UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)
Academic Year 2020 – 2nd Year Examination – Semester 3

IT3405 – User Interface Design
Part 2 - Structured Question Paper

(ONE HOUR)

To be completed by the candidate

BIT Examination Index No: ....

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions are in English.
- This paper has **2 questions** and **10 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.
- Calculators are **not** allowed.
- *All Rights Reserved.*

Questions Answered

Indicate by a cross (✗), (e.g. ✗) the numbers of the questions answered.

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

1) (a) In your own words, define what is Usability. State three (3) benefits of a highly usable system.

[10 Marks]

ANSWER IN THIS BOX

> **Usability can be described as the capacity of a system to provide a condition for its users to perform the tasks safely, effectively, and efficiently while enjoying the experience.**
>
> **The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. 5Es of Usability can also be mentioned.**
>
>
> **Benefits of a highly usable system (Any of the 3 answers)**
> - **Increased productivity (for the user)**
> - **Decreased training and support costs**
> - **Increased enrollment (sales and revenues)**
> - **Reduced development time and costs**
> - **Reduced maintenance costs**
> - **Increased customer satisfaction**

(b) In the context of user interface development, describe four (4) reasons why prototyping is needed.

[8 Marks]

ANSWER IN THIS BOX

(Any of the 4 answers)

- **Enable to explore the problem space with the stakeholders to clearly identify requirements.**

- **Validate the possible solution or identify alternative solutions by exploring the solution space.**

- **A vehicle for you to communicate the possible User Interface design(s) of the system.**

- **Recognize the potential foundation from which to continue developing the system.**

- **Validate the requirements identified or assumed in the analysis stage.**

(c) Write down the main difference between Throw-away prototyping and Evolutionary prototyping

[7 Marks]

ANSWER IN THIS BOX

Throwaway Prototyping refers to the creation of a prototype that will eventually be discarded rather than becoming part of the final delivered software. The main objective is to capture user requirements and user evaluation at an early stage in the design process. Whereas the main goal when using evolutionary prototyping is to build a very robust prototype in a structured manner and constantly refine it based on user feedback. The reason for this approach is that the evolutionary prototype, when built, forms the heart of the new system, and the improvements and further requirements will then be built. This prototype will become a part of the final software delivered.

(d) (I) In your own words, define horizontal and vertical prototyping.

[8 Marks]

ANSWER IN THIS BOX

> **Horizontal Prototype: Covers a large portion of the interface but doesn't go in-depth on many (if any) components.**
>
> **Vertical Prototype: limited coverage of the entire interface, but what is implemented is done in full detail.**

(II) Assume you are a UI designer. You have been assigned to develop a prototype of a system similar to YouTube. The system should consist of two 2 options: one for uploading and the other for downloading.

During uploading, the system should support video editing and tagging. For downloading, the system supports downloading files and commenting on them. However, in your prototype, you were able to implement only video editing and downloading files features.

Out of Horizontal prototype and Vertical prototype, what is the **best-suited** prototype that you would use for the above scenario? Justify your answer.

[8 Marks]

ANSWER IN THIS BOX

> **Horizontal prototype.**
>
> **Because horizontal prototype provides a broad view of an entire system or subsystem, focusing on user interaction more than low-level system functionality. In the prototype, one feature from each option was supported (in downloading option: downloading file feature, in uploading option: video editing feature).**

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(e) Consider the following layout of an elevator panel design. State whether this is a good design or a bad design. Justify your answer.

[9 Marks]
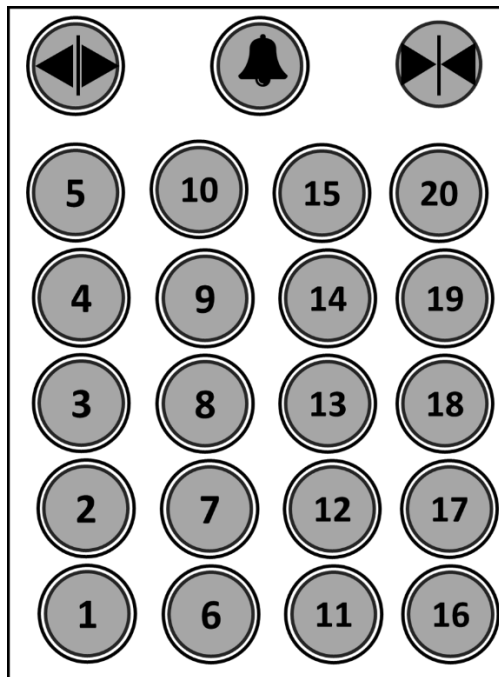
ANSWER IN THIS BOX

This is a bad design.

Even though the elevator control seems simple and straightforward, the buttons for the floor increase up and to the right in an awkward pattern; Floor 16's button is actually below Floor 5's button.

Therefore, for example, users will be confused when trying to find Floor 16 because the button of the floor 16 is at the very bottom. This shows that it is quite possible to make what should be a user-friendly interface unusable.

2) (a) Describe what are metaphors. Give two (2) examples of metaphors used in the Windows operating system.

