Assignment No-01

Q.1. a) Discuss the model of the structure of human memory with diagrammatic illustration.

Ans:- Human memory is a powerful mental process that has many impli-cations on life and how you experien-ce things, from remembering meanin-gful events to enabling you to execute tasks and achieve goals.

The model asserts that Human memory has three seperate components as follows :-

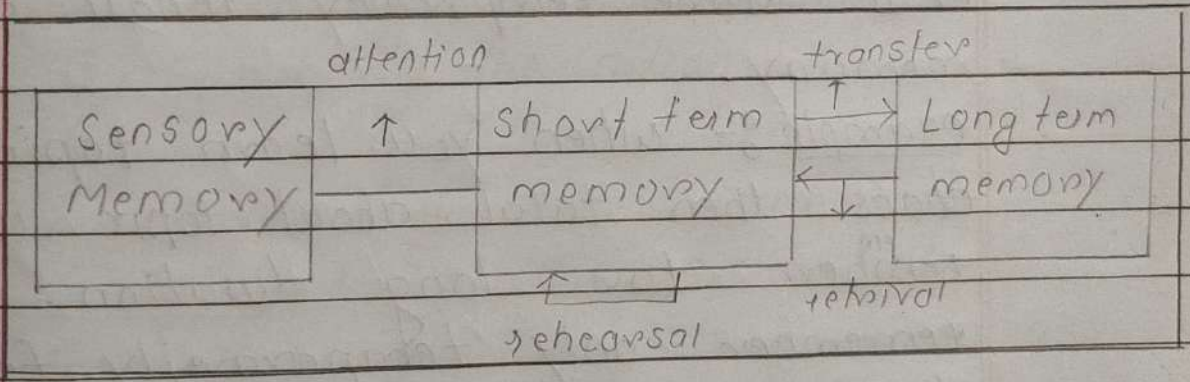

fig:- Model structure of human memory

a) Sensory memory :-

i) Sensory memory is also called butter memory.

ii) The sensory memory include Sight, Hearing and Touch. These stimulize acting as a buffer for the stimulize from the sensers of the human.

iii) The sensory memory store large capacity but a very brief duration. it can encode information from any of the sensors.

iv) The sensory memory are :-

i) Sight :- iconic memory

ii) Touch :- haptic memory

iii) Heaving :- echoic memory.

b) Short term memory :-

i) Short term memory is also called a working memory.

ii) It store temporary recall of memory.

example :- when you learn topic in class then total about topic is not remember for long duation. you remember only temporarily for some days.

c) long term memory :-

i) It is a type of memory in which we store information for long term.

ii) There are two types :- event and expeiences

a) episodic memory :-

b) Symantic memory :- facts, concept and skills.

Q.1 b) List and explain the stages of Normans model of interaction.

Ans:- "The Normans model of interaction also known as the execution - evaluation cycle. According to this model, the user first establishes the goals and then executes actions to achieve that goal using the system interface."

The stages in Norman's model of interaction are as follows:

1. Establishing the goal.
2. forming the intention
3. Specifying the action sequence.
4. Executing the action
5. perceiving the system state
6. Interpreting the system state
7. Evaluating the system state with respect to goals and interactions.

Normans uses this model of interaction to demonstrate why some interface cause problems to their users. He describes these in terms of the gulfs of execution and the gulfs of evaluation. As we noted eavlier, the user and the system do not use same terms to describe the domain and goals.

Example of Normans mode of Interaction :-

Task :- Save my Sketch

Goals

↓

1. I will now save my sketch in paint to my folder HCIDesign234 - (Goal)

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2. Mental Model :- I need to select save option in the file menu - (intention)

↓

3. Perform the sequence of action like hand movement for clicking on label - (action of sequence)

↓

4. Action :- click on label 'save' (Execution)

↓

5. Observe progress bar. (perceptions)

↓

6. Progress bar completes and menu dissolves (Interpretation)

↓

7. Mental Model : Check in my folder HCIDesign234 if doc is save in file (evaluation)

↓

Sketch saved as document in file

Q.2 a) Distinguish between short term and long term memory. State requi-rements to perform Cognitive walk-th-rough of a system.

