

# HMI QB Answers

## 1. What is HCI?

Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers. While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology design.

## 2. Who is involved in HCI?

- *User*: "user", we may mean an individual user, a group of users working together. An appreciation of the way people's sensory systems (sight, hearing, touch) relay information is vital. Also, different users form different conceptions of mental models about their interactions and have different ways of learning and keeping knowledge and. In addition, cultural and national differences play a part.
- *Computer*: When we talk about the computer, we're referring to any technology ranging from desktop computers, to large scale computer systems. For example, if we were discussing the design of a Website, then the Website itself would be referred to as "the computer". Devices such as mobile phones or VCRs can also be considered to be "computers".
- *Interaction*: There are obvious differences between humans and machines. In spite of these, HCI attempts to ensure that they both get on with each other and interact successfully. In order to achieve a usable system, you need to apply what you know about humans and computers, and consult with likely users throughout the design process. In real systems, the schedule and the budget are important, and it is vital to find a balance between what would be ideal for the users and what is feasible in reality

## 3. What are the 5 major senses?

Touch, sight, hearing, smell and taste

## 4. What are the effectors?

Input in humans is mainly through the senses and output through the motor control of the effectors. There are five major senses: Sight, Hearing, Touch, Taste, and Smell. There are a number of effectors: Limbs, Fingers, Eyes, Head, Vocal system.

## 5. What is sensory memory?

Sensory memory is a very brief memory that allows people to retain impressions of sensory information after the original stimulus has ceased. It is often thought of as the first stage of memory that involves registering a tremendous amount of information about the environment, but only for a very brief period.

## 6. Difference between short term and long-term memory?

▲ TABLE 5-3 Comparison of Short-Term and Long-Term Memory		
Characteristic	Short-Term Memory	Long-Term Memory
<b>Time of Storage after Acquisition of New Information</b>	Immediate	Later; must be transferred from short-term to long-term memory through consolidation; enhanced by practice or recycling of information through short-term mode
<b>Duration</b>	Lasts for seconds to hours	Retained for days to years
<b>Capacity of Storage</b>	Limited	Very large
<b>Retrieval Time (remembering)</b>	Rapid retrieval	Slower retrieval, except for thoroughly ingrained memories, which are rapidly retrieved
<b>Inability to Retrieve (forgetting)</b>	Permanently forgotten; memory fades quickly unless consolidated into long-term memory	Usually only transiently unable to access; relatively stable memory trace
<b>Mechanism of Storage</b>	Involves transient modifications in functions of preexisting synapses, such as altering amount of neurotransmitter released	Involves relatively permanent functional or structural changes between existing neurons, such as formation of new synapses; synthesis of new proteins plays a key role

## 7. What is long term memory? And mention its types?

<https://www.verywellmind.com/what-is-long-term-memory-2795347>

Long-term memory refers to the storage of information over an extended period. If you can remember something that happened more than just a few moments ago, whether it occurred just hours ago or decades earlier, then it is a long-term memory. Long-term memories are often outside of the conscious mind. This information is largely outside of our awareness but can be called into working memory to be used when needed. Some memories are relatively easy to recall, while others are much harder to access.

Long-term memory is usually divided into two types—explicit and implicit.

- Explicit memories, also known as declarative memories, include all of the memories that are available in consciousness. Explicit memory can be further divided into episodic memory (specific events) and semantic memory (knowledge about the world).
- Implicit memories are those that are mostly unconscious. This type of memory includes procedural memory, which involves memories of body movement and how to use objects in the environment. How to drive a car or use a computer are examples of procedural memories.

## 8. What is Short term memory?

<https://www.verywellmind.com/what-is-short-term-memory-2795348>

Short-term memory, also known as primary or active memory, is the information we are currently aware of or thinking about. The information found in short-term memory comes from paying attention to sensory memories.

- Short-term memory is very brief. When short-term memories are not rehearsed or actively maintained, they last mere seconds.
- Short-term memory is limited. It is commonly suggested that short-term memory can hold seven plus or minus two items.

