



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2014/2015 – 2nd Year Examination – Semester 3

IT3405: User Interface Design
PART 2 - Structured Question Paper

01st March, 2015
(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 is English.
- This paper has **3 questions** and **11 pages**.
- **Answer all questions.** All questions **do not** 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.

Questions Answered

Indicate by a cross (×), (e.g.

×

) the numbers of the questions answered.

To be completed by the candidate by marking a cross (×).	Question numbers		
	1	2	3
To be completed by the examiners:			

- 1) (a) What fills the gap between the user and computer? Describe its significance for successful communication between two components. (10 marks)

ANSWER IN THIS BOX

Interface. Interface facilitates the communication between the user and system.

It translates users' requirement to a format understandable for computing devices as well as messages from computing devices to a format understandable for human users.

- (b) Simplification is a method to extend the user interface. How does the simplification affect the user? How do you implement it using the keyboard? (10 Marks)

ANSWER IN THIS BOX

It increases the productivity of the user. Short cut keys are the common ways to increase productivity. Caps lock and Shift key also facilitate the simplification as well as productivity. Function keys bundle several actions together or map to a longer task by just one touch. Numeric keypad could also be considered as a way to simplify the process of entering numeric data. Backspace or DEL keys simplify the interaction of deleting a character.

- (c) Write a brief description about the device proposed by the father of Human-Computer Interaction. (10 Marks)

ANSWER IN THIS BOX

Vanner Bush is considered to be the father of human-computer interaction. This was based on his visionary article published in 1945, "As we may think". This article is based on a device he proposed, called "Memex". It is a device where an individual stores all his books, records, and communications and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to one's memory.

- 2) (a) Explain how the FITTS law could be used to justify time taken to hit a target on the screen. (10 Marks)

ANSWER IN THIS BOX

FITTS law is

$$M_t = a + b \log_2(D/S + 1)$$

where: a and b are empirically determined constants

M_t = movement time, D = Distance, S = Size of target

It is hard to hit smaller objects irrespective of distance based on the above formula. It is easier to hit larger objects and only distance from the mouse point (starting location) affects the movement time. Therefore it is better to design targets as large as possible and distances as short as possible.

- (b) What is the role of sensors in Perceptual computing? Provide an example that demonstrates the role of sensor in a device. (10 Marks)

ANSWER IN THIS BOX

Perceptual computing uses the technology to identify the voice commands, user's gestures and facial recognition to provide the natural user interaction compared to traditional direct input based (keyboard, mouse,...) interaction. Hence the input to computing devices is intuitive. Sensors are used to capture these intentions to initiate the interaction as well as to continue the interaction. Captured input from several sensors are processed to make decisions on processing. For example, the proximity sensor in the mobile phone. It detects the user's position and current action to switch off the mobile display.

- (c) Briefly state how a mistake could occur as a human error during the interaction. (5 Marks)

ANSWER IN THIS BOX

It is due to incorrect reasoning about how to do something. It occurs when the user has a wrong intention and wrong mental model.

(d)

List three aspects that describe the role of widgets in WIMP interfaces. (5 Marks)

<u>ANSWER IN THIS BOX</u>	
appearance	- what they look like
interaction	- how they behave
semantics	- what they mean

- 3) Consider the following prototype screen design and answer questions below.

- (a) Identify at least two design errors in the above screen design. (6 Marks)

ANSWER IN THIS BOX

Alignment of buttons, size of buttons, space between buttons

Very small fonts, not very clear in the display.

Poor use of white space

- (b) Describe at least two possible usability issues in this design (6 Marks)

ANSWER IN THIS BOX

A user may find it hard to click buttons because of size and placement

If the user has forgotten his username and password, he may not be very sure about how to proceed.

Button labels are confusing.

(c) Suggest how to improve the redesign of this data entry form (12 Marks)

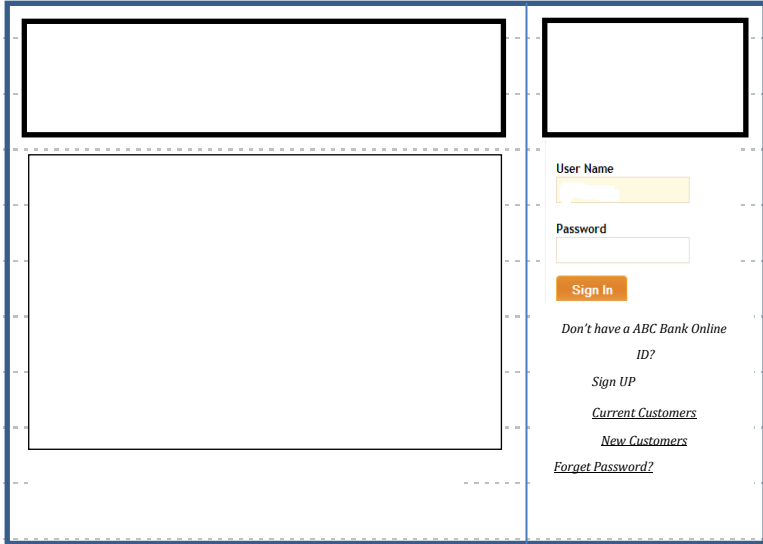
ANSWER IN THIS BOX

Wording needs to be changed, redesign the buttons and place them properly, some help labels about user id and password will be needed.

Organize the login window in order,
place more details about online banking service and other
banking services.

- (d) Draw a sketch of redesign interface based on your suggestions. (16 Marks)

ANSWER IN THIS BOX



User Name

Password

Sign In

Don't have a ABC Bank Online ID?

Sign UP

Current Customers

New Customers

Forget Password?

Index No