Ans:-

Short term memory	long term memory
1.) Short term memory is the capacity to recall a small amount of information from a recent time period	1) long term memory is the capacity to recall memories from a longer time ago.
2) Store data only for temporarily	3) store data permanently
3) Short term memory is for visual information while working memory for verbal infor-mation.	3) Short term memory is a temporary information store. while working memory is for long term.
4) ex:- Holds a phone number that has just been recited.	4) ex:- Recollection of an important day in the distant past (like birthday, graduation etc)

Requirements to perform Cognitive Walkthrough of a system as follows

- Step 1 :- Define your user base. The usability of site all depends on the specific user.
- Step 2 :- Define your user goals ....
- Step 3 :- Identify the "happy path" ....
- Step 4 :- Invite the right team members.
- Step 5 :- Conduct your walkthrough
- Step 6 :- Implement Site improvements.

Q.2 b) With diagrammatic illustration explain the model of the structure of human memory?

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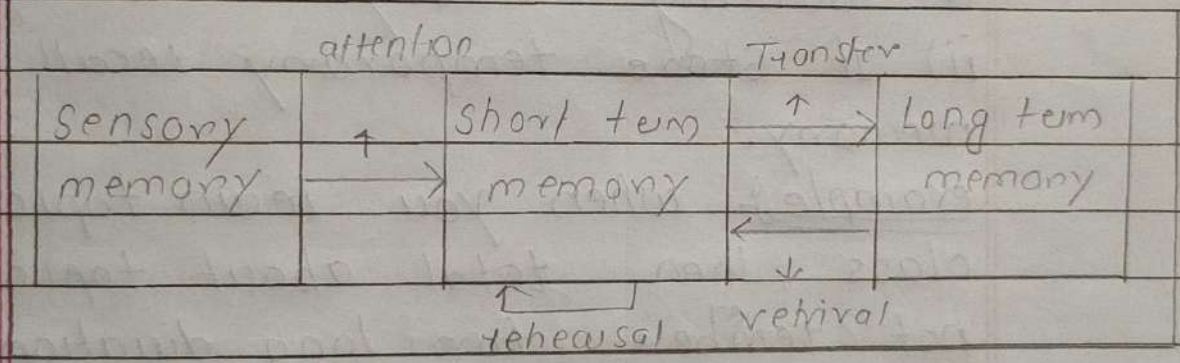

