
3. It basically focuses on maximizing usability and the user experience.
4. The goal of user interface design is to make the user's interaction as simple and efficient as possible.

GENERAL PRINCIPLES OF USER INTERFACE DESIGN:

I) Clarity:

1. Clarity is the most important element of user interface design.
2. It means the information content is conveyed accurately.
3. Clarity must be reflected in the concepts, languages and vision including:
    a. Visual Elements.
    b. Functions.
    c. Metaphors.
4. Example: Tooltip is used to explain the functionality of buttons.

II) Consistency:

1. Consistency means the design and behavior across every part of the system should be similar.
2. A system should look, act, and operate the same throughout.
3. Similar components should:
    a. Have a similar look.
    b. Have similar uses.
    c. Operate similarly.
4. The same action should always yield the same result.
5. Consistency enables users to develop usage patterns.
6. Example: The Microsoft Office user interface is consistent for all applications such as Word, Excel, PowerPoint etc.

III) Responsiveness:

1. Responsive means a couple of things, basically responsive means fast.

2. That is the system must quickly respond to the request made by the user.
3. Responsive also means the interface provides some form of feedback.
4. Knowledge of results, or feedback, increases confidence.
5. Example: Instead of gradually loading the page, Gmail shows a progress bar when you first go to your inbox. This allows for the whole page to be shown instantly once everything is ready.

IV) Efficiency:

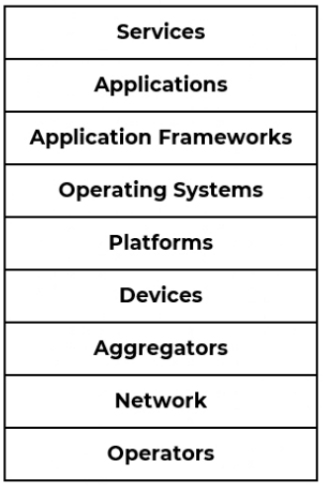
1. Efficiency means achieving maximum productivity with minimum effort.
2. A good interface should allow users to perform functions faster and with less effort.
3. Efficiency minimizes eye and hand movements and other control actions.
4. To achieve efficiency, real world metaphors must be provided.
5. Example: Providing buttons to accomplish each of some functions in the photo controls.

V) Forgiveness:

1. Users are bound to make mistakes when using your software or website.
2. A forgiving interface is one that can save your users from costly mistakes.
3. Human errors that are inevitable must be tolerated and forgiven.
4. Disastrous errors must be provided strong protection.
5. Error must be supported with productive, effective and positive messages.
6. Example: Trashed the wrong email by mistake? Gmail lets you quickly undo your last action. The conversation has been moved to the Trash.

MOBILE ECOSYSTEM:

1. Mobile is an entirely unique ecosystem and like the Internet, it is made up of many different parts that must all work seamlessly together.
2. If the Internet is a cloud, then the mobile ecosystem would be the atmosphere, made up of many clouds.
3. Each layer is reliant on the others to create a seamless, end-to-end experience.



I) Operators:

1. The base layer in the mobile ecosystem is the operator.
2. Operators can be referred to as Mobile Network Operators (MNOs).
3. Operators are what essentially make the entire mobile ecosystem work.
4. They are the gatekeepers to the kingdom.
5. The operator's role in the ecosystem is to create and maintain a specific set of wireless services over a reliable cellular network.

II) Network:

1. Operators operate wireless networks.
2. Remember that cellular technology is just a radio that receives a signal from an antenna.
3. The type of radio and antenna determines the capability of the network and the services you can enable it.
4. The vast majority of networks around the world use the GSM standard, using GPRS or GPRS EDGE for 2G data and UMTS or HSDPA for 3G.

III) Aggregators:

1. Aggregators are also known as Mobile Enablers.
2. Aggregators are third-party companies that bridge the gap between content owners, carriers/operators, and consumers.
3. They are a necessary middleman with untapped experience and knowledge that can't be overlooked or undervalued.

IV) Devices:

1. Devices in the mobile industry are considered as handsets and terminals.
2. These are terms that are becoming outdated with the emergence of wireless devices that rely on operator networks, but do not make phone calls.
3. Example: Mobile Phones

V) Platforms:

1. A mobile platform's primary duty is to provide access to the devices.
2. To run software and services on each of these devices, you need a platform, or a core programming language in which all of your software is written.
3. Like all software platforms, these are split into three categories: licensed, proprietary, and open source.

