



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2025 – Level II Examination – Semester 4

IT4106 – User Experience Design
Part 2 - Structured Question Paper

(ONE HOUR)

To be completed by the candidate

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **2 questions** and **8 pages**.
- **Answer all questions.** All questions carry **equal** marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, 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 is not printed, please inform the supervisor immediately.
- All kinds of electronic devices including calculators are **not** allowed.
- *All Rights Reserved.*

Questions Answered

Indicate by a cross (✕), (e.g. ☐ 1) the numbers of the questions answered.

	Question numbers	
	1	2
To be completed by the candidate by marking a cross (✕).		
To be completed by the examiners:		

Question 1 [50 Marks]

(a) Define User Experience (UX) and, using a brief example, explain the difference between a good and a poor user experience. State **two (2)** key principles of the User-Centred Design (UCD) approach.

[10 marks]**ANSWER IN THIS BOX**

User Experience (UX) refers to all aspects of a person's interaction with a product, system, or service, including how it is perceived, learned, and experienced. It encompasses both usability and the user's emotional and aesthetic responses.

Good UX is effective, efficient, satisfying, and pleasant. For example, an online checkout process that can be completed in a few clear steps with helpful feedback provides a good user experience. **Poor UX**, on the other hand, is confusing, slow, or error-prone. For example, a form that clears all entered fields after a single error and provides no guidance results in a poor user experience.

Two key principles of **User-Centred Design (UCD)** are:

- Early and continuous focus on users and their needs.
- Active user involvement throughout the development process.

Other acceptable UCD principles include empirical user testing and iterative design.

(b) A team is designing a new mobile recipe application.

- (i) Explain what a conceptual model is and why developing one at an early stage of the design process is important. **[6 marks]**
- (ii) Identify **two (2)** interaction types that the application's conceptual model would rely on, and provide one example of each within the application. **[5 marks]**
- (iii) Suggest one (1) interface metaphor for the application and state one benefit of using it. **[3 marks]**

ANSWER IN THIS BOX

(i) A conceptual model is a high-level outline of how the system is organised and will operate — what users can do with it and the concepts they need to understand it. Building it early lets the team reason through interactions before committing to UI detail, helps users form an accurate mental model, and reduces costly rework.

(ii) Any two + example: Instructing (tap to start a timer / add to shopping list); Manipulating (drag to reorder steps, swipe); Conversing (voice: “what’s the next step?”); Exploring/browsing (browse recipe categories).

(iii) A “recipe card / cookbook” or “shopping basket” metaphor — benefit: leverages users’ familiar real-world knowledge so the app is more intuitive to learn.

(c) Consider a mobile banking application.

- (i) Explain what cognition is and why it is important for interaction design. **[4 marks]**
- (ii) Select two (2) cognitive processes from attention, perception, or memory. For each, provide one design recommendation that supports that process in a mobile banking application. **[8 marks]**
- (iii) Briefly explain how designing for positive emotions can improve the user experience of the application. **[2 marks]**

ANSWER IN THIS BOX

(i) Cognition is the set of mental processes by which we acquire, store, manipulate and retrieve information — attention, perception, memory, learning, reasoning, problem-solving. It matters because designs should fit how users perceive, think and remember, so the product is easy to use and error-free.

(ii) Any two (process + recommendation): Attention — reduce clutter, surface the key action (e.g. “Transfer”), one task at a time. Perception — high-contrast legible text, clear grouping of account information, recognisable icons. Memory — support recognition over recall (show recent payees), minimise what must be remembered, use confirmations to prevent slips.

(iii) A reassuring tone, clean aesthetic and clear confirmations build trust and reduce anxiety in a high-stakes banking context, raising satisfaction and continued use.

(d) *A bank is designing a walk-up self-service kiosk.*

(i) Recommend a suitable interface type for the kiosk and justify your choice. **[5 marks]**

(ii) Describe a simple low-fidelity prototype for the kiosk's main menu screen, and give **two**

(2) reasons why low-fidelity prototyping is appropriate at this early stage of design. **[7 marks]**

ANSWER IN THIS BOX

(i) A large-target touchscreen interface with multilingual and audio support is suitable because kiosk users are typically occasional or transient users who require minimal learning effort, low cognitive load, and fast task completion.

(ii) A paper or wireframe sketch of the main menu with large labelled buttons ("Withdraw", "Deposit", "Other"), non-functional. Reasons (any two): Quick and inexpensive to produce and iterate enables early user feedback and exploration of alternatives before costly development Facilitates communication among designers, developers, and stakeholders by providing a shared understanding of the interface structure

Question 2 [50 Marks]

(a) *A university is redesigning its online library system (search, reserve, and renew books), which students and staff currently find confusing.*

(i) Identify and briefly explain **three (3)** key issues the team must address when planning and conducting a data-gathering session. **[6 marks]**

(ii) The team decides to use interviews and observation. State **one (1)** advantage of each technique for this study. **[8 marks]**

(iii) The team derives the following requirement:

“As a student, I want to renew a borrowed book online so that I avoid late fines.”