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i) It is a type of memory in which we store information for long term.
ii) There are ~~three~~ two types :-
a) episodic memory :- event and experiences
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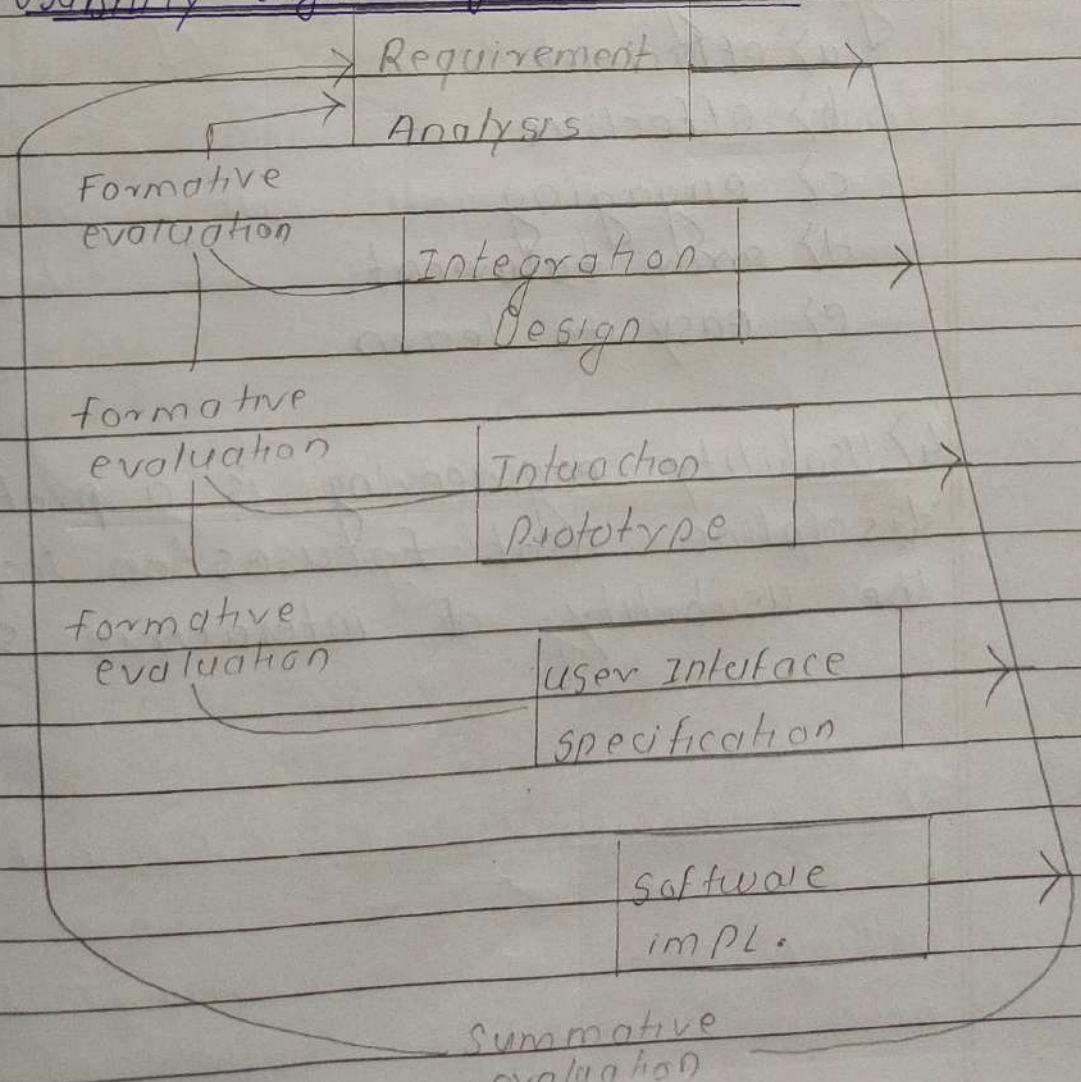
Q.3 a) Describe the usability engineering in detail.

Ans:- Usability is all about how users interact with technology and usability engineering studies the human - Computer interface (HCI) in depth.

Usability engineering requires a firm knowledge of Computer science and psychology and approaches product development based on Customer feedback.

Usability engineering life cycle :-



1) Usability engineering depends on understanding three aspects of a product.
- know the user
- know the task
- know the environment

2) If all of these are understood, you will be able to design a better product.

3) There are 5 goals of usability engineering as follows :-
a) efficient
b) effective
c) engaging
d) error tolerent
e) easy to learn.

4) Usability engineering is a professional discipline that focuses on improving the usability of interactive systems.

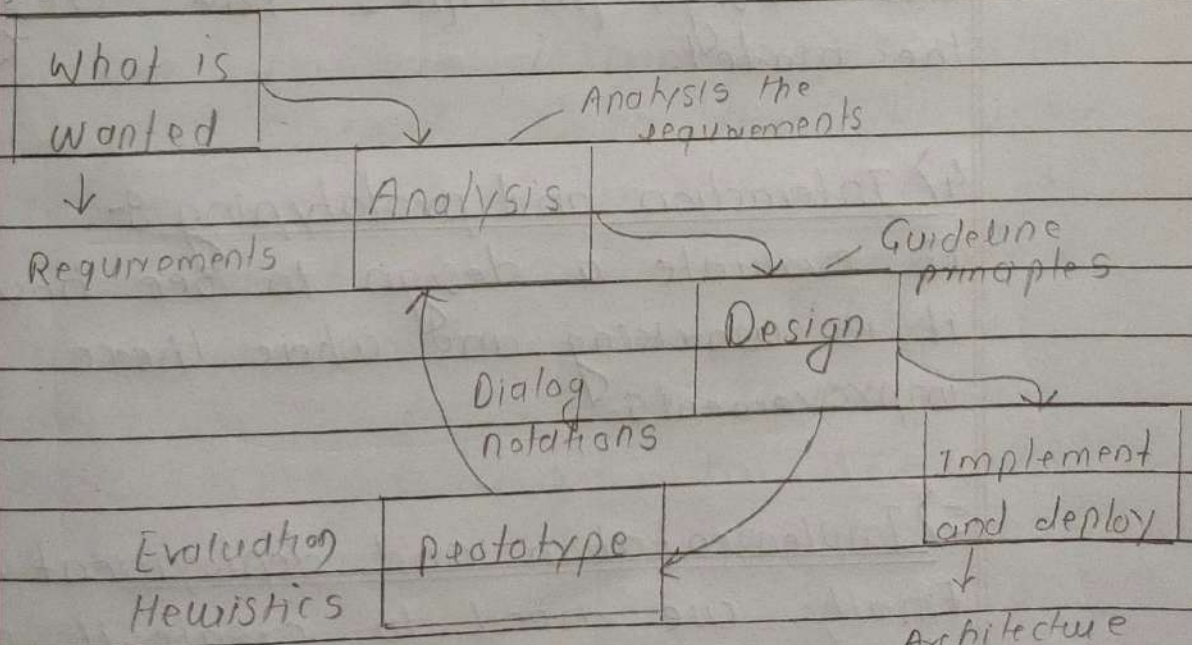
Q.3 b) Elaborate the concept interaction design process.

