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BSC INFORMATION SCIENCE YEAR 3

# AIIQ3123: HUMAN COMPUTER INTERACTION (HCI) CAT 2

## 1. Describe any FIVE advantages of Graphical User Interface (GUI) over other forms of HCI.

Graphical User Interface (GUI) is widely used in modern computing due to its visual and interactive elements. Here are five advantages of GUI over other forms of Human-Computer Interaction (HCI):

- User-Friendly and Intuitive: GUI uses visual representations such as icons, buttons, and windows, making it easy for users to understand and interact with the system without extensive training.

- Enhances Productivity: GUIs allow users to perform tasks quickly through intuitive controls, drag-and-drop functionality, and easy navigation, reducing the learning curve and improving efficiency.

- Supports Multitasking: Unlike Command Line Interfaces (CLI), which require users to input commands one at a time, GUIs enable users to work with multiple windows and applications simultaneously, improving workflow.

- Requires Minimal Technical Knowledge: Users do not need to memorize complex commands, as GUI-based systems provide visual clues and tooltips to guide them through tasks, making them accessible to non-technical users.

- Attractive and Interactive Design: GUI enhances user engagement through animations, colors, and interactive elements, creating a visually appealing and dynamic experience compared to text-based interfaces.

## 2. Describe any TWO emerging HCI styles.

Emerging HCI styles focus on improving user interactions through advanced technology. Here are two notable styles:

- Voice User Interface (VUI): VUI allows users to interact with a system using voice commands, commonly found in virtual assistants like Siri, Alexa, and Google Assistant. This hands-free interaction is beneficial for accessibility, multitasking, and convenience.

- Augmented Reality (AR) and Virtual Reality (VR) Interfaces: AR and VR provide immersive experiences by overlaying digital elements in the real world (AR) or creating entirely virtual environments (VR). These interfaces are used in gaming, training simulations, and remote collaboration.

## 3. Explain any FOUR rules of user interface design.

Good UI design follows specific principles to enhance user experience. Here are four essential rules:

- Consistency: The interface should have a uniform design across different screens and elements, ensuring users can predict interactions and navigate easily.

- Simplicity: A simple and clutter-free design helps users focus on their tasks without distractions. Reducing unnecessary elements improves usability.

- Feedback and Responsiveness: The system should provide immediate feedback (e.g., confirmation messages, loading indicators) to inform users about the outcome of their actions.

- Error Prevention and Recovery: The interface should minimize the chances of errors (e.g., by disabling irrelevant options) and provide easy recovery options, such as undo and error messages.

## 4. Explain how you can achieve ‘usability’ in HCI design for any FIVE categories of users.

Usability ensures that an interface is easy, efficient, and satisfying for different user groups. Here’s how it can be achieved:

- Beginners (First-time Users): Provide tutorials, guided walkthroughs, and tooltips. Use simple language and clear instructions. Offer undo options to prevent mistakes.

- Elderly Users: Increase text size and button contrast for readability. Reduce the number of steps required to complete tasks. Support voice commands for easier interaction.

- People with Disabilities: Implement screen readers and keyboard navigation. Offer voice commands and gesture-based controls. Ensure compatibility with assistive technologies.

- Experts (Advanced Users): Provide shortcuts and customizable settings. Allow automation of repetitive tasks. Support advanced options without overwhelming basic users.

- Children and Young Users: Use colorful, engaging visuals and animations. Include interactive elements and gamification. Ensure parental controls for safety.