[6 Marks]

ANSWER IN THIS BOX

> **Metaphors are ways in which familiar objects are used to describe elements in GUIs or systems.**
>
> **Some examples: Desktop, Recycle bin, Folder, Document**

(b) Read the following scenario and identify if this type of human error is a mistake or a slip. Justify your answer. State how this type of error can be minimized.

[9 Marks]

Suppose that you have received an email from a friend which was also copied to other recipients. Even though you intended to reply only to the sender, when replying, instead of pressing the "Reply" button, you pressed the "Reply All" button.

ANSWER IN THIS BOX

> **This is a Slip.**
>
> **The user had the right intention but failed to do it right. The user wanted to reply to only the sender but accidentally pressed the "Reply All" button.**
>
> **Slips may be corrected by, better screen design, perhaps putting more space between buttons.**

(c) (I) Define the PACT framework for the design of interactive systems.

[4 Marks]

ANSWER IN THIS BOX

> **PACT (People, Activities, Contexts, Technologies) is a useful framework for thinking about the design of a proposed product in different aspects.**
>
> **People use particular technologies to undertake particular activities in particular contexts.**

(II) Suppose you are asked to conduct a PACT analysis for the following scenario. Read the following scenario and write down **three (3) key Ps, As, Cs and Ts** that are possible, or likely, in this domain.

[12 Marks]

UCSC wishes to introduce a system called "BIT Info" that helps BIT students be reminded about the assignment, assessment, and project deadlines. Through this system, students will also be notified about important announcements, examination dates, application deadlines, and notifications after releasing of examination results. Furthermore, the system will also provide a platform for students to collaborate with peers by posting messages.

ANSWER IN THIS BOX

Sample answer:

People

- Age: 18-55
- Gender: Males, Females
- Education: After A/L, After FIT, Different educational qualifications
- English: mid to high level
- Experience: higher usage of internet, mobile, computer usage
- Lifestyle: studying, working
- Usability: Might be short just to check notifications, deadlines, etc. or might be long when posting or replying to messages.

Continue ....

7

Activity

- Checking examination/application dates
- Checking notifications/announcements
- Checking assignment, assessment, and project deadlines
- Checking posted messages
- Replying to messages

Context

- At Home/Workplace, Outings, with other activities
- Indoors, Outdoors, Noise/Noise/quiet, public/private transport
- Daytime and night time

Technology

- Computer, Mobile, Tablets
- Touch screen
- Mouse may/may not be present , keyboard present (physical or touch)

(d) Following is a prototype of a fill-in form designed for a travel agency located in Sri Lanka. Customers will use this form to enter their travel details. Write down four (4) good form design guidelines that have been followed and four (4) form design guidelines that have been violated in this prototype.

[8 Marks]

Travel Booking   Help?

Step 2 of 4: Please enter details of your travel

[▮▮▮▮▮▮▮▯▯▯▯▯▯▯▯▯▯▯▯▯]

* Required Field

┌─ **Travel Details** ──────────────────────────┐

Start from * [▼]

Destination *[   ]

Via   [   ]   **(e.g. Doha)**

◯ First Class   ◯ Business Class   ◉ Economy Class

◯ Single   ◉ Return   Date * [   ]   **(e.g. 20-Dec-2020)**

  ┌─ **Seating Preference** ──────────┐
  │ ◯ Window seat   ◉ Aisle seat │
  │   │
  │ Seat Number * [   ] │
  └───────────────────────────────────┘

└───┘

            [<< Previous]   [Next >>]   [Cancel]

ANSWER IN THIS BOX

Good Guidelines followed (any four of these):
- Using (*) asterisks for the fields that are required
- Showing an example/hint for "Via"
- Using the drop-down lists for "Start from" field and using radio button
- Logical grouping of items is used under Travel Details and Seating preference.
- Showing a progress indicator (step 2 of 4) when the form is split through multiple steps
- Having a "Help?" link
- "Previous" and "Next" buttons are grouped.

Guidelines violated: (any four of these):
- Text fields are not aligned properly. Each text field has a different length.
- For the destination and Via fields, users are expected to type instead of selecting. Even though a hint is given for Via, users are not aware of a place en route to a destination. Even the destination, when typing they might make mistakes.
- For Date, the calendar option is not used. Even though a hint is given, users might still make a mistake and it takes time to enter data rather than selecting.
- Only a single date is given. In the case of a return trip, both departure and arrival dates need to be entered. Depending on the selection "single" or "Return", date fields should appear.
- The seat number is a required field. However, at this stage users do not know which seat number to select. There is no image to refer for seat numbers and booked seats.
- No close button to close the form.

(e)   What is the difference between a tangible interface and a touch interface with respect to interaction?

[5 Marks]

ANSWER IN THIS BOX

> **In a way, a tangible user interface is like a touch interface. However, the difference is that in a tangible user interface we interact with the system through the physical environment.**

(f)   What is the difference between usability and acceptability?

[6 Marks]

ANSWER IN THIS BOX

> **An essential difference between usability and acceptability is that acceptability can only be understood in the context of use.**
>
> **Usability can be evaluated in a laboratory (though such evaluations will always be limited). Acceptability cannot. For acceptability, evaluations need to be carried out with real users in the field.**

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