## 9. What is semantic memory?

<https://www.livescience.com/42920-semantic-memory.html>

Semantic memory refers to a portion of long-term memory that processes ideas and concepts that are not drawn from personal experience. Semantic memory includes things that are common knowledge, such as the names of colors, the sounds of letters, the capitals of countries and other basic facts acquired over a lifetime.

## 10. What is gestalt theory?

<https://www.interaction-design.org/literature/topics/gestalt-principles>

Gestalt Principles are principles/laws of human perception that describe how humans group similar elements, recognize patterns and simplify complex images when we perceive objects. Designers use the principles to organize content on websites and other interfaces so it is aesthetically pleasing and easy to understand.

These principles are organized into five categories: Proximity, Similarity, Continuity, Closure, and Connectedness.

## 11. What is reasoning? What are the different types of reasoning?

<https://www.butte.edu/departments/cas/tipsheets/thinking/reasoning.html>

Reasoning is the process of using existing knowledge to draw conclusions, make predictions, or construct explanations. Types:

- *Deductive reasoning*: Deductive reasoning starts with the assertion of a general rule and proceeds from there to a guaranteed specific conclusion. Deductive reasoning moves from the general rule to the specific application: In deductive reasoning, if the original assertions are true, then the conclusion must also be true.
- *Inductive reasoning*: Inductive reasoning begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain, in light of accumulated evidence. You could say that inductive reasoning moves from the specific to the general. Much scientific

research is carried out by the inductive method: gathering evidence, seeking patterns, and forming a hypothesis or theory to explain what is seen.

- *Abductive reasoning*: Abductive reasoning typically begins with an incomplete set of observations and proceeds to the likeliest possible explanation for the set. Abductive reasoning yields the kind of daily decision-making that does its best with the information at hand, which often is incomplete.

## 12. What is a mental model?

[https://fs.blog/mental-models/#what\\_are\\_mental\\_models](https://fs.blog/mental-models/#what_are_mental_models)

- Mental models are how we understand the world. Not only do they shape what we think and how we understand but they shape the connections and opportunities that we see. Mental models are how we simplify complexity, why we consider some things more relevant than others, and how we reason.
- A mental model is simply a representation of how something works. We cannot keep all of the details of the world in our brains, so we use models to simplify the complex into understandable and organizable chunks.

## 13. What is jaggies and anti-aliasing?

<https://www.computerhope.com/jargon/j/jaggies.htm>

Alternatively referred to as staircasing, jaggies are a rigid, non-straight line or edge of an image or graphic. For example, jaggies or jagged edges are visible when zooming in on an image and with poor quality images.

Anti-aliasing encompasses a variety of techniques used to get rid of jagged edges on your screen which appear as a result of rectangular pixels forming non-rectangular shapes.

## 14. Mention 7 stages of Donald Norman's model in interaction? / Outline seven stages of action?

<https://nptel.ac.in/content/storage2/courses/106103115/Handouts/M4L3.pdf>

- User to establish Goal
- User to formulate Intention
- Decides on action on the interface
- Executes the action
- Perceives system state
- Interprets system response
- Evaluates system with respect to goal.

## 15. What is ergonomics?

<https://ergo-plus.com/ergonomics-definition-domains-applications/#definition>

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

## 16. Different types of INTERACTION STYLES?

<http://www-it.fmi.uni-sofia.bg/courses/HCI/guidelines/intstyle/final.htm>

- *Command line*: The user types in commands for the program, usually one at a time. The program executes the commands and returns feedback, if necessary. MS-DOS and UNIX use this style.
- *Question and answer*: The application asks questions and when the user provides all necessary data, the application gives the results. Sometimes these are called "walkthrough and use" applications.
- *Menus*: Possible user actions are listed on the screen and the user can select one of them. Gopher is an example and most MS Windows applications also include menus.
- *Form filing*: The user types the data in specific fields, similar to the fields on a paper fill-in form. Many office and database applications use this style.
- *Function keys*: The interaction is done by a set of special keys or key combinations for different operations. Typical examples are computerised ticket machines, computer games, etc.
- *Graphical direct manipulation*: The objects used in application are graphically represented on the screen and the user can manipulate them directly by pointing, clicking, dragging, typing, etc. Most windowing systems, or GUI's (Graphical User Interface) are based on graphical direct manipulation.

