Question Paper

Exam Date & Time: 09-Dec-2023 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

VII SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV 2018

Human Computer Interaction [ICT 4049]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1)	A)	Explore the impact of deductive, inductive, and abductive reasoning in Human-Computer Interaction (HCI), considering scenarios where logical conclusions conflict with real-world knowledge. Discuss how these reasoning types influence interactive system design and usability.	(5)
	B)	Discuss the principles related to robustness in interactive systems, focusing on observability and its associated principles: browsability, defaults, and operation visibility. Provide examples to illustrate how these principles contribute to the robustness of an interactive system.	(3)
	C)	Analyze the various organizational strategies for controls and displays in interactive systems, considering factors like functionality, sequence of use, and frequency. Provide examples highlighting the importance of appropriate organization in enhancing user experience and system efficiency.	(2)
2)	A)	Assume that you are designing a mobile banking application for a leading bank. The application aims to provide users with a seamless and secure banking experience. As part of the design process, create an application functional hierarchy and network of screens/states to illustrate the structure and flow of the application.	(5)
	B)	Discuss how the implementation of Multi-Sensory Systems contributes to accessibility, inclusivity, and the creation of more intuitive and interactive digital environments with suitable application scenarios. Evaluate the challenges and considerations associated with designing interfaces that leverage multiple senses.	(3)
	C)	Consider you are designing a virtual birthday surprise experience that captures the essence of unwrapping a physical gift. Deconstruct the elements of this experience and propose creative ways to reconstruct them in the virtual realm. Additionally, explain how these virtual elements enhance the overall experience of receiving a birthday surprise.	(2)
3)	A)	Explore the distinctions among the four evaluation designs tailored for assessing user interfaces, particularly focusing on Instagram, a visual social media platform for sharing images/videos with captions. Examine each evaluation approach individually and discern how each specific method contributes to the assessment of usability and effectiveness in diverse user scenarios for the app.	(5)
	B)	Discuss the advantages and limitations of heuristic evaluation as a usability inspection method. Provide examples of situations where Heuristic Evaluation is particularly effective and instances where it might be less suitable.	(3)
	C)	Explain the principles of flexibility in the context of system design. Discuss how designing systems	(2)

with flexibility in mind enhances adaptability to changing requirements and environments.

4)	A)	Write the differences between pervasive and ubiquitous computing. Considering the Smart Homes application, explain all the enablers of pervasive computing. Explain the performance criteria for the same.	(5)
	B)	Compare and contrast the cognitive walkthrough and heuristic evaluation techniques in the context of usability evaluation methodologies. Evaluate the strengths and weaknesses of each approach and provide examples of scenarios where one might be more effective than the other.	(3)
	C)	Evaluate the strengths and limitations of the two main experimental design methodologies, considering how experimental variables are manipulated, controlled, and measured.	(2)
5)	A)	Apply Keystroke Level Model to estimate the time required for a user to perform everyday tasks in the text editing software. Consider tasks like creating a new document, typing a paragraph, and searching for and replacing text.	(5)
	B)	Identify the most suitable time/space matrix for each of the following application scenarios. Justify your choices based on the characteristics of each scenario. a. Real-Time Collaborative Editing b. Mobile Health Monitoring System c. Interactive Virtual Reality Gaming	(3)
	C)	The model view controller architecture contributes to a more organized, maintainable, and adaptable software structure in HCI applications, fostering a positive user experience through effective management of data, presentation, and user interactions. In the application's lifecycle, a model instance is initially created, kickstarting its internal data structures. Following this, a view object is instantiated, with its initialization involving a reference to the previously created model. The view seamlessly integrates with the model's change-propagation mechanism by invoking the attach procedure. Subsequently, the view proceeds to create its controller, passing references to both the model and itself during the controller's initialization process. Similarly, the controller establishes its connection to the model's change-propagation mechanism through the attach procedure. With the initialization phase concluded, the application transitions into event processing. Represent this as a detailed sequence diagram, capturing the dynamic relationships described.	(2)

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