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National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Human Computer Interaction	Course Code:	CS 422
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Section: C

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

**Question1.** 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~~ Portable ~~keyboard~~  
attached to the screen

Input Device2:

Voice input through microphone  
(Conventional keyboard is hard  
to carry around)

Output Device1:

Voice Output  
For blind users  
(Assisting them about the  
information displayed)

Output Device2:

~~Monitor~~ LCD screen  
For normal users

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(b) Tourist information system

Input Device1:

Numpad

(Just a few keys needed to  
input on the screen)

Input Device2:

Card Scanner

(For a user to input his  
info and transaction)

Output Device1:

~~LCD~~

Large LCD Display

(To check information)

Output Device2:

(c) Air traffic control system

Input Device1:

Alarm triggering button  
(Keyboard not needed)

Input Device2:

Microphone

(Mouse is not needed)

Output Device1:

Alarm Alert Device

Rapid Alert System

Output Device2:

LCD display with bright icons  
for air traffic

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(d) Worldwide personal communications system

Input Device1:

Microphone  
(For interaction through voice  
for the ease of users)

Input Device2:

Keyboard  
(For users not comfortable  
with ~~voice~~ communication through voice)

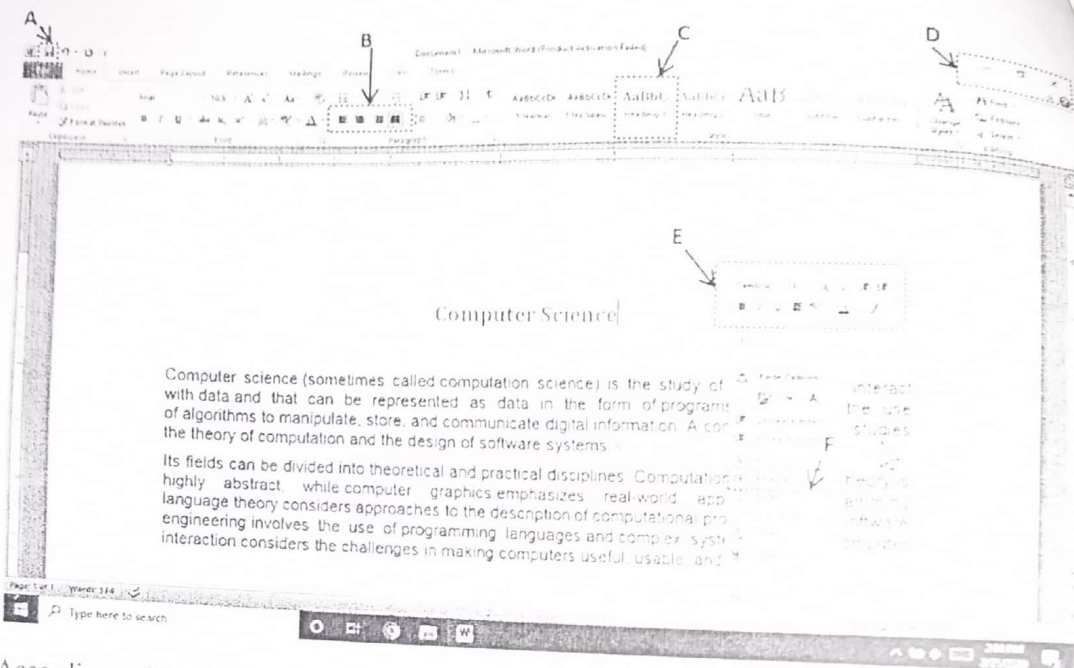
Output Device1:

Speaker / Headphone  
(For hearing other users)

Output Device2:

~~Monitor~~ LCD  
(For seeing textual  
data sent)

Question 2: Consider the following interface and labels.



According to Fitt's Law which regions of the screen (labeled as A-F) have the highest accuracy to target with reference to cursor position. (Rank 1 as easiest)

Rank	Label	Reason
1	C	I can see the cursor and the text is large
2	D	It is in the center of the screen and the text is large
3	A	Relatively far from the cursor and the text is large
4	B	No label just a small icon
5	F	Isn't apparent will only right click
6	E	Only become apparent on right clicks and too much compacted information has small icons

Question 3: What can a system designer do to improve the usability of the interface? (4 Points)

- Use Pref memory
- Limit



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

- Use Preloaded variables ~~to~~ minimize memory access time
- Limit the user to access to much information from the ~~the~~ memory all at once

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)

- Time required to send data from conventional keyboard (input time)
- Time required to process data after its sent (processing time)
- Drawbacks of using the conventional keyboard
- Measurement of fatigue the conventional keyboard puts on the arms of the user
- Feedback provided by the keyboard