VI) Operating Systems:

1. This is the important component of a Mobile, which controls/operates all applications that are residing on the mobile phone.
2. Android is open source and IOS is a closed source.
3. Example: IOS, Android, BlackBerry OS, Symbian, Bada etc.

VII)Application Frameworks:

1. Application frameworks often run on top of operating systems, sharing core services such as communications, messaging, graphics, location, security, authentication, and many others.
2. Application frameworks are used to create applications, such as a game, a web browser, a camera, or media player.
3. Although the frameworks are well standardized, the devices are not.

VIII) Applications:

1. Applications usually refers to a computer program that runs on a website (Google Apps), a small computing device (iPad App) or a cell phone (Android App).
2. Application is a point of interaction between device and the user.
3. Example: Games, Web Browser, Camera or Media Player.

IX) Services:

1. Services are everything the user is trying to do.
2. They are often available at different levels such as Application, Application Framework and Operating System.
3. Example of services may include:
   a. Internet.
   b. Sending a text message.

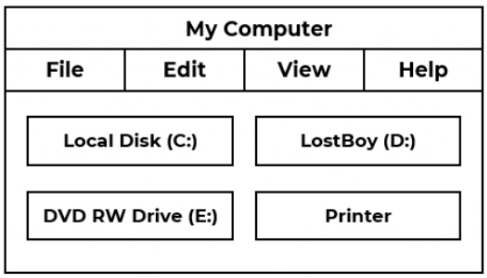
GUI VS WEB PAGE:

Points	Graphical User Interface	Web Page Design
Definition	GUI is the type of interface which allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation.	Web page designing is a process of creating a plan and originating the development of a specific web page.
User focus	Data & applications.	Information & navigation.
Hardware variation	Limited.	Enormous.
User tasks	Install, configure, personalize, start, use and upgrade programs.	Link to a site, browse or read pages, fill out forms, register for services etc.
Presentation element	Windows, menus, control, data, message, toolbars etc.	Two components browse and pages.
Navigation	Through menus, lists, trees, dialogs and wizards.	Through links, bookmarks and typed URLs.
Interaction	Interactions such as clicking menu choices, pressing buttons, selecting list choices.	Basic interaction is single click.
Response time	Nearly instantaneous	Quite variable depending on transmission speeds, page content and so on.
Users conceptual space	Controlled and constrained by program.	Infinite and generally unorganized.
System capability	Unlimited capability proportional to sophistication of hardware and software.	Limited by constraints imposed by the hardware, browser, software and client support.

Write short notes on types of windows.

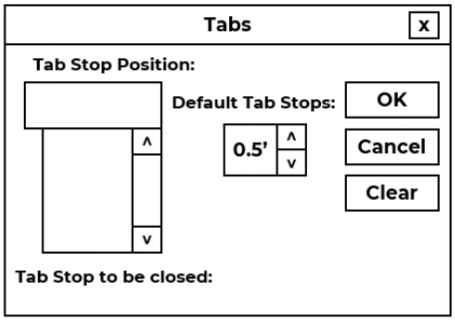
I) Primary Window:

1. The primary window is the first window which appears on the screen when activity or action is started.
2. Primary window represents an independent function or application.
3. Primary window is used to present information that is continually updated for example: Date and time.



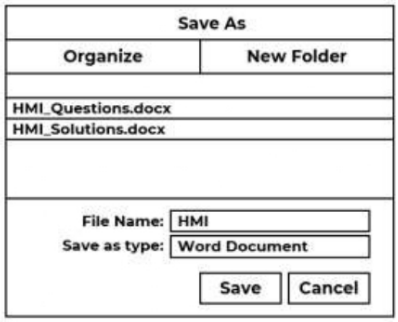
II) Secondary windows:

1. Secondary windows are supplementary windows.
2. Secondary windows may be dependent upon a primary window or displayed independently of the primary window.
3. Secondary windows are used for performing subordinate, supplementary or ancillary actions.



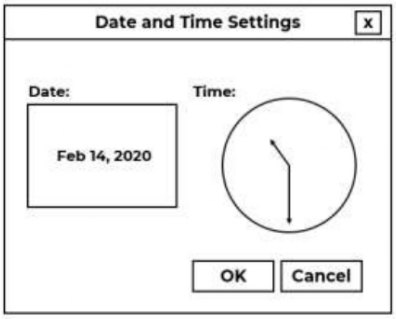
III) Dialog Boxes:

1. It is used for presenting brief messages.
2. It includes command buttons such as OK, Cancel etc.
3. It is also used to perform actions that take a short time to complete and are not frequently changed.