## 17. What is WIMP? list its elements?

<https://www.interaction-design.org/literature/book/the-glossary-of-human-computer-interaction/wimp>

WIMP stands for Windows, Icons, Menus and Pointers (or maybe Windows, Icons, Mouse, Pull-down menus).

WIMP is the style of graphical user interface that uses the above-mentioned common widgets. It was invented at Xerox PARC, popularised by the Apple Macintosh and now available in other varieties such as the Microsoft Windows operating system, the X Window System, OSF/Motif, NeWS and RISC OS.

WIMP is also sometimes said to be a paradigm for human-computer interaction. It can, however, not be said to be an "interaction style" (see this).

## 18. What are paradigms and give examples?

Successful interactive systems enhance usability, serve as paradigms for the development of future products.

- Time sharing
  - A single computer could support multiple users (1940s-1950s).
  - Previously, humans (programmers) were restricted to batch sessions, in which complete jobs were batch sessions, in which complete jobs were submitted on punch cards or paper tape to the operator who ran them individually on the computer.
- Video display units (VDU)
  - Display screens could provide a more suitable medium than a paper printout for presenting vast quantities of strategic information for rapid assimilation (1950s).
- Programming toolkits
  - The power of programming toolkits is small, well-understood components can be composed in fixed ways in order to create larger tools.
  - Engelbart's idea (graduate student at the University of California) was to use the computer to teach humans, which complex technology only the intellectually privileged were capable of manipulating. => toolkit
- Personal computing
  - Graphic programming language for children called LOGO to control turtles that dragged a pen along a surface to trace its path.
  - No matter how powerful a system may be, it will always be more powerful if it is easier to use.
- Window systems and the WIMP interface
  - Interaction based on windows, icons, menus and pointers (1981).
- The metaphor
  - LOGO language to teach children => metaphor of a turtle dragging its tail in the dirt. (Turtle head direction).
  - Space key for typewriter vs. word processor.
  - VR systems are rigged with special devices so the system can locate users and interpret their motion correctly.
- Direct manipulation.
  - Involves continuous representation of objects of interest and rapid, reversible, and incremental actions and feedback.
  - Ex. of direct-manipulation is resizing a graphical shape, such as a rectangle, by dragging its corners shape, such as a rectangle, by dragging its corners or edges with a mouse

## 19. What is design?

[https://www.tutorialspoint.com/human\\_computer\\_interface/design\\_process\\_and\\_task\\_analysis.htm](https://www.tutorialspoint.com/human_computer_interface/design_process_and_task_analysis.htm)

HCI design is considered as a problem solving process that has components like planned usage, target area, resources, cost, and viability. It decides on the requirement of product similarities to balance trade-offs.

The following points are the four basic activities of interaction design –

- Identifying requirements
- Building alternative designs
- Developing interactive versions of the designs
- Evaluating designs

Three principles for user-centered approach are –

- Early focus on users and tasks
- Empirical Measurement
- Iterative Design

## 20. State the golden rule of design.?

<https://medium.com/theagilemanager/user-experience-shneidermans-golden-rules-of-interface-design-5c041ba09bb3>

To improve the usability of an application it is important to have a well designed interface. Shneiderman's "Eight Golden Rules of Interface Design" are a guide to good interaction design.

- *Strive for consistency*: Standardizing the way information is conveyed ensures users are able to apply knowledge from one click to another; without the need to learn new representations for the same actions.
- *Enable frequent users to use shortcuts*: With increased use comes the demand for quicker methods of completing tasks and to reduce the number of interactions. Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.
- *Offer informative feedback*: The user should know where they are at and what is going on at all times. For every action there should be appropriate, human-readable feedback within a reasonable amount of time.
- *Design dialog to yield closure*: Don't keep your users guessing. Tell them what their action has led them to.
- *Offer simple error handling*: As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.
- *Permit easy reversal of actions*: This feature relieves anxiety, since the user knows that errors can be undone; it thus encourages exploration of unfamiliar

options. The units of reversibility may be a single action, a data entry, or a complete group of actions.

