University of Colombo, Sri Lanka

University of Colombo School of Computing

BIT

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2023 — 2nd Year Examination — Semester 4

IT4106 — User Experience Design

Part 2 - Structured Question Paper
(2 Hours for both Part 1 and Part 2)

To be completed by the candidate							
Index Number							

Important Instructions

- This paper has **two (2) parts, Part 1 and Part 2**.

- The total duration of **both Part 1 and Part 2 is 2 hours**.

- The final mark for the paper will be determined by averaging the scores of Part 1 and Part 2, each of which is graded out of **100**.

- The medium of instructions and questions is English. Students should answer in the medium of English language only.

- This paper (Part 2) has **2 questions** on **5 pages**. Answer **both** questions.

- Write your answers **only on the space provided** on this question paper.

- Do not tear off any part of this question paper. Under no circumstances may this paper (or any part of this paper), used or unused, be removed from the Examination Hall by a candidate.

- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator immediately.

- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, is not allowed.

- Calculators are **not allowed**.

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To be completed by the examiners

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Total	

1) **(50 Marks)**

(a) Define "User-Centered Design" and explain its importance in the context of User Experience Design .

[10 Marks]

> **ANSWER IN THIS BOX**
>
> User-centered design (UCD) is an iterative design process that focuses on the users and their needs in each phase of the design process. UCD ensures that the final product is usable and meets the needs of the users, thus improving user satisfaction, usability, reduced development cost, increased adoption, and overall product success.

(b) Name and briefly describe **three (3)** usability evaluation methods that do not involve direct user interaction.

[12 Marks]

> **Answer in the box**
>
> ☐ **Heuristic Evaluation:** A usability expert reviews the user interface against a set of established heuristics or guidelines to identify usability issues.
> ☐ **Cognitive Walkthrough:** Evaluators go through the interface step-by-step to see if it aligns with how users think and solve problems, predicting potential usability issues.
> ☐ **Predictive Modeling:** Uses models like GOMS (Goals, Operators, Methods, and Selection rules) to predict user performance on tasks without involving actual users.

(c) Explain how A/B testing can be used to evaluate two different designs of an e-commerce website. Describe the steps involved in conducting an A/B test.

[20 Marks]

> **Answer in the box**

A/B testing involves comparing two versions (A and B) of a web page to see which one performs better in terms of user engagement or conversions. Steps include:

1. **Define Objective:** Set clear goals for what you want to achieve (e.g., increased conversions).
2. **Create Variations:** Develop the two different versions of the web page.
3. **Split Traffic:** Randomly split incoming traffic so half the users see version A and the other half see version B.
4. **Collect Data:** Use analytics tools to collect data on how users interact with each version.
5. **Analyze Results:** Compare the performance metrics (e.g., conversion rates) of both versions to determine which one meets the objectives better.
6. **Implement Best Version:** Implement the version that performs better based on the results.

(d)

List **four (4)** advantages of using high-fidelity prototypes in the design process.

[08 Marks]

> ### Answer in the box
>
> ☐ **Realistic User Feedback:** High-fidelity prototypes provide a realistic experience, leading to more accurate user feedback.
> ☐ **Detailed Usability Testing:** They allow for detailed usability testing of the interface and functionality.
> ☐ **Stakeholder Buy-in:** They help in gaining stakeholder buy-in by providing a clear representation of the final product.
> ☐ **Clearer Specifications:** They provide clearer specifications for developers to follow during the development phase.

2) **(50 marks)**

(a) Describe the key differences between usability testing in a controlled laboratory setting and usability testing in a natural setting.

10 Marks]

> **ANSWER IN THIS BOX**
>
> Usability testing in a controlled laboratory setting involves observing users in a controlled environment where variables can be managed to reduce distractions and simulate specific scenarios. In contrast, usability testing in a natural setting involves observing users in their natural environment, providing insights into how the product is used in real-world conditions. Laboratory testing allows for more precise control and data collection, while natural setting testing offers more authentic user interactions.

(b) Identify and explain four (4) types of interaction design principles.

[16 Marks]

☐ **Visibility:** Ensuring that the necessary options and information are visible to the user, preventing confusion.
☐ **Feedback:** Providing timely and relevant feedback to users about their actions and the system's state.
☐ **Consistency:** Maintaining uniformity in design elements and behavior throughout the interface to reduce the learning curve.
☐ **Affordance:** Designing elements so that their use is intuitive and apparent, encouraging correct user actions.

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(c) Assuming you are a UX consultant, choose the most appropriate evaluation method for each of the following scenarios and justify your choice:

1. Evaluating the effectiveness of a navigation system in a new mobile app.
2. Investigating the root cause of user difficulties in completing online transactions on a banking website.
3. Assessing the overall user satisfaction of a new e-learning platform.

[24 Marks]

ANSWER IN THIS BOX

☐ **Heuristic Evaluation:** Suitable for evaluating navigation systems as it allows experts to review and identify usability issues based on established principles.
☐ **Cognitive Walkthrough:** Effective for identifying specific user difficulties and understanding the cognitive process users follow when interacting with the system.
☐ **User Surveys:** Best for assessing overall user satisfaction as they collect direct feedback from users about their experiences and satisfaction levels.

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