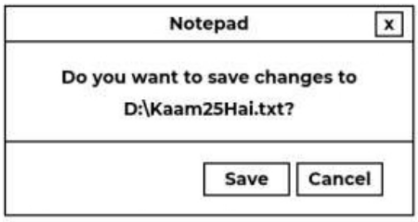
IV) Property Sheets and Property Inspectors:

1. It is used for presenting a complete set of properties for an object.
2. The recommended sizes for property sheets are:
   a. 252 DLUs wide x 218 DLUS high.
   b. 227DLUs wide x 215 DLUS high.
   c. 212 DLUs wide x 188 DLUS high.
3. It includes the command buttons like Ok, Cancel, Apply, Reset etc.



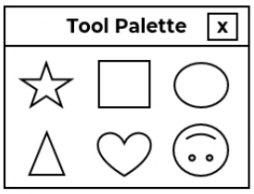
V) Message Boxes:

1. It is used to display a message about a particular situation or condition.
2. It includes command buttons such as OK, Cancel, Help, Yes and No etc.
3. It is used to enable the title bar close box only if the message includes a cancel button.



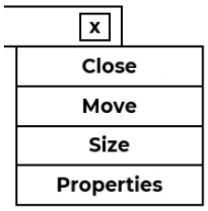
VI) Palette Windows:

1. It is used to present a set of controls.
2. It is designed to be resizable. Alternatively, design them as fixed in size.



VII) Pop Up Windows:

1. It is used to display additional information.
2. It is also used to display context sensitive help information.
3. It displays textual labels for graphics controls.

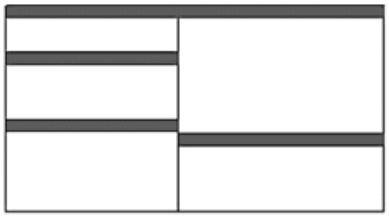


WINDOW PRESENTATION STYLES:

1. The presentation style of a window refers to its spatial relationship to other windows.
2. There are two basic styles, commonly called tiled or overlapping.

I) Tiled Windows:

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



Advantages:

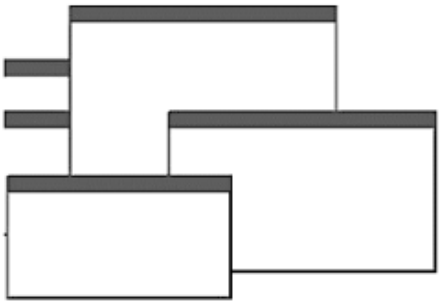
1. Windows are positioned automatically, so there is no need for the user to decide on positioning.
2. Open windows are always visible, eliminating the possibility of them being lost and forgotten.
3. Every window is always completely visible, eliminating the possibility of information being hidden.

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.

II) Overlapping Windows:

1. Overlapping windows may be placed on top of one another like papers on a desk.
2. They possess a three-dimensional quality, appearing to lie on different planes.
3. Size of the overlapping window can be altered.
4. Location as well as the plane of the windows is user controlled.



Advantages:

1. Visually, their look is three-dimensional, resembling the desktop that is familiar to the user.
2. Greater control allows the user to organize the windows to meet his or her needs.
3. Windows can maintain larger sizes, consistent sizes & consistent positions.

Disadvantages:

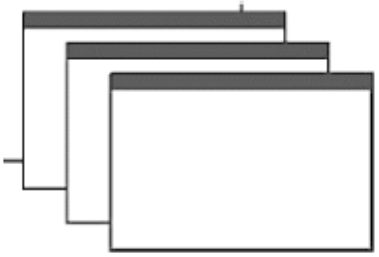
1. They are operationally much more complex than tiled windows.
2. More control functions require greater user attention and manipulation.
3. Information in windows can be obscured behind other windows.

III) Cascading Windows:

1. It is a special type of overlapping window.
2. It has the windows automatically arranged in a regular progression.
3. Each window is slightly offset from others.

Advantages:

1. No window is ever completely hidden.
2. Bringing any window to the front is easier.
3. It provides simplicity in visual presentation and cleanness.