- *Support internal locus of control:* Experienced operators strongly desire the sense that they are in charge of the system and that the system responds to their actions. Design the system to make users the initiators of actions rather than the responders.
- *Reduce short-term memory load:* The limitation of human information processing in short-term memory requires that the interfaces should be as simple as possible with proper information hierarchy, and choosing recognition over recall.

## 21. What is “know your user”?

It means knowing all the demographic data your analytics app(s) can pull, yes. But more importantly, it means knowing what they need, and what stands in the way of them achieving their goals.

It means speaking with them face to face, watching them use your product (and maybe others), and asking them questions that go deeper than, "What do you think of this design?"

What are their goals? What stands in the way of them achieving those goals? How can a website help them overcome or work around those challenges?

## 22. List the principles of a software design in HCI?

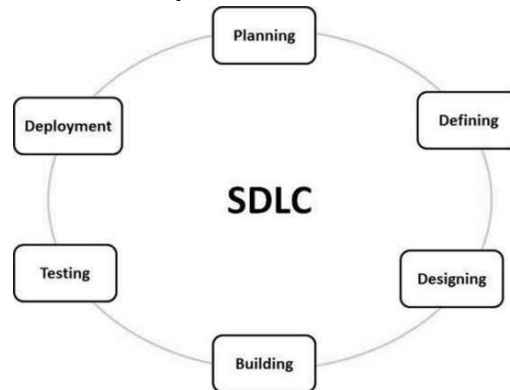
<https://www.lukemurphy.info/5-design-principles-of-human-computer-interaction/>

There are many different properties that go into HCI design such as:

- *Affordance:* Affordance in terms of design means how an object should physically be used, we should be able to visually see what that object or thing should be used for.
- *Perceivability:* A website user should be able to perceive when or if an action should be carried out. The website itself should be designed so users get visual clues about what to do and where to go next.
- *Feedback:* Giving the user feedback whilst processing an action is fundamental when it comes to HCI design. If a user does not get the proper feedback, they may think something is wrong or they did not perform the action, therefore they will perform the action again and this could lead to errors.
- *Constraints:* Constraints are when the interactive options and functions of a product are restricted. Since we have all filled them out at some point, we shall look at website forms. When we fill out a form online, whether it be for a registration, subscription, book an appointment or other, they are generally the same in the sense they require information.
- *Consistency:* Consistency tells us the way in which I make sense of the world, including products we interact with. As humans, we create and work out patterns in almost everything we do, this helps us to decide what our next steps are to achieving our ultimate goal.



### 23. Define model of software life cycle.?



[https://www.tutorialspoint.com/sdlc/sdlc\\_overview.htm](https://www.tutorialspoint.com/sdlc/sdlc_overview.htm).

There are various software development life cycle models defined and designed which are followed during the software development process. These models are also referred to as Software Development Process Models". Each process model follows a Series of steps unique to its type to ensure success in the process of software development.

Following are the most important and popular SDLC models followed in the industry

- Waterfall Model
- Iterative Model
- Spiral Model
- V-Model
- Big Bang Model

### 24. Types of TEXT ENTRY DEVICES?

[https://en.wikipedia.org/wiki/Text\\_entry\\_interface](https://en.wikipedia.org/wiki/Text_entry_interface)