Ans:-

1) Interaction design is a process of making human to Computer interface (HCI) free human like.

2) Interactive digital products create this "human" Connection by giving Feedback to the end-users.

3) The Interaction design process is what designers use to create Sollution centered on users needs, aims and behaviour when interacting with products.



The process of design :-

1) Requirement :-
What is wanted? The first stage is establishing what exactly need. There are number of techniques used for this in HCI: Interviewing people, videotaping them, looking at the documents etc.

2) Analysis :-
The result of observation and interview need to be ordered in some way to bring out key issue and communicate with later stages of design.

3) Design :-
There are numerous rules, guidelines and design principles for designing the model.

4) Interaction and prototyping :-
To evaluate a design to see how well it is working and where there can be improvements.

5) Implementation and deployment :-
Finally, we need to create it and deploy. This involves writing code, perhaps, making hardware etc.

Q.4 a) Explain in detail about iterative design and prototyping.

Ans:-

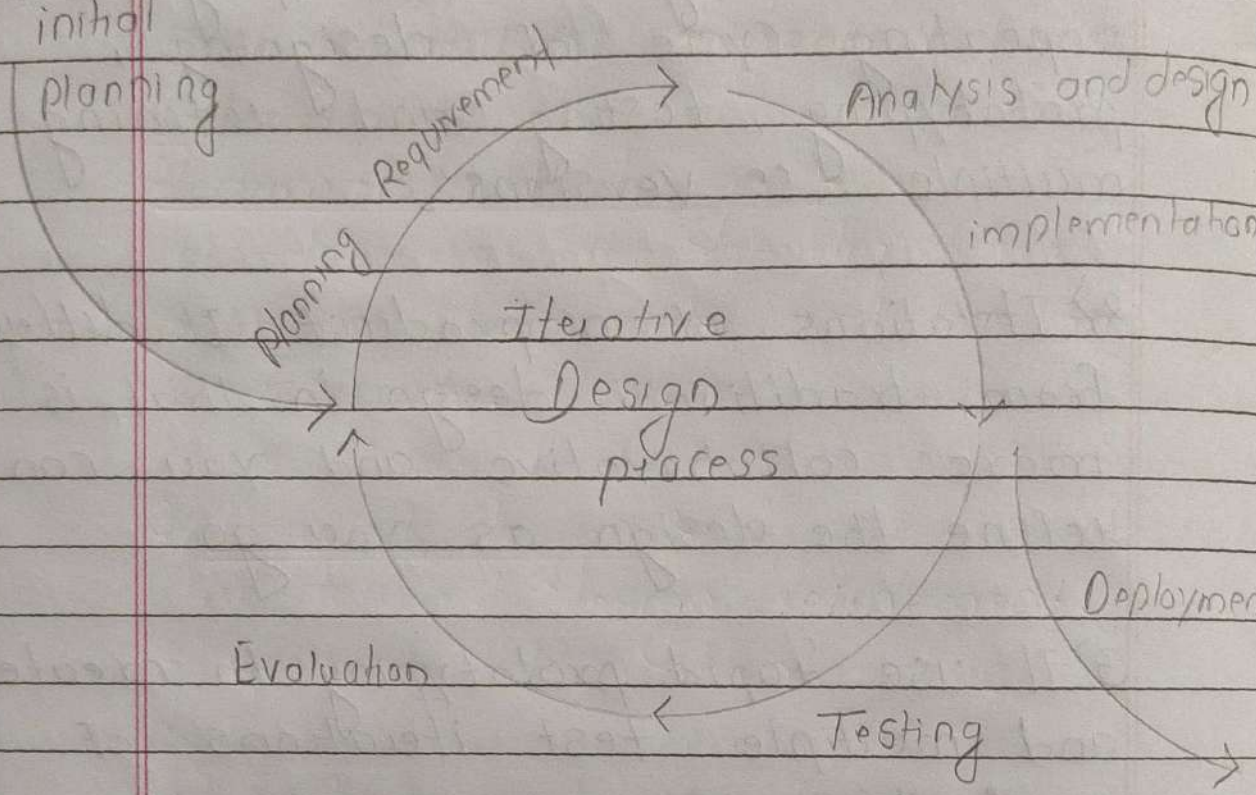
1) Iterative design and prototyping is a repeating cycle of designing, prototyping, testing and refining multiple "ee versions".