PICKING A PRESENTATION STYLE:

Use tiled windows for:

1. Single-task activities.
2. Data that needs to be seen simultaneously.
3. Tasks requiring little window manipulation.
4. Novice or inexperienced users.

Use overlapping windows for:

1. Switching between tasks.
2. Tasks necessitating a greater amount of window manipulation.
3. Expert or experienced users.
4. Unpredictable display contents.

Explain importance of Text Messages with respect to communication

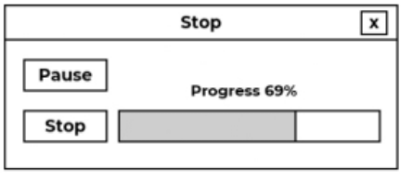
TEXT MESSAGE:

1. Text based communication is a dominant form of direct communication.
2. Text messages are the form of text based communication.
3. Text messages are communication provided on the screen to the user or viewer.
4. Screen messages fall into two broad categories:
    a. Instructional messages (prompting message): Tell the user how to work with, or complete the screen displayed.
    b. System messages: Generated by the system to keep the user informed of the system's state and activities.

TYPES OF SYSTEM MESSAGES:

I) Status messages:

1. It provides information concerning the progress of a lengthy operation.
2. It usually contains a progress indicator and a short message.
3. It contains a cancel button to stop the operation being performed.
4. Pause and resume buttons may also be included.



II) Informational messages:

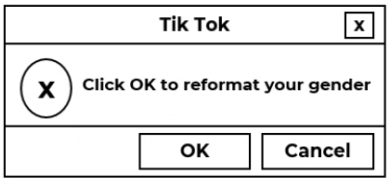
1. It is also known as notification messages.
2. This kind of message is usually identified by an "I" icon to the left of the message.
3. It is used to provide information about the state of the system.

III) Warning messages:

1. They are usually identified by an "!"
2. 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.
3. A deletion request by a user is any action that commonly generates a warning message.

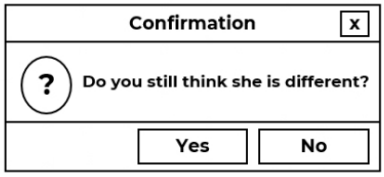
IV) Critical messages:

1. They are also known as Action Messages that describe an erroneous situation that is usually presented as a critical message.
2. Some products use a "Do Not" symbol while others use a “Stop” sign. An X in a circle used by Microsoft Windows.
3. Critical messages require user action to continue.



V) Question Messages:

1. A question message asks a question and offers a choice of options for selection.
2. It is designated by a "?" icon preceding the message text.
3. This type of message is used when there is a question to be asked.



IMPORTANCE OF TEXT MESSAGE:

1. Wording of the interface and its screens is the basic form of communication with the user.
2. Clear and meaningfully crafted words, messages, and text lead to greatly enhanced system usability.
3. Clear Text Message minimizes the user confusion that leads to errors.

Words:

1. Do not use technical words, made-up words or terms such as filespec, abend, or spool, Ungroup or de-archive.
2. Do not use abbreviations or acronyms.

Sentences & message:

1. Brief and simple.
2. Directly and immediately usable.

Gulf Of Evaluation:

- The terms gulf of execution and gulf of evaluation were introduced by usability researcher Donald Norman.
- They are concepts that are essential to understanding the interaction between humans and computers.
- The two gulfs are closely related to Norman's Seven Stages of Action; the first four stages make up the gulf of execution, while the next three stages make up the gulf of evaluation.

Gulf of execution:

- Gulf of execution is the degree of ease with which a user can understand the current state of a system.
- It is the difference between the intentions of the users and what the system allows them to do.
- For example, a person can look at a light switch and easily tell what the current state of the system is (i.e., whether the light is on or off) and how to operate the switch.
- This means that the gulf of execution is small. Norman states that, in order to design the best interfaces, the gulf must be kept as small as possible.

Gulf of evaluation:

- Gulf of evaluation is the degree of ease with which a user can perceive and interpret whether or not the action they performed was successful.
- This gulf is small when the system provides information about its state in a form that is easy to receive, interpret, and matches the way the person thinks of the system.
- An example of a large gulf of evaluation is when an application has a spinning wheel to show a "loading" state after the user performs an action.
- The wheel alone is not enough for the user to interpret the progress that the system is making in response to their action. The gulf can be shortened by having a loading bar instead.