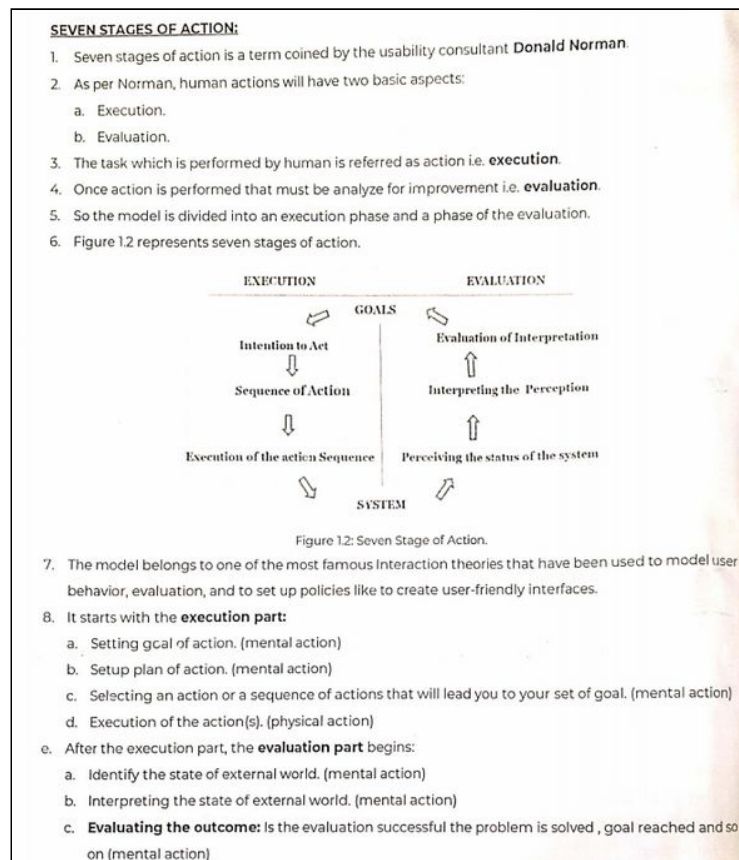
<ul style="list-style-type: none"><li>• Computer keyboard text entry</li><li>• ITU-T text entry (phone keyboard)</li><li>• Virtual keyboards</li><li>• Voice recognition</li><li>• Individual letter selection</li><li>• Handwriting recognition</li></ul>	<ul style="list-style-type: none"><li>• Light pen</li><li>• Touch screen</li><li>• Digital pen</li><li>• Graphics tablet</li><li>• Punched card input</li></ul>
--	---

### 25. Types of display devices?

[https://en.wikipedia.org/wiki/Display\\_device](https://en.wikipedia.org/wiki/Display_device)

<ul style="list-style-type: none"><li>• Electroluminescent (ELD) display</li><li>• Liquid crystal display (LCD)</li><li>• Light-emitting diode (LED) backlit LCD</li><li>• Thin-film transistor (TFT) LCD</li></ul>	<ul style="list-style-type: none"><li>• Light-emitting diode (LED) display</li><li>• OLED display</li><li>• AMOLED display</li><li>• Plasma (PDP) display</li><li>• Quantum dot (QLED) display</li></ul>
---	--

## 26. Outline seven stages of action?



## 27. Describe the three levels of processing?

<https://www.ques10.com/p/210/three-levels-of-processing/>

### *Level 1 :- Visceral level*

- This is the initial level of processing available information.
- In this step of processing humans react to audio visual actions and other aspects of a product.
- The external look and touch feel of the product will dominate the user at this visceral level.
- A human need to decide things are good, bad, safe or dangerous.

### *Level 2 :- behavioral Level*

- The emotional brain is important while making decisions.
- The more detailed level of product description than visceral.
- It is very difficult to work with complex systems, than working in simple environments.
- Semantics and usability practices are addressed in this level.

### *Level 3: - Reflective Level*

- The final level of processing is analysis and reflection of all experiences is done at a reflective level.
- All experience and its meaning is stored in the human brain.
- This level mainly deals with analyzing past user experiences and future requirements to plan for a goal.
- Then based on user preferences, we choose a method to execute the plan.

## **28. What is Direct manipulation? Explain its characteristics?**

<https://www.nngroup.com/articles/direct-manipulation/>

Direct manipulation (DM) is an interaction style in which users act on displayed objects of interest using physical, incremental, reversible actions whose effects are immediately visible on the screen.

