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Time taken	1 hour 24 mins
Grade	Not yet graded

Information

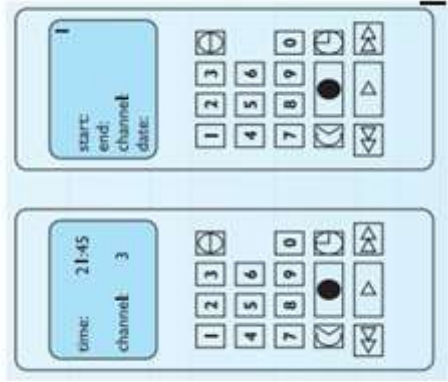
One of the important features of usability engineering is the inclusion of a usability specification, forming part of the requirements specification that concentrates on features of the user–system interaction which contribute to the usability of the product.

Information

To aid the programmer in fusing input and output behaviours, another level of abstraction is placed on top of the window system – the toolkit. A toolkit provides the programmer with a set of ready-made interaction objects – alternatively called interaction techniques, gadgets or widgets – which she can use to create her application programs.

Information

Consider the task of designing a remote control for a video recorder (VCR) and the user is interested in the task of programming the VCR to do timed recordings. The initial design is shown in below. The picture on the left illustrates the handset in normal use, the picture on the right after the timed record button has been pressed. The VCR allows the user to program up to three timed recordings in different 'streams'. The next available stream number is automatically assigned. The user want to know whether the design supports the user's task. The user begin by identifying a representative task.



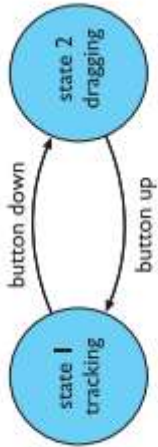
Information

Evaluation tests the usability, functionality and acceptability of an interactive system. User participation in evaluation tends to occur in the later stages of development when there is at least a working prototype of the system in place.

Information

In mouse, If you move it with no buttons pushed, it normally moves the mouse cursor about. This tracking behaviour is termed state 1. Depressing a button over an icon and then moving the mouse will often result in an object being dragged about. This Buxton calls state 2.

The state transition diagram of mouse movements is given below:



Information

Effective communication clearly underlies much collaborative work and many systems aim to support communication at a distance. Face-to-face communication is often seen as the ideal to which computer-mediated communication should aim. Body language, tone of voice and eye contact are all crucial in enabling smooth conversation. Most analysis of conversation focuses on two-person conversations, but this can range from informal social chat over the telephone to formal courtroom cross-examination. Speech act theory plays a vital role in conversational analysis.

Question **1**

Complete

Marked out of 5

Design a usability specification for the design of a control panel for a Video Cassette Recorder (VCR) based on the following metrics:

- a. Worst case
- b. Best case
- c. Planned level

(5 marks- [An/C, 2])

- Attribute: Backward recoverability
- Worst case: As many actions as it takes to program-in mistake
- Planned level: A maximum of two explicit user actions
- Best case: One explicit cancel action

Question **2**

Complete

Marked out of 5

Design a usability specification for the design of a control panel for a Video Cassette Recorder (VCR) based on the following metrics:

- a. Measuring method
- b. Measuring concept

(5 marks- [An/C, 2])

- 1. **Measuring concept:** Undo an erroneous programming sequence Typically, usability is measured relative to users performance on a given set of test tasks
- 2. **Measuring method:** Number of explicit user actions to undo current program. High efficiency is achieved when the user finishes the mission with few resources in terms of time cost, learning cost as well as maintenance cost, etc.

Question **3**

Complete

Marked out of 4

The below figure represents how the input and output are combined for interaction with a button object.



Design a representation for the behaviour of a button interaction object for release and move actions. (4 marks- [Ap/P, 2])

1. As the user moves the mouse cursor over the button, it changes to a finger to suggest that the user can push it.
2. Pressing the mouse button down causes the button to be highlighted and might even make the keys on some keyboards, providing immediate feedback that the button has been pushed.
3. Releasing the mouse button unhighlights the button and moving the mouse off the button changes the cursor to its initial shape, indicating that the user is no longer over the active area of the button

Question **4**

Complete

Marked out of 4

Design an earcon to represent destroy action, text string and file action.

(4 marks- [U/C, 2])

PFA

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Question **5**

Complete

Marked out of 3

Program the video to time-record a program starting at 18.00 and finishing at 19.15 on channel 4 on 21 November 2021.