ICONS:

1. An Icon is a picture that represents an object or program.
2. An icon is a graphical representation of a program or file that, when clicked on, will be run or opened.
3. Icons are used with Graphical User Interface (GUI) operating systems.
4. GUI operating systems include Microsoft Windows and the Apple MAC-OS etc.
5. Example: My Computer icons in Microsoft Windows.

Advantages:

1. It helps to add a creative touch to the website or application.
2. Icons can communicate an idea in seconds.

INFLUENCE OF ICONS:

1) Familiar:

- It reduces the learning time.
- Experience often makes words and numbers more familiar to a person than symbols.
- Graphic symbols may be more visually similar to each other.

II) Clarity:

- The resolution and pixel shapes for the screen differ from one another.
- Icons must appear correctly and consistently no matter what kind of screen is used.
- If color is used then it must contrast well with the background.
- Poor clarity will lead to low performance.

III) Simple:

- Designed icons should be simple.
- Too many parts will confuse the screen viewer.

IV) Consistent:

- Icons displayed on different screens should be consistent in structure & shape.
- Icons displayed on different sizes should be consistent in structure & shape.

V) Directness of the meaning:

- Icons should convey its intended meaning directly.
- For concrete objects and actions, direct links are more easily established.

VI) Efficient:

- In some cases, a graphical screen is less efficient, consuming more screen display space than a word.
- Icons strength lies in a situation where a small area of space is required to communicate the concept.

VII) Discriminable from others:

- Symbols chosen must be visually discriminable from other symbols.
- Person's ability to discriminate between alphabetic information is much more potent.

DIRECT MANIPULATION:

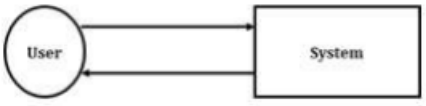
1. Direct Manipulation is a human-machine interaction style.
2. The term direct manipulation was given by Shneiderman in 1982.
3. Direct Manipulation involves continuous representation of objects of interest.
4. It is used to describe graphical systems.

Characteristics:

1. The system is portrayed as an extension of the real world.
2. Objects and actions are continuously visible.
3. Actions are rapid and incremental with visible display of results.
4. Incremental actions are easily reversible.

Example:

Figure 3.2 shows example of direct manipulation in office system, here the user interacts with artificial



Advantages:

1. Easy to learn.
2. It permits error avoidance.

Disadvantages:

1. It is difficult to code.
2. It requires graphics displays and pointing devices.

PROBLEMS WITH DIRECT MANIPULATION:

1. Direct manipulation is not always feasible.
2. It is not feasible due to following reasons:
    a. Operations may be difficult to conceptualize in a graphical system.
    b. Difficult to understand & learn by people.
    c. Graphics capability of the system may be limited.
3. Direct Manipulation can be slow.
4. Some gestures can be more error-prone than typing.

Write short notes on Characteristics of the Graphical User Interface

1. GUI is an interface that allows users to interact with different electronic devices using icons and other visual indicators.
2. The graphical user interfaces were created because command line interfaces were quite complicated and it was difficult to learn all the commands in it.

CHARACTERISTICS OF THE GRAPHICAL USER INTERFACE:

1. Sophisticated Visual Presentation:

- Visual presentation is the visual aspect of the interface.
- It is what people see on the screen.
- The sophistication of a graphical system permits displaying lines, including drawings and icons.
- It also permits the displaying of a variety of character fonts, including different sizes and styles.
- The objective is to reflect visually on the screen the real world of the user as realistically, meaningfully, simply, and clearly as possible.

2. Pick-and-Click Interaction:

- To identify a proposed action is commonly referred to as pick, the signal to perform an action as click.
- The primary mechanism for performing this pick-and-click is most often the mouse and its buttons.
- The secondary mechanism for performing these selection actions is the keyboard.

3. Restricted Set of Interface Options:

- The array of alternatives available to the user is what is presented on the screen or what may be retrieved through what is presented on the screen, nothing less, and nothing more.
- This concept fostered the acronym WYSIWYG.

4. Visualization:

- Visualization is a cognitive process that allows people to understand information that is difficult to perceive, because it is either too voluminous or too abstract.
- The goal is not necessarily to reproduce a realistic graphical image, but to produce one that conveys the most relevant information.
- Effective visualizations can facilitate mental insights, increase productivity, and foster faster and more accurate use of data.