Characteristics of Direct Manipulation:

- *Continuous representation of the object of interest:* Users can see visual representations of the objects that they can interact with. As soon as they perform an action, they can see its effects on the state of the system.
- *Physical actions instead of complex syntax:* Actions are invoked physically via clicks, button presses, menu selections, and touch gestures. In the move-file example, drag-and-drop has a direct analog in the real world, so this implementation for the move action has the right signifiers and can be easily learned and remembered.
- *Continuous feedback and reversible, incremental actions:* Because of the visibility of the system state, it's easy to validate that each action caused the right result. Thus, when users make mistakes, they can see right away the cause of the mistake and they should be able to easily undo it.
- *Rapid learning:* Because the objects of interest and the potential actions in the system are visually represented, users can use recognition instead of recall to see what they could do and select an operation most likely to fulfill their goal. They don't have to learn and remember complex syntax. Thus, although direct-manipulation interfaces may require some initial adjustment, the learning required is likely to be less substantial.

## **29. What is Indirect manipulation? Explain its characteristics?**

[http://www.brainkart.com/article/Indirect-Manipulation\\_9004/](http://www.brainkart.com/article/Indirect-Manipulation_9004/)

In practice, direct manipulation of all screen objects and actions may not be feasible because of the following:

- The operation may be difficult to conceptualize in the graphical system.
- The graphics capability of the system may be limited.
- The amount of space available for placing manipulation controls in the window border may be limited.

- 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.

### 30. Draw and explain the structure of human Memory.

<https://wikispaces.psu.edu/display/331Grp1/Memory+HCI+Information>

There are three types of memory. Sensory memory, which acts as a buffer for stimuli received through all the senses. Sensory memory exists for each sense we have - haptic for touch, echoic for sound and iconic for sight. Short-term memory is where all information is held briefly upon entering our system. Upon entering short-term memory, the information does not have long to live - 200 milliseconds is about the maximum time. Short-term memory is also very limited. If not committed to long-term memory, we will lose the information. Long-term memory is much longer and holds the information over a long period of time. There is very little decay but if held for too long, it becomes difficult to recall the information.

### 31. What is usability engineering? Mention the parts of usability specification for VCR?

<https://www.interaction-design.org/literature/topics/usability-engineering>

Usability engineering is a professional discipline that focuses on improving the usability of interactive systems. It draws on theories from computer science and psychology to define problems that occur during the use of such a system. Usability engineering involves the testing of designs at various stages of the development process, with users or with usability experts.

#### PART OF A USABILITY SPECIFICATION FOR A VCR

##### Attribute: Backward recoverability

Measuring concept:	Undo an erroneous programming sequence
Measuring method:	Number of explicit user actions to undo current program
Now level:	No current product allows such an undo
Worst case:	As many actions as it takes to program-in mistake
Planned level:	A maximum of two explicit user actions
Best case:	One explicit cancel action

### **32. What are Scenarios? Where are they used?**

<https://dl.acm.org/doi/10.1145/29933.275645>

A scenario is an idealised but detailed description of a specific instance of human-computer interaction (HCI). A set of scenarios can be used as a “filter bank” to weed out theories whose scope is too narrow for them to apply to many real HCI situations.

Use of scenarios:

- Allows the researcher to build on empirical findings already established while avoiding the tar-pits associated with the experimental methodology.
- Enables the researcher to consider a range of phenomena in a single study, thereby directly addressing the question of the scope of the theory.
- Ensures that the resulting theory will be applicable in HCI contexts.

### **33. Explain Software Life cycle model in detail? (Upar dekho)**

### **34. What are the characteristics of Web user Interface?**

- The Web interface provides a navigation environment where user move between pages of information.
- Web interface systems can be easily accessible anytime and anywhere with internet connection.
- It has a graphically rich environment containing menus, icons, hyperlinks, images, buttons etc.
- It is easy to understand for users.
- It is easier to maintain.
- It can be customized as per range of audience.
- It is responsive and can be accessed using mobile devices.
- Web interface is consistent across all web pages.

