Internal Assessment Test 1 –November 2021 Scheme and Solutions

Sub: User Interface Design Sub Code: 18CS734 Branch: ISE
Date: 12/11/2021 Duration: 90 min's Max Marks: 50 Sem/Sec: VII A, B &C

	Answer any FIVE FULL Questions	MARKS	CO	RBT
1a)	Explain the importance and benefits of good user interface design.	5	CO1	L2

Definition:

User interface design is a subset of a field of study called human-computer interaction (HCI). Human-computer interaction is the study, planning, and design of how people and computers work together so that a person's needs are satisfied in the most effective way.

Importance:

A well-designed interface and screen is terribly important to our users. It is their window to view the capabilities of the system and it is also the vehicle through which complex tasks can be performed.

A screen's layout and appearance affect a person in a variety of ways. If they are confusing and inefficient, people will have greater difficulty in doing their jobs and will make more mistakes.

Benefits

The benefits of a well-designed screen have also been under experimental scrutiny for many years. One researcher, for example, attempted to improve screen clarity and readability by making screens less crowded.

Another benefit is, ultimately, that an organization's customers benefit because of the improved service they receive.

Identifying and resolving problems during the design and development process also has significant economic benefits.

1b)	Write any five differences between GUI and Web page Design.	5	CO1	L1

Any Five

1. Devices
2. User Focus
3. Data
4. Information
5. User Tasks
6. Presentation
7. Navigation
8. Interaction
9. Response Time
10. System Capability
11. Task Efficiency
12. Consistency
13. User Assistance
14. Integration
15. Security
16. Reliability

Characteristics	GUI	WEB
Devices	User hardware variations limited. User hardware characteristics well defined Screens appear exactly as specified.	User hardware variations enormous. Screen appearance influenced by hardware being used.
User Focus	Data and applications.	Information and navigation.
Data	Typically created and used by known and trusted	Full of unknown content.
Information	Sources are trusted. Properties generally known. Typically placed into system by users or known people and organizations.	Source not always trusted. Often not placed onto the Web by users or known people and organizations. Highly variable organization.
User Tasks	Install, configure, personalize, start, use, and Open, use, and close data files. Familiarity with	Link to a site, browse or read pages, fill out forms, upgrade programs. register for services, participate in transactions, download and

2 Explain the advantages and disadvantages of Graphical systems. 10 CO1 L2

Advantages

- **Symbols recognized faster than text**: symbols can be recognized faster and more accurately than text. An example of a good classification scheme that speeds up recognition is the icons. These icons allow speedy recognition of the type of message being presented.
- **Faster learning**: a graphical, pictorial representation aids learning, and symbols can also be easily learned.
- **Faster use and problem solving**: Visual or spatial representation of information has been found to be easier to retain and manipulate and leads to faster and more successful problem solving.
- **Easier remembering**: Because of greater simplicity, it is easier for casual users to retain operational concepts.

- **More natural**: symbolic displays are more natural and advantageous because the human mind has a powerful image memory.
- **Fewer errors**: Reversibility of actions reduces error rates because it is always possible to undo the last step. Error messages are less frequently needed.
- **Increased feeling of control**: The user initiates actions and feels in control. This increases user confidence
- **Immediate feedback**: The results of actions furthering user goals can be seen immediately. If the response is not in the desired direction, the direction can be changed quickly.
- **Predictable system responses**: Predictable system responses also speed learning.
- Easily reversible actions: This ability to reverse unwanted actions also increases user confidence
- **More attractive**: Direct-manipulation systems are more entertaining, cleverer, and more appealing.
- **May consume less space**: Icons may take up less space than the equivalent in words but this is not the case always.
- **Replaces national languages**: Icons possess much more universality than text and are much more easily comprehended worldwide.
- **Easily augmented with text displays**: Where graphical design limitations exist, direct-manipulation systems can easily be augmented with text displays. The reverse is not true.
- **Low typing requirements**: Pointing and selection controls, such as the mouse or trackball, eliminate the need for typing skills.