5. Object Orientation:

- A graphical system consists of objects and actions. Objects are what people see on the screen as a single unit.
- Objects can be composed of sub objects.
- For example, an object may be a document and its sub objects may be a paragraph, sentence, word, and letter.
- Objects are divided into three meaningful classes as Data objects, which present information, container objects to hold other objects and Device objects, represent physical objects in the real world.

6. Use of Recognition Memory:

- Continuous visibility of objects and actions encourages use of a person's more powerful recognition memory.
- The "out of sight, out of mind" problem is eliminated.

GUIDELINES FOR CHOOSING AND USING COLOR IN DESIGN:

1. Color schemes have a large impact on human-computer interaction.
2. Color can greatly improve user interfaces if used correctly, but can also reduce the functionality of the interface if used inappropriately.
3. Important factors of designing color interfaces include:

I) Simplicity:

1. Firstly, you want to keep the color scheme fairly simple.
2. Simplicity can be achieved by using the four primary colors, which are red, green, yellow, and blue.

II) Consistency:

1. Consistency is also another important factor when designing an interface.
2. Colors should be assigned to a particular type of concept or to help classify information.
3. This technique helps users to retain more information in their short term memory.

III) Clarity:

- Clarity and the concise use of color aids in helping users identify items more efficiently.

IV) Colorblindness and Usability:

1. Colorblindness plays a major role in designing websites.
2. You may lose up to 10% of the users to your site because of colorblindness.
3. The biggest solution to the problem is adjusting the contrast.
4. Make sure the text and its background have a strong contrast difference for its usability.

V) Accommodating Color Blindness:

1. Color blindness affects 9% to 12% of the male population and less than 1% of the female population.
2. The most common type of color blindness is the confusion between red and green and can be classified by dividing the deficiency into hue, saturation and brightness (HSB).

3. User Interfaces need to take into account this issue during the design stage.
4. The main area to be concerned with is the use of "color-coding" or "color-cueing."
5. The results do not necessarily represent what a color-blind person sees, but gives a good indication of the effect of the chosen color scheme with regard to hue, saturation and brightness.

VI) Other factors:

1. Recognize the power of color to speed or slow tasks.
2. Ensure that color coding supports the task.
3. Make color coding appear with minimal user effort.
4. Design for monochrome first.
5. Be consistent in color coding.
6. Be alert to common expectations about color codes.

WIMP:

1. WIMP stands for "windows, icons, menus and pointer".
2. It was coined by Merzouga Wilberts in 1980.
3. WIMP is an acronym that emerged in the 1980s and describes the graphical user interface (GUI) of personal computers.
4. It includes both Windows and Macintosh interfaces, as well as other less common operating systems, such as Linux and NeXT.
5. WIMP is technically a subset of GUIS which means all WIMP interfaces are GUIs, but not all GUIs are WIMPS.
6. WIMP-based systems are designed to be used with a keyboard and mouse, since the mouse controls the pointer (or cursor) and the keyboard is used to enter data.
7. Other GUIs may support different types of input, such as a touchscreen display.

ELEMENTS OF WIMP:

I) Windows:

1. Window is the area of the screen through which a particular software or data file may be viewed.
2. Types of WIMP interfaces Windows:
    a. Single Document Interface (SDI): They open new primary windows for each instance of an application document E.g. Notepad.
    b. Multiple Document Interface (MDI):
    - Windows resides under a single parent Window.
    - Multiple documents to be simultaneously visible.

    Example: Visual Basic, Adobe Photoshop
    c. Tabbed Document Interface (TDI): Windows are arranged in a tab. E.g. Firefox.

II) Icons:

1. Icons are small images or symbols that represent files, commands, or windows.
2. A good design of icons is important.
3. It should be:
    a. Concrete and familiar.
    b. Visual and conceptually distinct.
    c. Simple - unnecessary information is not needed.

III) Menus:

1. Menus allow users to make selections from the list.
2. Some Kinds of Menus:
    a. Pull-down menu: A menu that is pulled down from the menu bar and that remains available as long as the user holds it open.
    b. Drop-down menu: A menu that drops from the menu bar when requested and remains open without further action until the user closes it or chooses a menu item.
    c. Pop-up menus: Pop-up menus is a menu in a graphical user interface (GUI) that appears upon user interaction, such as a right-click mouse operation.
    d. Pie menus: Pie Menus is arranged in a circle.

IV) Pointers:

1. Pointers usually look like arrows and are used to select Icons and the options found in the menu.
2. WIMP style relies on pointing and selecting things.
3. The pointer moved around the screen via mouse.
4. The shape of the pointer can sometimes change depending on the application you are using at that time.