2) Iterations of a product. It differes from traditional design in that is more collaborative and you can refine the design as you go.

3) It use rapid prototyping to create and multiple test iterations of product.

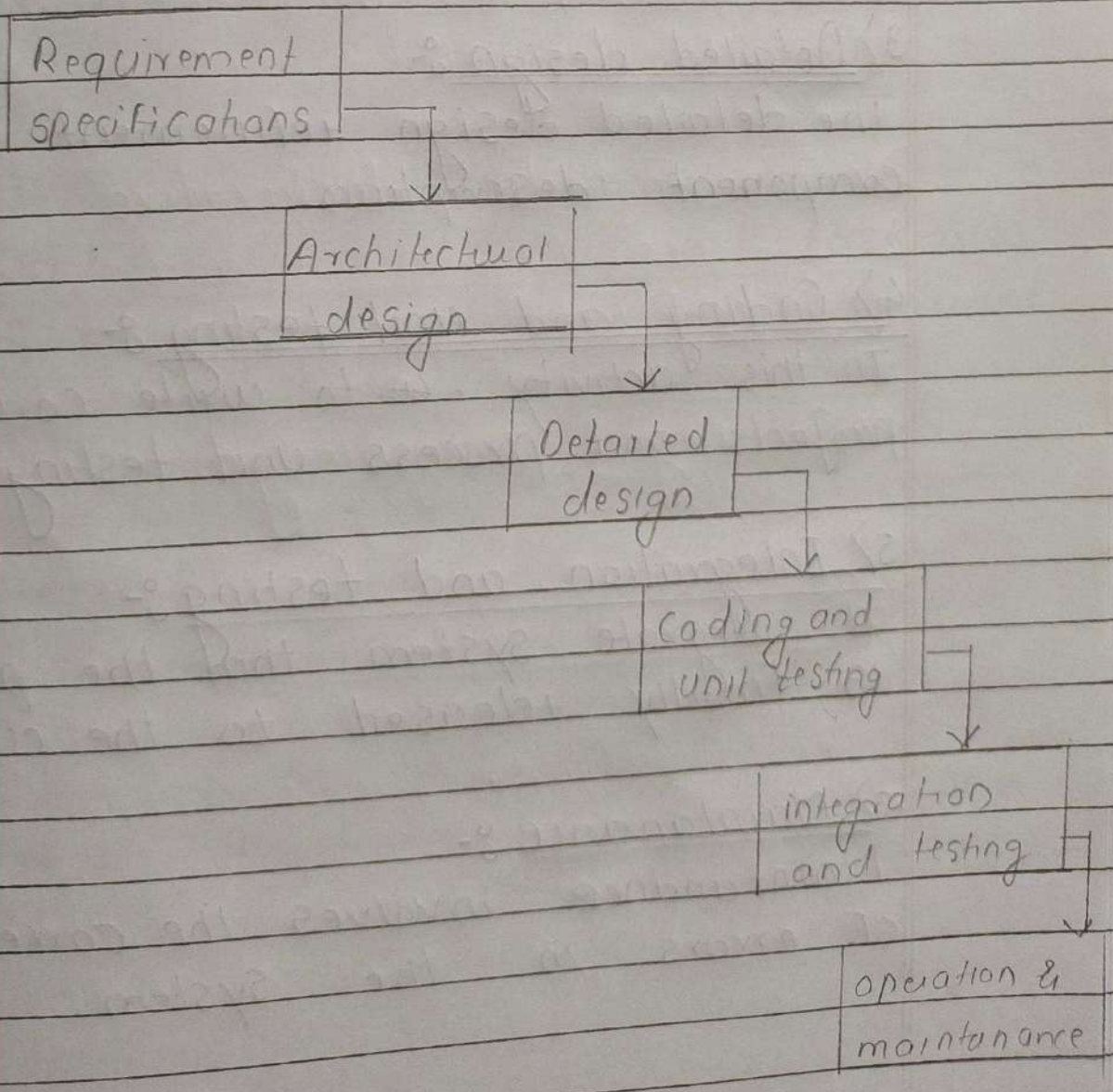
4) The iterative design process is a simple concept. Once through user research you have identified a user need and have generated ideas to meet that need, you develop a prototype. Then you test the prototype to see whether it meets the need in the possible way.