Draw or sketch a simple prototype of a screen that supports this requirement.

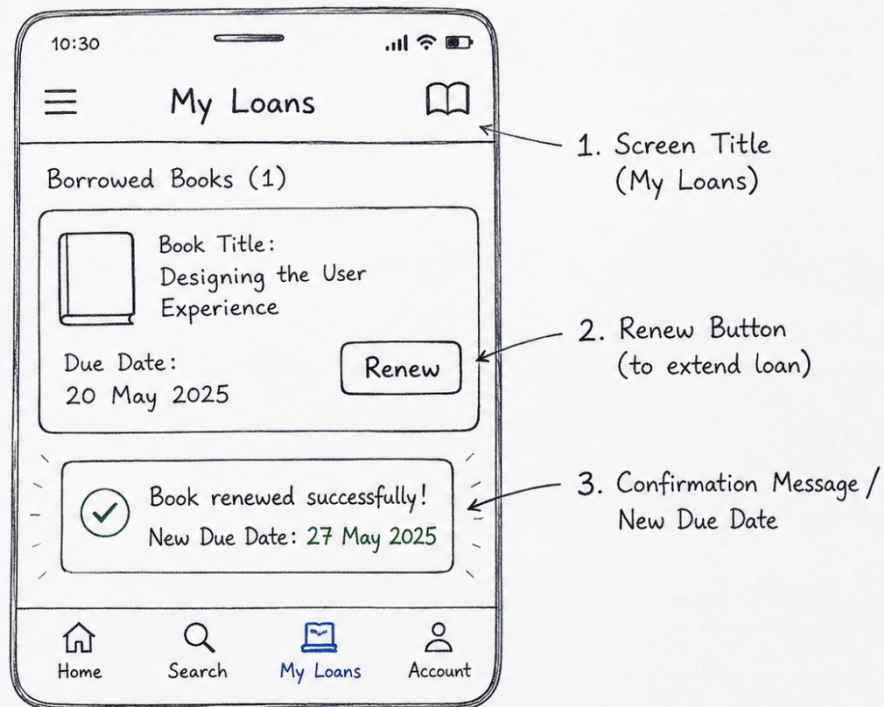
Label at least three (3) interface elements on your sketch, and write one or two sentences explaining how a user would use the screen to renew a book. **[11 marks]**

ANSWER IN THIS BOX

(i) Any three: Goal setting — clear objectives for the study; Identifying participants — recruit representative students and staff; Relationship between collector and provider — informed consent, professionalism, putting people at ease; Triangulation — use multiple sources to validate; Pilot study — trial the session first.

(ii) Interview — gathers in-depth qualitative insight into needs and reasons, with scope to probe. Observation — reveals what users actually do and where they struggle in real context, not just what they report.

(iii)



Usage: The user opens "My Loans" to view borrowed books. They tap "Renew" next to the book. A confirmation message shows the new due date after successful renewal.

(b) With reference to Question 2(a), a university is redesigning its online library system (search, reserve and renew books), which students and staff currently find confusing.

- (i) Distinguish between qualitative and quantitative data analysis, giving **one (1)** example of each that could arise in this study. **[8 marks]**
- (ii) The team must present its findings to non-technical university management. Recommend **one (1)** appropriate method for presenting the findings and justify your choice **[6 marks]**
- (iii) The team intends to evaluate the usability of the redesigned system with real users before launch. Recommend a suitable evaluation method and justify your choice, and state **two (2)** usability measures the team could collect. **[11 marks]**

ANSWER IN THIS BOX

- (i) Quantitative analysis uses numerical methods to find amounts/patterns — e.g. average time to find a book, % of successful renewals — shown with charts/descriptive statistics. Qualitative analysis examines non-numerical data (words, observations) for themes and meaning — e.g. students' comments that search results are confusing — shown with themes, quotes or stories.
- (ii) Present the findings using an executive summary supported by simple visualisations (e.g. bar charts, infographics, or dashboards) and user journey highlights. This approach is appropriate because non-technical university management require clear, high-level insights rather than technical detail, and visual and narrative summaries make usability issues easier to understand, interpret, and act upon
- (iii) Usability testing in a controlled setting with representative users performing typical tasks (search, reserve, renew): it directly checks whether intended users can complete real tasks before launch. Measures (any two): task completion/success rate; time on task; number of errors; user satisfaction (e.g. a post-test questionnaire). (Accept other justified user-based methods, e.g. a field study.)

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