Fall 2021, Midterm 2 Solution
November 26, 2021, 10:30 pm – 11:30 am

Course Code: CS 2007/CS 4060	Course Name: Human Computer Interaction
Instructor Name : Mr. Behraj Khan	
Student Roll No:	Section No:

- Return the question paper.
- Read each question completely before answering it. There are **8 questions and 1 page only.**
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- Understanding the paper is part of the exam. **The course teacher will not visit the exam room.**
- **All the answers must be solved according to the sequence given in the question paper otherwise they will not be graded.**
- Note: Drawing Login/Sign up window screen isn't applicable.
- Be succinct.

Time: 60 minutes.   **Max Marks**: 40 points

Q1. Write down the title of your submitted project at google classroom, mention your group members' student id along with their names as per flex record (case sensitive). Draw the screen you have applied deductive reasoning from user perspective. (Screen must match with your submitted assignment)
Sol:
Std-id:
Name:
Title:
The screen may vary as it is per assignment perspective

Q2. As storyboarding, is a graphical depiction of the outward appearance of the intended system, without any accompanying system functionality, why it is preferred as good prototyping practice. Write down about the origin of the mentioned prototyping technique. How can it be used for finding out if the design goes in right direction or not?
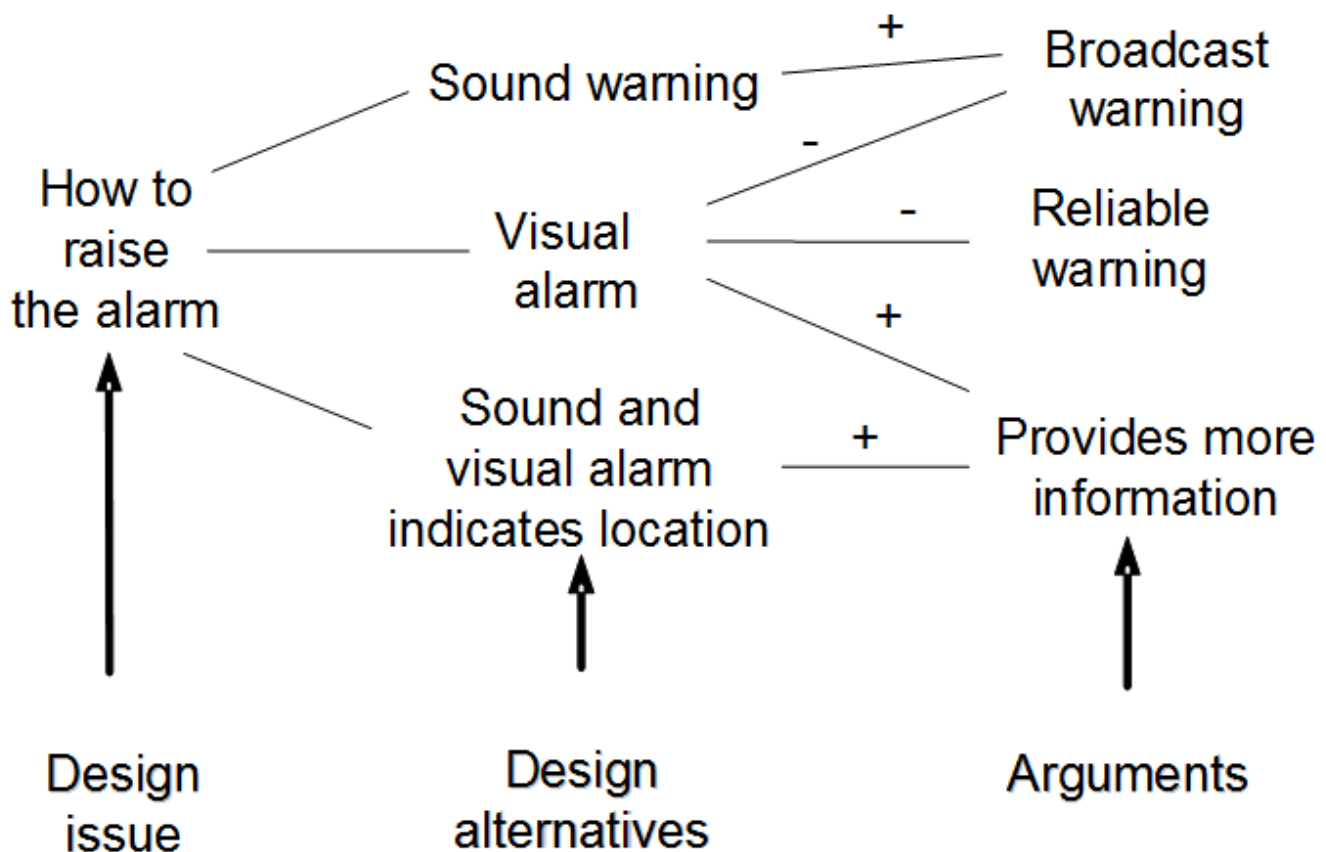Sol: Storyboards do not require much in terms of computing power to construct; in fact, they can be mocked up without the aid of any computing resource. The origins of storyboards are in the film industry, where a series of panels roughly depicts snapshots from an intended film sequence in order to get the idea across about the eventual scene. Similarly, for interactive system design, the storyboards provide snapshots of the interface at particular points in the interaction. Evaluating customer or user impressions of the storyboards can determine relatively quickly if the design is heading in the right direction.