The Iterative Design process :-



Q.4 b) Discuss about the activities in waterfall and of software life cycle.

Ans:- The classical waterfall model is the basic SDLC model. The waterfall model is used for large, complex projects.
The waterfall model include several activities as follows:-



1) Requirement Specification :
In requirements specification, the designer and customer try to compute a deseription of what the eventual system will be expected to provide.

2) Architectual design :-
It describes the interdependecies between seperate components and the sharing of resources.

3) Detailed design :-
The detailed design refinement of the component description

4) Coding and unit testing :-
In this activity, to write code for projects and process unit testing.

5) Integration and testing :-
It integrate system that the product is finally released to the customer

6) Maintanance :-
Maintanance involves the correction of errors in the system.

Q.5 a) Explain the cognitive model and its classification.

Ans:-

1) Cognitive model represents users of interactive systems.

2) Cognitive modeling is an area of computer science that deals with simulating human problem-solving and mental processing in a computerized model.

3) It is based on three things:-

a) Hierarchical Model:-

It is based goals and task also called whole structure. It includes following models.

G - Goals
O - Operators
M - Methods
S - selection.

b) Linguistic Model:-

It is based on how to interact with system. Different people have different mind and way to interact, so perform a particular BNF and TAG.

C) physical Model :-
It is based on choice of work experience like single click mouse, button, double click button etc.

Classifications :-

1) The focus on Cognitive knowledge and skills.

2) As opposed to sensori-motor skills.