### **35. Explain Principles of user interface design.**

- Familiarity:
  - The interface should use terms and concepts which are drawn from experienced users to make the system more usable.
  - Usability is often related with familiarity by users by using interaction styles.
  - For example, if a user is in a habit to use Windows OS so it would not be too hard to work on that system but the user will not be comfortable with other OS in first interaction.
- Consistency:
  - The interface should be consistent across the application.
  - allows users to recognize usage patterns
  - Once a user learns about the certain parts of the interface working, the same knowledge can be applied to new areas and features.

- Define a design pattern and follow it. It should be the same for text, colour code or performing actions.
- Minimal Surprise:
  - User should never be surprised while performing any action.
  - The user should be able to predict the operation of commands.
- Recoverability:
  - The system should provide some resilience to user errors and allow the user to recover from errors.
  - This might include an undo facility, confirmation of destructive actions, 'shift' delete, etc.
  - The interface has to be able to help the user to recover from their mistakes.
- User Guidance:
  - The interface should not mislead users and must provide meaningful feedback.
  - Interfaces should provide guidance to users for full usage of applications.
- User Diversity:
  - Interfaces should be designed in such a way so that different types of users can use it.
  - Interface designing is not only for users of all ages, but of genders, races, levels of impairment and disability, culture and ethnicity.

### **36. Explain techniques of organizing, ordering, and grouping of screen data.**

- Organizing Screen Elements:
  - Screens are clearly visible when display elements are well organized and in meaningful ways. A clear organization of screen, makes the user understand which are essential elements.
  - Clarity is influenced by many factors like consistency, visually pleasing composition, a logical and sequential ordering, the presentation of the proper amount of information, groupings, and alignment of screen items.
- Ordering of Screen Elements:
  - Grouping of information into units that are logical and meaningful.
  - Screen provides interrelationships between related information.
  - Elements on the screen should be placed in a group as well as on priority basis.
  - Ordering schemes includes : Sequence of use, Frequency of use, Function and Importance.
  - It ensures that only information relative to the task is presented on screen.
  - Organizational scheme is to minimize the number of information variables.

### 37. Explain with examples the Qualities of visually pleasing composition.

<https://humancomputerinteractionhoney.blogspot.com/2019/02/q.html>

- Balance:- create screen balance by providing an equal weight of screen elements, left and right, top and bottom
- Symmetry:- create symmetry by replicating elements left and right of the screen center line
- Regularity:- create regularity by establishing standard and consistently spaced horizontal and vertical.
- Predictability:- create predictability by being consistent and following conventional orders or arrangements.
- Sequentiality:- Provide sequentiality by arranging elements to guide the eye through the screen in an obvious, logical, rhythmic and efficient manner.
- Economy:- Provide economy by using as few styles, display techniques and colors as possible.
- Unity:- create unity by
  - using similar sizes, shapes or colors for related information.
  - Leaving less space between elements of a screen than the space left at the margins.
- Proportion:- create windows and groupings of data or text with aesthetically pleasing proportions

### 38. Write a short note on the statistical graphics?

<https://www.quora.com/p/43584/short-note-on-statistical-graphics/>

A statistical graphic is data presented in a graphical format.

A well designed statistical graphic also referred to as chart or graph.

Use of statistical graphics

- Reserve for material that is rich, complex or difficult.
- Data Presentation
- Emphasize the data
- Minimize non data elements
- Minimize redundant data
- Fill the graph's available area with data.
- Show data variation
- Provide proper context for data interpretation

## Types of statistical graphs

- Curve and line graphs
- Single graph
- Surface charts
- Scatter plots
- Bar Graph
- Segmented or stacked bars
- Flow charts

### 39. What are the different phases of screen designing?

1. *What is wanted:* User Requirement. This is the first phase from where requirements are collected from the user. There are a number of techniques available like interviewing people, documents etc.
2. *Analysis:* The results of interviews and observations need to be in order in such a way to analyze user requirements and find out key issues for designing.
3. *Design:* At this stage our main focus will be how the system will work rather than what the user wants. There are various designing rules, guidelines and principles available for designing a good system.
4. *Prototype:* We do not expect to get designs right the first time. We need to evaluate a design to see how well it is working and what improvements can be done.
5. *Implementation and Deployment:* This is the final stage where we actually developed the product and deployed it with real users.