Q3. As we have discussed about the more deliberative approach to design rationale which emphasize the space of design alternatives and the approach is embodied in form of question option criterion (QOC) form along with examples. In last class I asked a question from K20-0366 and K20-1695 but both of them were unable to even recall my question. Write down the reason behind this phenomenon that why both of them were unable to just repeat my question. Let us consider that you want to design and application to avoid this kind of problems in near future for your friend. You decide to warn your friend with sound alarm such as we have discussed in class. Draw the design space analysis QOC for the mentioned feature which we had discussed in class.
Sol:
Attention was missing that's why information not moved to short term memory at that time.
QOC:

**************************** **

Sound warning — Broadcast warning (+)
How to raise the alarm — Visual alarm
Visual alarm — Broadcast warning (-)
Visual alarm — Reliable warning (-)
Visual alarm — Provides more information (+)
How to raise the alarm — Sound and visual alarm indicates location
Sound and visual alarm indicates location — Provides more information (+)

Design issue | Design alternatives | Arguments

Q4. Consider the scenario mentioned in **Q3** and write down about the type of channels and type of sensory memory which will be used while using the particular feature you have designed for your friends. Rationalize
Sol:
Echoic,iconic can be considered as I/O channels
Echoic sensory memory ,iconic sensory memory : A sensory memory exists for each sensory channel: *iconic memory* for visual stimuli, *echoic memory* for aural stimuli and *haptic memory* for touch. These memories are constantly overwritten by new information coming in on these channels.

Q5. Consider the users mentioned in **Q3** and formulate the activity of activating the particular feature into Norman interaction model. Design a screen use of particular feature and explain that how will you implement the Abowed and Beale model? How will you bridge between gulf of evaluation and gulf of execution in this scenario?
Sol:
Norman interaction model
1. Establishing goal (to activate alarm)
2. Formulate intention
3. Specify your actions (like to click on the alarm icon)
4. Execution of action (clicking on the icon)
5. Perceive the system state (observing the system state like the icon pressing and change in state)
6. Interpret the system (interpret wrt to your goal)
7. Evaluate (the alarm appearance at top corner of your phone)

Abowed and Beale will be implemented by introducing user understandable labels and icons while the user command will be converted to system language with any programming language chosen by you and then the output will be shown in user understandable language.
The gulf of execution and evaluation will be bridge by allowing user wanted action and displaying his/her expected output like the functions labels and icons will self-explanatory is such way that it may represent the actions to be executed, and so as in case of evaluations.

****************************** **

Q6. Write the equation for Fitts' law. Suppose there is an interface which uses a mouse as input device. Will there be any change in movement time if we triple the distance between the buttons in the interface while also triple the size of the buttons and change the input from mouse to touch screen? Justify.

Sol:

Movement time = $a + b \log_2(\text{distance/size} + 1)$

Yes. As the input change from mouse to touch so value of a and b will change.

Q7. Differentiate between direct and indirect interfaces with one example each.

- Sol:

- office– direct manipulation

  - user interacts with artificial world

- industrial – indirect manipulation

  - user interacts *with* real world *through* interface

Q8. How Would you classify psychological design rationale as process or structure oriented? Why?
Sol:
Psychological design rationale is mainly a process-oriented approach. The activity of a claims analysis is precisely about capturing what the designers assumed about the system at one point in time and how those assumptions compared with actual use. Therefore, the history of the psychological design rationale is important. The discipline involved in performing a psychological design rationale requires designers to perform the claims analysis during the actual design activity, and not as post hoc reconstruction.

*********************** ***