HCI Exam 2023 - Answers to the questions

Question 1

(a) What is a micro-interaction? Name any two of the four components of a micro-interaction. Give one example of a micro-interaction in an interface.

A micro-interaction is a small, contained product moment that revolves around a single use case. The four components of a micro-interaction are: trigger, rules, feedback, and loops. An example of a micro-interaction is the heart icon on Instagram that changes color when you double tap it.

(b) What are the problems with using a red circle to indicate "stop", which changes to a green circle when it is safe for the user to proceed with their action?

The problem with using a red circle to indicate "stop" is that it is not universally understood. In some cultures, red is associated with danger, while in others, it is associated with luck.

This can lead to confusion and misinterpretation of the message. Additionally, color blindness can make it difficult for some users to distinguish between red and green, further complicating the message.

The use of color alone to convey meaning can also be problematic, as it relies on the user's ability to perceive color accurately. This can be challenging for users with visual impairments or in situations where the lighting is poor.

(c) What is the difference between menu depth and menu breadth? Which is better to use to present menu choices to users, and why?

Menu depth refers to the number of layers in a menu hierarchy, while menu breadth refers to the number of choices at each level. A shallow menu with a large breadth is generally better for presenting menu choices to users, as it allows users to quickly access the information they need without having to navigate through multiple levels of the menu.

A deep menu with a small breadth can be overwhelming and confusing for users, as it requires them to remember the hierarchy and navigate through multiple levels to find the desired information. A shallow menu with a large breadth is more user-friendly and intuitive, as it minimizes the cognitive load on users and allows them to easily find the information they are looking for.

(d) With regard to human memory, what is a retrieval cue? Give two examples of retrieval cues used in interface design

A retrieval cue is a stimulus that helps trigger the recall of information stored in memory. Two examples of retrieval cues used in interface design are:

Icons: Icons are visual cues that represent specific actions or concepts. For example, a magnifying glass icon is commonly used to represent the search function.

Color coding: Color coding is a visual cue that uses different colors to represent different categories or types of information. For example, red is often used to indicate errors or warnings, while green is used to indicate success or completion.

Question 2

a

One method of preventing errors in design is to use a forcing function. Forcing functions can be especially useful in safety-critical systems. In interface design, we distinguish between three types of forcing functions. For each of the following scenarios, identify and name the type of forcing function being used

(i) Dialog window appears asking if you want to save your work before closing a document with unsaved changes.

The type of forcing function being used in this scenario is a lock-in forcing function. A lock-in forcing function prevents the user from taking an action until a specific condition is met. In this case, the user is prevented from closing the document until they have saved their work.

(ii) ATM forces you to take your card first before releasing your money

The type of forcing function being used in this scenario is an interlock forcing function. An interlock forcing function forces the user to take actions in a specific order in order to prevent errors. In this case, the user is prevented from taking their money until they have taken their card.

(iii) When paying for an item purchased online, you cannot complete the payment until you've entered the one-time security code

The type of forcing function being used in this scenario is a lock-out forcing function. A lock-out forcing function prevents the user from taking an action until a specific condition is met. In this case, the user is prevented from completing the payment until they have entered the one-time security code.

(b) We distinguish between two types of user errors: slips and mistakes. Slips are unconscious errors – right intention, but wrong action.In no more than one sentence, identify which type of user is more prne to "slips", and why

Users who are more experienced with a system are more prone to slips, as they may rely on automatic or habitual actions rather than conscious thought when interacting with the system. The familiarity with the system can lead to slips, as users may perform the wrong action unintentionally due to muscle memory or routine. We distinguish between two types of user errors: slips and mistakes. Slips are unconscious errors – right intention, but wrong action. In no more than one sentence, identify which type of user is more prone to "slips", and why. Another example of a slip is when a user types the wrong password due to muscle memory or habit, even though they know the correct password. On the other hand, mistakes are conscious errors – wrong intention, wrong action.

c - Your team has been given the task of re-designing a website for users to book flights. The first screen allows the user to select their departure and arrival city, and their travel dates before searching for available flights

(i) Identify two ways your team can design this first screen that will prevent the user from making "slips" when specifying their flight requirements.

The first way to reduce slips within the system is by adjusting the size of the various input options on to be larger, or much clearer. If the buttons on the website were very small and without even spacing, it would likely be much easier for the user to accidentely click on the wrong button, simply because everything's so close together.

The second way to reduce slips within the system is by using vivid colours for both the text and the buttons. If the text and buttons were all the same colour, it would be much easier for the user to accidentally click on the wrong button, as they would all blend in together.

(ii) One of the phases of human-centred design is prototyping. Your team would like to make use of the lo-fi prototyping technique. Give three advantages of using lo-fi prototyping.

The first advantage is that it's significantly cheaper to produce, as a lo-fi prototype could even include paper sketches. This also means that the tools which are required in order to create a lo-fi prototype are much lesser; you don't necessarily need the most expensive specialised equipment or software, as you can often create a lofi prototype with the equipment around you.

The second advantage is that the average amount of time required to make a lo-fi prototype is significantly less than a hi-fi prototype, meaning that a designer can go through multiple more iterations of the same technology. This would allow different designs and interfaces to receive feedback much more rapidly.

The third advantage is that lo-fi designs can be more accessible to team members from a wide variety of disciplines. Hi-fi prototypes may only be edited by people who know how to code, or who know how a specific piece of design software such as Figma works, which may limit the number of people who are able to provide feedback and work on it.

Question 3

You are part of a design team that has been tasked with designing a digital touchscreen thermostat. > (a) Sketch an interface design for this system with appropriate annotations. The thermostat system should display the current temperature and allow the user to: > > - Set their preferred room temperature > - Switch between showing the temperature in Celsius (°C) or Fahrenheit (°F). > - Switch the heating on for a fixed duration. > THERE ARE NO OTHER FUNCTIONS OR FEATURES.

[insert image here]

(b) For each feature that you have designed, identify a design principle that you have used and explain (in no more than one sentence each) how the feature implements the design principle.

[insert features here]