### 40. What do you mean by persona? Mention steps to design persona?

<https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them>

Personas are fictional characters, which you create based upon your research in order to represent the different user types that might use your service, product, site, or brand in a similar way. Creating [personas](#) will help you to understand your users' needs, experiences, behaviours and goals. Creating personas can help you step out of yourself. It can help you to recognise that different people have different needs and expectations, and it can also help you to identify with the user you're designing for. Personas make the design task at hand less complex, they guide your [ideation](#) processes, and they can help you to achieve the goal of creating a good user experience for your target user group.



### Steps to Create Engaging Personas:

- *Collect data:* Collect as much knowledge about the users as possible. Perform high-quality user research of actual users in your target user group.
- *Form a hypothesis:* Based upon your initial research, you will form a general idea of the various users within the focus area of the project, including the ways users differ from one another.
- *Everyone accepts the hypothesis:* The goal is to support or reject the first hypothesis about the differences between the users. You can do this by confronting project participants with the hypothesis and comparing it to existing knowledge.
- *Establish a number:* You will decide upon the final number of personas, which it makes sense to create. Most often, you would want to create more than one persona for each product or service, but you should always choose just one persona as your primary focus.
- *Describe the personas:* The purpose of working with personas is to be able to develop solutions, products and services based upon the needs and goals of your users.
- *Prepare situations or scenarios for your personas:* This engaging persona method is directed at creating scenarios that describe solutions. For this purpose, you should describe a number of specific situations that could trigger use of the product or service you are designing.
- *Obtain acceptance from the organisation:* It is a common thread throughout all 10 steps that the goal of the method is to involve the project participants. As such, as many team members as possible should participate in the development of the personas, and it is important to obtain the acceptance and recognition of the participants of the various steps.
- *Disseminate knowledge:* In order for the participants to use the method, the persona descriptions should be disseminated to all. It is important to decide early on how you want to disseminate this knowledge to those who have not participated directly in the process, to future new employees, and to possible external partners.
- *Everyone prepares scenarios:* Personas have no value in themselves, until the persona becomes part of a scenario – the story about how the persona uses a future product – it does not have real value.
- *Make ongoing adjustments:* The last step is the future life of the persona descriptions. You should revise the descriptions on a regular basis. New information and new aspects may affect the descriptions.

#### 41. Explain goal directed design in detail?

<https://www.ques10.com/p/216/goal-directed-design-process-in-human-machine-in-1/>

The whole process of Goal directed design is broken down into six steps.

1. *Research:*

In this stage you collect qualitative data about the users or potential users through field studies and interviews. You carry out a competitor analysis and interview key stakeholders to gather their requirements. When you're finished you should be left with a set of instructions which describe how the product could be used.

2. *Modelling:*

The modelling stage can be broken down into two parts. In part one you define the domain model by building on the workflow patterns from the research stage. In part two you define the user model through the use of personas or key archetypes which represent identifiable groups of users.

3. *Requirements Definition:*

Stage three is critical for providing that link between the user model and other models. In this stage you focus on context scenarios to help define 'a day in the life' of a persona. You also consider business goals, technical considerations and brand guidelines during this stage but it's the context scenarios which really make a big impact on the way you think and help generate a ton of ideas you might not have considered before.

4. *Framework Definition:*

During the framework definition stage you create the overall product concept and define the behaviour and visual design of the product. You can also create prototypes during this stage.

5. *Refinement:*

In the refinement stage you place more focus on detail and refinement and at the end of this stage it's recommended that you create your design documentation.

6. *Development Support:*

No matter how clear the vision is for the product things can and do change during development, budgetary and timeline concerns can affect which features get taken away or which new ones get added and it's critical that the designer is on hand to offer advice and to make sure the overall design quality doesn't get compromised.