


22/2

National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Human Computer Interaction	Course Code:	CS 422
	Program:	CS	Semester:	Spring 2020
	Duration:	60 Minutes	Total Marks:	30
	Paper Date:	26-FEB-2020	Weight	15
	Section:	ALL	Page(s):	5
	Exam Type:	Midterm-I		

Student : Name: Abdullah Farad Roll No. 17L-6321 Section: CS-6A

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.

Speech

Input Device1: sound to text converter/microphone.
The blind user will not have a good time using a conventional keyboard. This input device will allow him to simply speak the letters he wants to write to input them.

Input Device2: A keyboard that pronounces every letter inputted or gives a different vibration or sound effect for every keystroke. This will be useful for the blind user, and the sound can be turned off by the user when needed. A normal keyboard will not work because the blind user will not know whether he is typing.

Output Device1: Speaker. This output device will pronounce the words the user wrote. A normal screen is not suitable because this will also be used by blind people who will not be able to read what they wrote on the single screen.

Output Device2: A special screen with a computerized feedback system which will have different feedback for different actions. The screen will be designed in a way using materials and colors that make it blind person friendly.

2

(b) Tourist information system

Input Device1:

A conventional keyboard would work here. The user can type in the name of the location he/she wants information about.

Input Device2:

A conventional mouse with which the user can simply point and click on the location he is after. An alternative can be touch screen where user will simply touch the screen.

Output Device1:

A simple CRT screen will suffice to show the user information about whatever tourist location he inputted. An alternative would be a touch screen, which could also work, and could be used for input as well.

Output Device2:

Speaker for announcements, audio results and possibly narrating directions or instructions.

(c) Air traffic control system

Input Device1:

Microphone. This would allow the traffic controller to communicate with one another so they can do as good a job as possible, and with pilots.

Input Device2:

A simple keyboard where the traffic observer or pilot simply enter instructions, questions or ask for status updates etc.

Output Device1:

A CRT screen that displays routes, airports, charters etc, all denoted by different colors for easy differentiation.

Output Device2:

An alarm. The alarm will act as an alert device, that will sound whenever an airplane is in SOS mode, or whenever there is a chance of an impending collision. An alternative is a speaker that will perform the same action, but using words instead of an alarm sound.

3

.) Worldwide personal communications system

Input Device1:

A keyboard. The user can simply type in messages to send over the communications network. An alternate could be a touch screen, which ^{would} be more modern, and eliminate the need for a ^{physical} keyboard.

Input Device2:

Microphone. The user can send audio messages using this. An alternative could be ~~use~~ a front facing camera, which will allow the user to video call and talk to whoever they're communicating with.

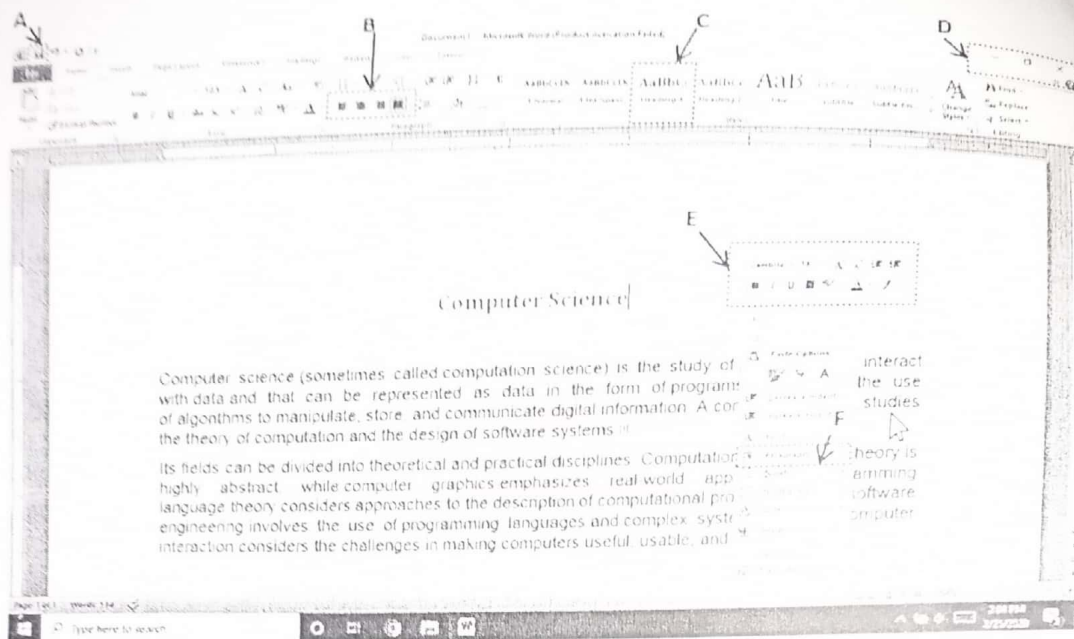
Output Device1:

A ~~color~~ ^{large} screen, which will display messages, notifications, video feeds and basically be a central hub for every feature of the communication system.

Output Device2:

A speaker that will sound a ringtone whenever there is a new message, it will act as a notification tool. It will also play audio messages.

Question 2: Consider the following interface and labels.



According to Fitt's Law which regions of the screen (Labeled as A, B, C, D, E, F) are the easiest and accuracy to target with reference to cursor position. (Rank 1 as easiest to target and 6 as hardest) (12 Points)

Rank	Label	Reason
1	E	user though E is close to the cursor, it is bigger than F and occupies more space making it easy to target.
2	F	F is a little small in size but it is very close to the cursor making it easy to target.
3	D	D is large, somewhat close to the cursor position, and is situated in the corner of the screen, means it can be targeted easily.
4	C	C is not very far from the cursor, but is not big enough in size, and is surrounded by other buttons and has dead space above it.
5	B	B is far from the cursor position, is small, and is surrounded in close proximity by other buttons.
6	A	The same button is very small and very far from the position of the cursor. It is also surrounded by similarly small buttons.

Question 3: What can a system designer do to make a system design options. (4 Points)

A system designer can make it bigger and different.

Question 3: What can a system designer do to minimize the memory load of the user? Give at least two options. (4 Points)

2+0
A system designer can make sure his system UI is easier to memorize and simpler to read by making it bigger and using white space and labelling with different fonts and weights. The designer can also incorporate a feedback system, that will tell everything the user presses or hovers over. This would mean the user does not have to memorize the interface, he will have a guide for his actions everytime. An ^{ordinal} tutorial system can also be added.

Question 4: 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)

As far as the information is concerned, the user's preferences would be a major consideration. The layout can be altered depending on whether the user is left-handed or right-handed. If the user is left-handed, the design will then be changed to incorporate more convenience and ease for the user. The preferences of the targeted market will decide a lot. An example can be if the user is right-handed or has a handicapped left, the keyboard would have prominent letters on the right side, to try and maximize the percentage of keystrokes taking place with the right hand and vice versa.