3) Can include declarative

4) procedual

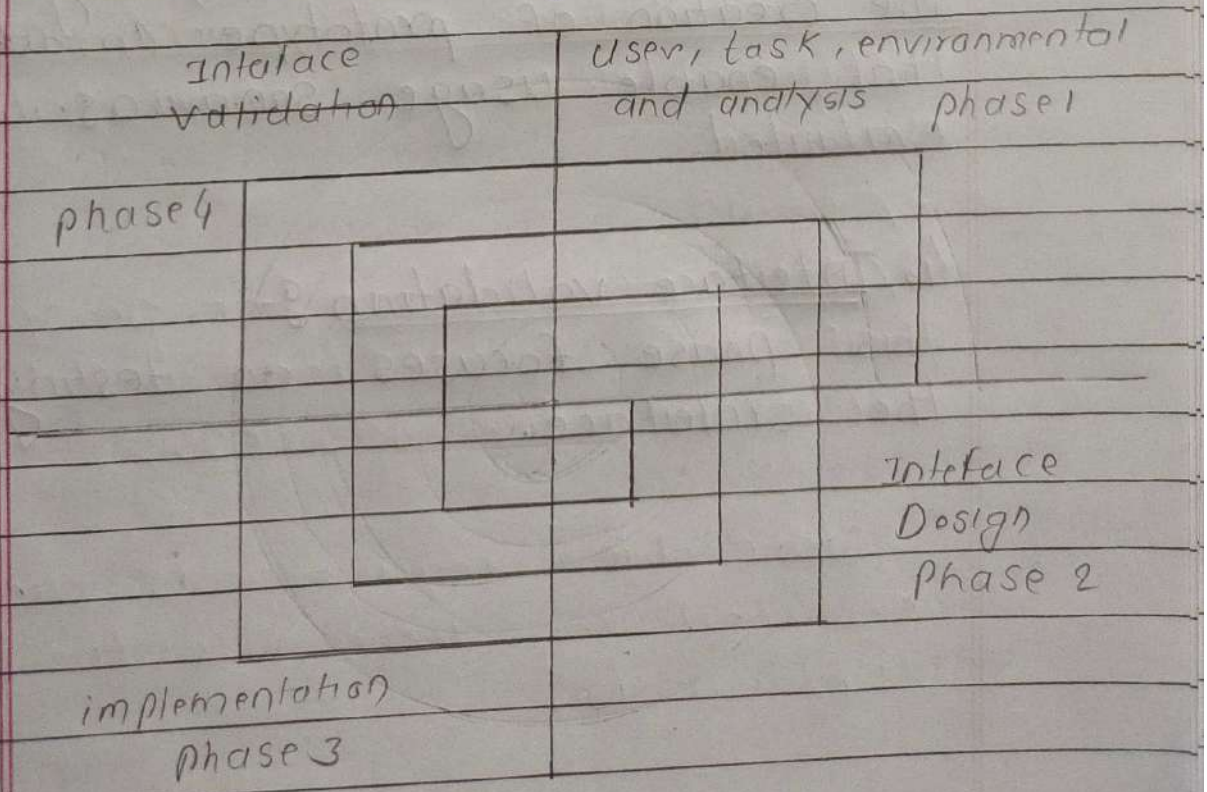
5) Strategic knowledge.

Q.5 b) Consider the case of preparing a group presentation for a software project. Elaborate the stages in specifying and designing UI for the same.

Ans :- User interface is the front end application view to which user interacts in order to use the software. The software becomes more popular if is user interface is :

- Attractive
- Simple to use
- Responsive in short time
- Clear to understand
- Consistent on all interface screens.

User Interface Design process :-



1. Usev, task, environmental analysis and modeling :-
The focus is based on the profile of users who will interact with the System ie understanding skills, knowledge, type of users. etc.

2. Interface design :-
The goal of this phase is to define the set of interface objects and actions i.e Control mechanism that enable the usev to perform desired task.

3. Interface Construction and implementation
The implementation activity begins with the creation of prototype (model) that enable usage senarios to be evaluated.

4. Interface validation :-
This phase focuses on testing the interface.

Q.6 a) Explain the concept of key stake level model.

Ans :- 1) In human - Computer Interaction the keystroke - level model (KLM) predicts how long it accomplish a routine task without errors using an interactive Computer System.

2) It was developed by Stuart - K - Card, Thomas P.

3) The Keystroke level model is a simple tool that allows a designer, researcher or engineer to predict or estimate how long it will take an experienced user to complete routine task in their software.

4) The model is composed of six elements or operators as follows :-

a) K - Keystroke or button press
b) P - pointing with a mouse.
c) H - holding the hands on keyboard
d) D - Manually drawing
e) M - Mental preparation.
F) R - System response time.

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Q.6 b) Describe the Socio organization issues and Stake holder requirements.

Ans:- The Socio organizational 'equation' consists of a combination of technology, culture and organization.

The socio organization issues are :-

1) Trust
2) Confidentiality
3) ~~Shout~~ knowledge sharing etc.
4) System may not take into account conflict and power relationship.
5) Those who benefit may not do the work.

The stakeholder requirements are :-

1) Define decisions about business needs
2) goals
3) Objectives from the perspective of the stakeholder and their role in the business.

* Stakeholder requirements are expected to decompose the business requirements.