1. What is usability? What are the features of the useable system?

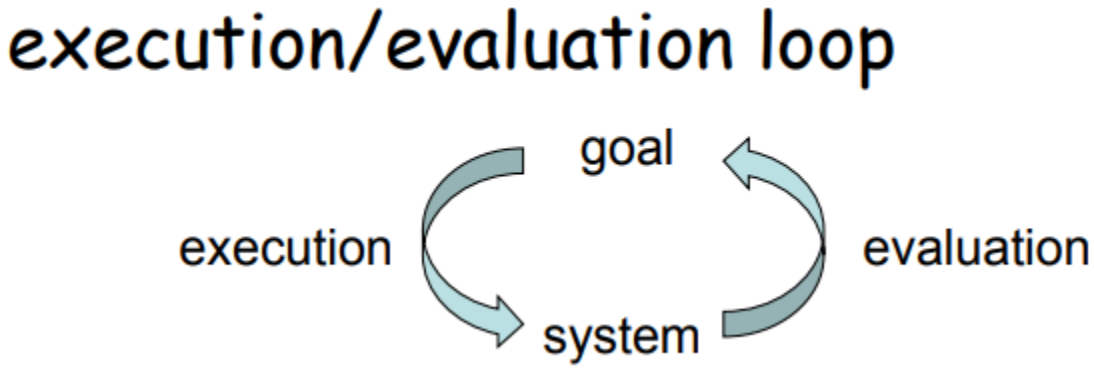
Usability is one of the key concepts in HCI. It is concerned with making systems easy to learn and use.

A usable system is:

a. easy to learn
b. easy to remember how to use
c. effective to use
d. efficient to use
e. safe to use
f. enjoyable to use

2. What are the seven stages of Donald Norman's model?

– user establishes the goal
– formulates intention
– specifies actions at interface
– executes action
– perceives system state
– interprets system state
– evaluates system state with respect to goal



3. What is the difference between slips and mistakes?

Slips :

- understand system and goal
- correct formulation of action
- incorrect action

Mistake :

- may not even have right goal!

Fixing things?

- Slip – better interface design
- Mistake – better understanding of system

4. Define Ergonomics and clarify your definition by examples?

Study of the physical characteristics of interaction(working environment)

Examples :

- arrangement of controls and displays
-surrounding environment
-health issues
-use of colour

5. Give the differences between virtual reality(VR) and augmented reality(AR)?

- AR uses a real-world setting while VR is completely virtual
- AR users can control their presence in the real world while VR users are controlled by the system

6. Give four Common interaction styles?

- command line interface
- menus
- natural language
- question/answer and query dialogue

7. Define the terms 'deductive reasoning'; 'inductive reasoning'; and ' abductive reasoning' and provide an example of each related to HCI?

deductive reasoning :

- Deduction:

– derive logically necessary conclusion from given premises.

e.g. If it is Friday then she will go to work

It is Friday

Therefore she will go to work.

- Logical conclusion not necessarily true
- When truth and logical validity clash
- People bring world knowledge to bear

inductive reasoning :

- Induction:

– generalize from cases seen to cases unseen

e.g.all elephants we have seen have trunks

therefore all elephants have trunks.

- Unreliable:

– can only prove false not true …

but useful!

- Humans not good at using negative evidence

e.g. Wason's cards.

abductive reasoning :

- reasoning from event to cause

e.g.Sam drives fast when drunk.

If I see Sam driving fast, assume drunk.

- Unreliable:

– can lead to false explanations

8. Give differences between speech synthesis and speech recognition?

Speech Recognition: This allows the user to operate the device using methods of dictating orders to the device via input devices such as microphones. This feature basically involves the computer or device interpreting what the user has said...

Speech Synthesis: This feature allows the device to dictate or read out aloud text or information from the device...output devices such as speakers are required for this. The end result is that the computer talks to the user to save the user having to read some text on the screen.

Sheet #1

9. What is the definition of HCI?

(human-computer interaction) is the study of how people interact with computers .

10. What is the basic goal of HCI?

A basic goal of HCI is to improve the interactions between users and computers by making computers more usable and receptive to the user's needs.

A long term goal of HCI is to design systems that minimize the barrier between the human's cognitive model of what they want to accomplish and the computer's understanding of the user's task.

11. What are the methods and techniques which HCI concerned with?

HCI is concerned with:

-methodologies and processes for designing interfaces (i.e., given a task and a class of users, design the best possible

interface within given constraints, optimizing for a desired property such as learning ability or efficiency of use)

-methods for implementing interfaces (e.g. software toolkits and libraries; efficient algorithms)

-techniques for evaluating and comparing interfaces

-developing new interfaces and interaction techniques

-developing descriptive and predictive models and theories of interaction

12. What is the difference between the professional practitioners and the researchers in HCI?

Professional practitioners in HCI are usually designers concerned with the practical application of design methodologies to real-world problems. Their work often revolves around designing graphical user interfaces and web interfaces.

Researchers in HCI are interested in developing new design methodologies, experimenting with new hardware devices, prototyping new software systems, exploring new paradigms for interaction, and developing models and theories of **interaction.**

13. What are the factors which should be considered in the analysis and design of a system using HCI principles?

The main factors are:

- **Organization Factors:** Training, job design, politics, roles, work organization
- **Environmental Factors:** Noise, heating, lighting, ventilation, Health and Safety Factors
- **The User:** Cognitive processes and capabilities, Motivation, enjoyment, satisfaction, personality, experience
- **Comfort Factors:** Seating, equipment, layout.
- **User Interface:** Input devices, output devices, dialogue structures, use of color, icons, commands, navigation, graphics, natural language, user support, multimedia,
- **Task Factors:** Easy, complex, novel, task allocation, monitoring, skills
- **Constraints** Cost, timescales, budgets, staff, equipment, buildings
- **System Functionality** Hardware, software, application
- **Productivity Factors** Increase output, increase quality, decrease costs, decrease errors, increase innovation

14. What are the main disciplines which have contributed to HCI?

Some of the main disciplines which have contributed to HCI are:

a. Computer Science
b. Cognitive Psychology
c. Social Psychology
d. Ergonomics/Human Factors
e. Linguistics
f. Artificial Intelligence
g. Philosophy, Sociology & Anthropology
h. Engineering & Design