Disadvantages

- **Greater design complexity**: Controls and basic alternatives must be chosen from a pile of choices numbering in excess of 50. This design potential may not necessarily result in better design unless proper controls and windows are selected. Poor design can undermine acceptance.
- **Learning still necessary**: The first time one encounters many graphical systems, what to do is not immediately obvious. A severe learning and remembering requirement is imposed on many users because meanings of icons or using pointing device have to be learned.
- **Lack of experimentally-derived design guidelines:** today there is a lack of widely available experimentally-derived design guidelines. Earlier only few studies to aid in making design decisions were performed and available for today now. Consequently, there is too little understanding of how most design aspects relate to productivity and satisfaction.

- **Inconsistencies in technique and terminology**: Many differences in technique, terminology, and look and feel exist among various graphical system providers, and even among successive versions of the same system. So the user has to learn or relearn again while shifting to next terminology.
- **Not always familiar**: Symbolic representations may not be as familiar as words or numbers. Numeric symbols elicit faster responses than graphic symbols in a visual search task.
- **Window manipulation requirements**: Window handling and manipulation times are still excessive and repetitive. This wastes time
- **Production limitations**: The number of symbols that can be clearly produced using today's technology is still limited. A body of recognizable symbols must be produced that are equally legible and equally recognizable using differing technologies. This is extremely difficult today.
- **Few tested icons exist**: Icons must be researched, designed, tested, and then introduced into the marketplace. The consequences of poor or improper design will be confusion and lower productivity for users.
- **Inefficient for touch typists**: For an experienced touch typist, the keyboard is a very fast and powerful device.
- **Not always the preferred style of interaction**: Not all users prefer a pure iconic interface. User will also prefer alternatives with textual captions.
- **Not always fastest style of interaction:** graphic instructions on an automated bank teller machine were inferior to textual instructions.
- **May consume more screen space**: Not all applications will consume less screen space. A listing of names and telephone numbers in a textual format will be more efficient to scan than a card file.
- **Hardware limitations**: Good design also requires hardware of adequate power, processing speed, screen resolution, and graphic capability.

3 Describe the important human characteristics in user interface design. 10 CO1 L3

Explain any 8 characteristics

1. **Perception**
2. **Memory**
3. **Sensory Storage**
4. **Visual Acuity**
5. **Foveal and Peripheral Vision**
6. **Information Processing**
7. **Mental Models**
8. **Movement Control**
9. **Learning**
10. **Skill**
11. **Individual Differences**

4 List and summarize the pit falls in development path of the design process. 10 CO1 L2

1. Designing for People
2. Usability
3. Common Usability Problems
4. Some Practical Measures of Usability
5. Some Objective Measures of Usability
6. The Design Team

7. Know your user or client
8. Why People Have Trouble with Computers
9. Responses to Poor Design

5 Explain the general principles of User interface design. 10 CO1 L2

- Aesthetically Pleasing
- Clarity
- Compatibility
- Comprehensibility
- Configurability
- Consistency
- Control
- Directness
- Efficiency
- Familiarity
- Flexibility
- Forgiveness
- Predictability
- Recovery
- Responsiveness
- Simplicity
- Transparency
- Trade-Offs

6 Explain the concept of Direct and Indirect manipulation. 10 CO1 L2

Direct Manipulation

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

Indirect Manipulation

1. The operation may be difficult to conceptualize in the 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.

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1b)	Write any five differences between GUI and Web page Design.							5	CO1	L1
2	Explain the advantages and disadvantages of Graphical systems.							10	CO1	L2
3	Describe the important human characteristics in user interface design.							10	CO1	L3
4	List and summarize the pit falls in development path of the design process.							10	CO2	L2
5	Explain the general principles of User interface design.							10	CO1	L2
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