25 + 2

National University of Computer and Emerging Sciences, Lahore Campus

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Instruction/Notes: **Solve on question paper, answer sheets are not required.**

Question 1. What input and output devices would you use for the following systems? For each, compare and contrast alternatives, and if appropriate indicate why the conventional keyboard, mouse and CRT screen may be less suitable. **(3 x 4 Points)**

(a) Portable word processor for blind and normal users.

Input Device1: Touch screen, ~~the~~ Touch screen devices will be used for this portable word processor as this ~~needs to~~ will allow user to carry along

Input Device2: ~~voice~~ voice recognisation ~~or~~ ~~text~~ through use of microphone. for blind users this is an easier way to interact as their sound will be converted into text.

Output Device1:

when using touch screen for input, ~~the~~ information is displayed on an LCD screen

Output Device2:

~~voice speaker for~~ a speaker can be used to output ~~of~~ the converted text into speech for blind users.

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* Conventional keyboard, mouse and CRT screen are less suitable because this ~~screen~~ system should be portable while these devices will make this process less convenient.

(b) Tourist information system

Input Device1: Touch screen to select menu or options to explore information. a joystick can be used to explore graphical images and more image in screen.

Input Device2: microphone for speech detection for blind

Output Device1: LCD screen for better result, for e.g a sky system which allows Tourist to search for places they can visit. HD images can be displayed.

Output Device2: speaker/headphones to tell user what is on screen

A a keyboard and mouse [illegible] defined instructions.

(c) Air traffic control system

Input Device1: keyboard and mouse [illegible] incorrect accuracy as here touch screen [illegible] of intricate situations

Input Device2: microphone for speech recognition as Air traffic controller contact pilots so voice communication makes it easier for both blind and normal

Output Device1: Large LCD screen displaying all the information. CRT television can not be very wide and they take a lot of space so thin wide LCD can provide better result.

Output Device2: headphones for Air Traffic controller as this can be used to listen clearly without other sound interference instead of speakers.

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(d) Worldwide personal communications system

Input Device1: Key board ~~[illegible]~~ : these can be used for communication purpose through texts, and it is more acurate.

Input Device2: voice input trough microphone mostly for blind people. but it is less acurate than a keyboard.

Output Device1: LCD screen for output

Output Device2: Headphones allows privacy thus speakers are not very suitable for this.

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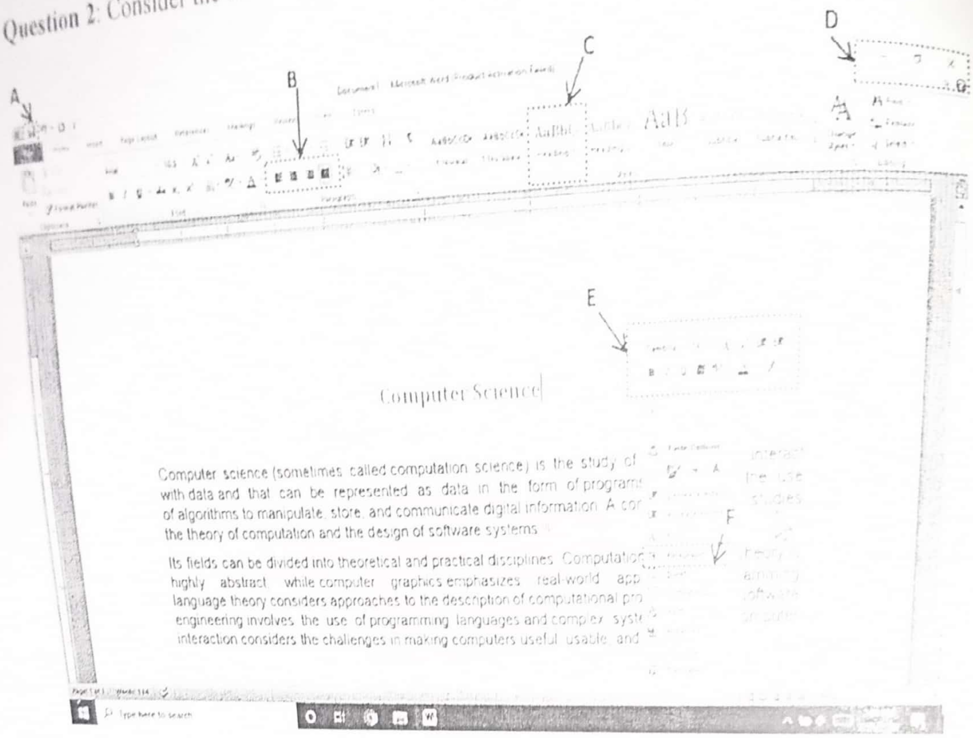
Question 2: Consider the following interface and labels.



According to Fitt's Law which regions of the screen (Labeled as A, B, ... F) rank easiest ... and accuracy to target with reference to cursor position. (Rank 1 as easiest or most accurate) (12 Points)

F
E
C
D
B
A

Rank	Label	Reason
1	F	As it is closer to the cursor and [illegible] wide enough for cursor to select an option easily
2	E	The E Label is close with respect to other options and is wide
3	D	The D Label is in one corner of screen. ~~The C label is square and wide enough and is not far from cursor as compared to other remaining~~
4	C	The C label is square and wide enough.
5	B	The B label is wider than A and is at lower side which slightly reduces chances of errors.
6	A	The A Label is in middle of other options and area is not also very wide and is very far away.

Question3: What can a system designer do to minimize the memory load of the user? Give at least two options. **(4 Points)**

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A designer should display information in chunks for e.g if the system is designed to generate a code of 11 digits. the screen should display code divided into several chunks for e.g 0323 58-27-28-1 this will help user remember.

If there are icons used in a system their design should be based on convention for e.g a telephone icon should contain a reciever instead of a mobile icon for call. This usually a telephone receiver icon is similar and user can rely on his/her memory.

Question4: A typical computer system comprises a QWERTY keyboard, a mouse and a color screen. There is usually some form of loudspeaker as well. You should know how the keyboard, mouse and screen work. If you were designing a keyboard for a modern computer, and you wanted to produce a faster, easier-to-use layout, what information would you need to know and how would that influence the design? **(2 Points)**

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For making a keyboard which is faster than the QWERTY keyboard. Firstly I would require information of most commonly used letters while typing. I would likely to know what kind of people will be using by keyboard for example, a programmer uses certain characters and brackets or some keys more frequently. Moreover, I would learn for information which hand while typing is most used and which hands can make a faster response, this also varies with the audience. I will set keys to either left or right side based on numbers of users which are "righty" or "lefty".