(3 marks- [Ap/P, 2])

- UA 1: Press the 'timed record' button
- SD 1: Display moves to timer mode. Flashing cursor appears after 'start.'
- UA 2: Press digits 1 8 0 0
- SD 2: Each digit is displayed as typed and flashing cursor moves to next position
- UA 3: Press the 'timed record' button
- SD 3: Flashing cursor moves to 'end.'
- UA 4: Press digits 1 9 1 5
- SD 4: Each digit is displayed as typed and flashing cursor moves to next position
- UA 5: Press the 'timed record' button
- SD 5: Flashing cursor moves to 'channel.'
- UA 6: Press digit 4
- SD 6: Digit is displayed as typed and flashing cursor moves to next position
- UA 7: Press the 'timed record' button
- SD 7: Flashing cursor moves to 'date.'
- UA 8: Press digits 2 4 0 2 0 5
- SD 8: Each digit is displayed as typed and flashing cursor moves to next position
- UA 9: Press the 'timed record' button
- SD 9: Stream number in top right-hand corner of display flashes
- UA 10: Press the 'transmit' button
- SD 10: Details are transmitted to video player and display returns to normal mode

Question **6**

Complete

Marked out of 3

Design an experiment to test whether adding colour coding to an interface will improve accuracy. Identify hypothesis, participant group, dependent and independent variables.

(3 marks- [Ap/P, 2])

Participants Taken from user population.

Hypothesis Color coding will make selection more accurate.

IV (Independent Variable) Color coding.

DV (Dependent Variable) Accuracy measured as number of errors.

Question 7

Complete

Marked out of 3

Identify the hypothesis, participant group, dependent and independent variables, experimental design, task and analysis approach to test whether adding colour coding to an interface will improve accuracy.

(3 marks- [U/C, 2])

The following is only an example of the type of experiment that might be devised.

Participants: Taken from user population.

Hypothesis: Color coding will make selection more accurate.

IV (Independent Variable): Color coding.

DV (Dependent Variable): Accuracy measured as the number of errors.

Design: Between-groups to ensure no transfer of learning (or within-groups with appropriate safeguards if participants are scarce).

Task: The interfaces are identical in each of the conditions, except that, in the second, color is added to indicate related menu items. Participants are presented with a screen of menu choices (ordered randomly) and verbally told what they have to select. A selection must be done within a strict time limit when the screen clears. Failure to select the correct item is deemed an error. Each presentation places items in new positions. Participants perform in one of the two conditions.

Analysis: t test.

Question **8**

Complete

Marked out of 3

Consider the following data for response times under two conditions:

condition A: 33, 42, 25, 79, 52

condition B: 87, 65, 92, 93, 91, 55

Rank the two conditions and compute the statistics ‘U’ based on wilcoxon’s test.

(3 marks- [Ap/P, 2])

We gather the data together and sort them into order: 25, 33, 42, . . . , 92, 93.

We then substitute for each value its rank in the list: 25 becomes 1, 33 becomes 2, etc. The transformed data are then

condition A: 2, 3, 1, 7, 4

condition B: 8, 6, 10, 11, 9, 5

Tests are then carried out on the data. For example, to test whether there is any difference between the two conditions we can use the Wilcoxon test. To do this, we take each condition and calculate the sum of ranks, and subtract the least value it could have (that is, $1 + 2 + 3 + 4 + 5 = 15$ for condition A, $1 + 2 + 3 + 4 + 5 + 6 = 21$ for condition B), giving the statistic U:

	rank sum	least	U
condition A:	$(2 + 3 + 1 + 7 + 4)$	15	2
condition B:	$(8 + 6 + 10 + 11 + 9 + 5)$	21	28

Question 9

Complete

Marked out of 3

Identify the three states corresponding to the movement of a light pen.

(3 marks- [An/C, 2])

the three states corresponding to the movement of a light pen.

S0:No Response

s1:Tracking

s2:dragging

Question **10**

Complete

Marked out of 3

For the above scenario, the value of Fitt's co-efficient is given below:

	Device	a (ms)	b (ms/bit)
Pointing (state 1)			
	Mouse	-107	223
	Trackball	75	300
Dragging (state 2)			
	Mouse	135	249
	Trackball	-349	688

The pointing method had two pointing operators, one to point to the window's title bar (with a distance to target size ratio of 10:1), the second to drag the selection down to 'CLOSE' on the pop-up menu (4:1). Calculate the KLM prediction for the closed using the given data for mouse and trackball.
(3 marks- [Ap/P, 2])

Mouse

$P[\text{to menu bar}] = -107 + 223 \log_2(11) = 664 \text{ ms}$

$P[\text{to option}] = 135 + 249 \log_2(5) = 713 \text{ ms}$

Trackball

$P[\text{to menu bar}] = 75 + 300 \log_2(11) = 1113 \text{ ms}$

$P[\text{to option}] = -349 + 688 \log_2(5) = 1248 \text{ ms}$

Question **11**

Complete

Marked out of 4

Consider the above scenario, A keystroke-level analysis for opening up an application in a visual desktop interface using a mouse as the pointing device has many methods. One such method is Double clicking on application icon method which consists of the steps as given below:

- 1.Move hand to mouse
 - 2.Mouse to icon
 - 3.Double Click
 - 4.Return to Keyboard
- Interpret the steps involved in using a menu method. (4 marks – [An/C,3])

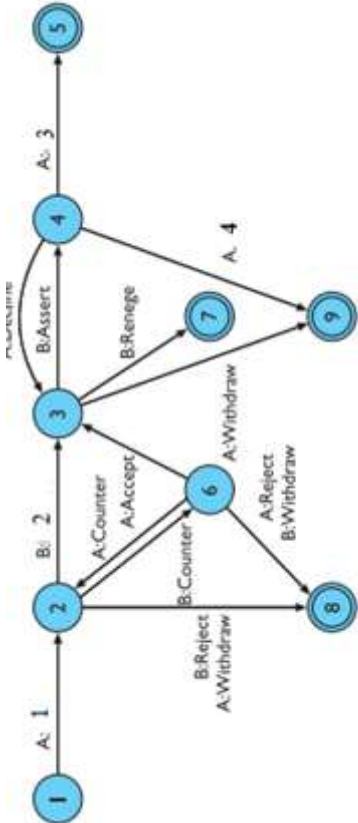
- Move Hand to Mouse
- Mouse to Icon
- Click to Select
- Pause
- Mouse to File Menu
- Drag to Open
- Release Mouse
- Return to Keyboard

Question **12**

Complete

Marked out of 4

Identify the correct action sequence of speech act theory to complete the process.



(4 marks-[U/C, 2])


- 1. A: Request
- 2. B: Promise
- 3. A: Decline
- 4. A: Withdraw

Question **13**

Complete

Marked out of 4

Match the following communication types with their message types and connectivity.

Text communication types	Message type	Connectivity
(i). Discrete	(a) Linked	(e) Single transcript
(ii). Linear	(b) Ordered	(f) Hypertext
(iii). Non-linear	(c) Directed	(g) Two-dimensional
(iv). Spatial	(d) Participant	 No connection

(4 marks – [U/C,2])

- i - c- h
- ii-b-e
- iii-a-f
- iv-d-g

Question **14**

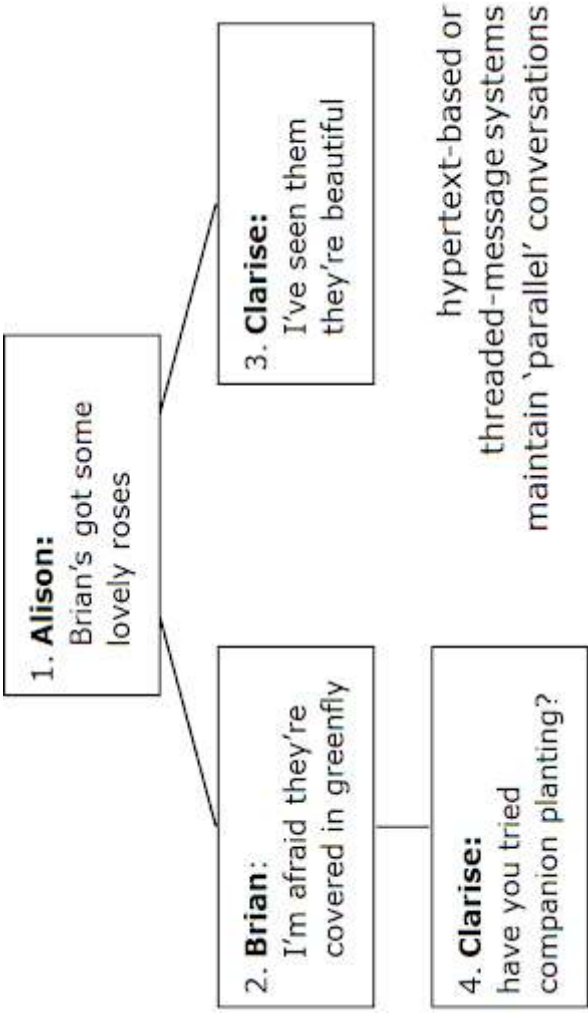
Complete

Marked out of 2

Given a sequence of conversation structure between three persons namely Alison, Brian and Clarise.

Alison: Brian's got some lovely roses.
Brian: I'm afraid they're covered in greenfly.
Clarise: I've seen them, they're beautiful.

Draw a hypertext conversation structure with four levels for the above sequence.
(2marks– [Ap/P,2])



 [191CS151_HC1_QN_14](#)