Direct Manipulation

The term direct manipulation is given by Shneiderman (1982) as they possess the following characteristics:

1. The system is portrayed as an extension of the real world.
2. Continuous visibility of objects and actions.
3. Actions are rapid and incremental with visible display of results.
4. Incremental actions are easily reversible.

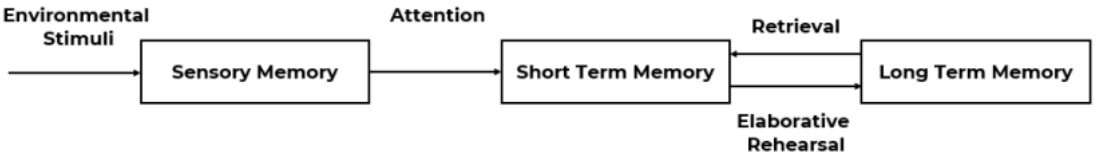
Example for direct manipulation:

Driving an automobile

- The scene is directly visible through the front window and performance of actions such as braking or steering has become common knowledge in our culture.
- To turn left, the driver simply rotates the steering wheel to the left.
- The response is immediate and the scene changes, providing feedback to refine the turn.
- In the above example, a driver looking at an object directly manipulates the scenario by his sudden action, which can be referred as direct manipulation.

Indirect Manipulation:

- In practice, direct manipulation of all screen objects and actions may not be feasible because of the following:
    1. The operation may be difficult to conceptualize in a graphical system.
    2. The graphics capability of the system may be limited.
    3. The amount of space available for placing manipulation controls in the window border may be limited.
    4. It may be difficult for people to learn and remember all the necessary operations and actions.
- When this occurs, indirect manipulation is provided. Indirect manipulation substitutes words and text, such as pull-down or pop-up menus, for symbols and substitutes typing for pointing.
- Most window systems are a combination of both direct manipulation and indirect manipulation.
- A menu may be accessed by pointing at a menu icon and then selecting it (direct manipulation) or the menu itself is a textual list of operations (indirect manipulation).



I) Short Term Memory:

1. Short term memory is also known as active memory.
2. It is the information we are currently aware of or thinking about.
3. Most of the information stored in active memory will be kept for approximately 20 to 30 seconds.
4. For example, in order to understand this sentence, the beginning of the sentence needs to be held in mind while the rest is read, a task which is carried out by the short-term memory.

II) Long term memory:

1. Long term memory is intended for the long-time storage of information.
2. Here we store factual information, experiential knowledge, procedural rules of behavior and in fact, everything that we 'know'.
3. It contains knowledge we possess.
4. Information received in short term memory is transferred to long term memory and encoded within it, a process we call learning.
5. However, there is also some evidence that long-term memory does also encode to some extent by sound.
6. For example, when we cannot quite remember a word but it is "on the tip of the tongue", this is usually based on the sound of a word, not its meaning.

III) Sensory Memory:

1. Sensory memory is an ultra-short-term memory and decays or degrades very quickly.
2. Sensory memory is the earliest stage of memory.
3. During this stage, sensory information from the environment is stored for a very brief period of time, generally for no longer than a half-second for visual information and 3 or 4 seconds for auditory information.
4. Unlike other types of memory, the sensory memory cannot be prolonged via rehearsal.

Norman's Fundamental Principles of Interaction.

Visibility

- The more visible functions are, the more likely users will be able to know what to do next.

Feedback –

- Feedback is about sending back information about what action has been done and what has been accomplished, allowing the person to continue with the activity.
- Various kinds of feedback are available for interaction design-audio, tactile, verbal, and combinations of these.

Constraints –

- The design concept of constraining refers to determining ways of restricting the kind of user interaction that can take place at a given moment. There are various ways this can be achieved.

Mapping –

- This refers to the relationship between controls and their effects in the world. Nearly all artifacts need some kind of mapping between controls and effects, whether it is a flashlight, car, power plant, or cockpit.

Consistency –

- This refers to designing interfaces to have similar operations and use similar elements for achieving similar tasks. In particular, a consistent interface is one that follows rules, such as using the same operation to select all objects.

Affordance –

- It is a term used to refer to an attribute of an object that allows people to know how to use it.
- To afford means "to give a clue". When the affordances of a physical object are perceptually obvious it is easy to know how to interact with it.