**Final Exam, Course: - Human Computer Intraction**

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**Question 1: (10)**

**Consider the chair given below. Your Employees want to use it as a computer chair. Your task is to write any As HCI Specialist, your job is point out any Five issues in the design of this chair.**

**Answer:**

As in HCI specialist after studying the chair I found the following issues in the chair. By removing that issues the chair will be comfortable and easy to use:

* This chair is uncomfortable and the employee will get tired of using it.
* It has no handle so the hands of the employee will be tired early
* The back should be of foam to be more comfortable
* It has no place where employee can give rest to their foots
* The chair should be revolving so that the employee can move around freely

**Q2:What is Paradigm, and what do you mean by paradigm shift?**

**Answer:**

**Paradigm:**

Paradigms are like over-arching theories that guide specific areas of science. A paradigm is essentially a particular view of the world. Paradigms emerge to provide an overall framework for understanding particular phenomena. The paradigm gains acceptance if the community of interested scientists agrees that it fits with most of the observable data.

**Paradigm Shift:**

Paradigm shift occurs when there is a “crisis” in a particular field. The crisis is always related to the fact that the old paradigm can no longer account for enough of the existing evidence to be believed by a majority of people. At the same time, there is typically strong enough evidence to indicate that a relatively new paradigm is a better structure through which to view the available evidence. At first, such new approaches are often rejected, even ridiculed. Copernicus and Galileo both had better paradigms, but they both suffered for leading the scientific revolution – for being too far ahead of their times.

**Question3: (06)**

**Explain Design Rationale. Write and explain the types of design rationale.Answer:**

**Design Rationale:**

 A design rationale is an explicit documentation of the reasons behind decisions made when designing a system or artifact. As initially developed by W.R. Kunz and Horst Rattle, design rationale seeks to provide argumentation-based structure to the political, collaborative process of addressing wicked problems.

**Types of Design Rationale:**

These types are not mutually exclusive and some systems may support multiple types of rationales. The following types of rationale are discussed in this document:

 **Argumentation based**

The design rationale is primarily used to represent the arguments that define a design . These arguments consist of issues raised, alternative responses to these issues, and arguments for and against each alternative.

 **History-based**

The rationale consists of the design history – the sequence of events that occurred while performing the design. This information can be stored in many forms. It could be in the form of entries in a design notebook, an archive of e-mail messages, or other types of documents that capture actions taken over time.

 **Device-based** - a model of the device itself is used to both obtain and present rationale [Gruber, 1990]. The explanations of the design would be produced by using the model to simulate the behavior of the device. It would be possible for the user to view the model and ask questions about its design and behavior.

 **Process-based** -- the DR capture is integrated into the design process itself which guides the format of the rationale. In the design description is modified only by changes to and refinements of the design objectives, thus capturing the rationale as part of the design process.

 **Active document-based** - the DR is pre-generated and stored in the system. In these systems, the designer creates the design and the DR system generates the rationale for it based on the system's stored knowledge. For each decision made, the system compares the decision made by the user with the decision that it would have made based in its knowledge. If the actions of the user conflict with the system recommendations, they are given the option of changing their decision or modifying some of the criteria.

**Question 4: (10)**

**Find the web pages that illustrate the principle of consistency. You must provide on good and one bad example of consistency. You must provide the screen shot of web pages along with URL and the written explanation justifying your good and bad example in your answer. To provide the relevant examples browse the internet.**

**Consistency Principles:**

Consistency is a key principle in life and in design. Without it we can’t get far. Even the mightiest of problems will fall if you keep hacking it everyday! Consistency is one of the design principles that we like to violate frequently. I am also guilty of doing that and I am not proud of it. Going all creative and [artzy](http://www.urbandictionary.com/define.php?term=artzy" \t "_blank) can easily break this design principle. The topic about consistency in design is huge. I will try my best to boil it down to the most important points. This way we can learn how to use consistency and how to keep it in our designs without breaking it.

Consistency is one of the molecules of the Design DNA. Consistent design is intuitive design. It is highly useful and makes the world a better place.In short, usability and learnability improve when similar elements have consistent look and function in similar way. When consistency is present in your design, people can transfer knowledge to new contexts and learn new things quickly without pain. This way they can focus on executing the task and not learning how the product UI works every time they switch the context. We humans like consistency by default! Our physical bodies constantly strive for consistent balance, so we can be healthy. We need to feel that things are consistent to feel secure and safe.

**Visuals:**

Typography, colors, space, grid, size and positions. These elements need to be defined in one central place and then used across the system you’re designing

<http://styleguides.io/examples.html>

## Voice and tone

The language and tone you use throughout the user flow influences how your user perceives the product. Keep the voice and tone consistent so it feels as one voice speaking to the user. We don't want them to hear many voices, do we? :)

## Use familiar patterns

People who will be using our designs be it digital or not, have been around for some time. This means they have experienced and learned other designs, and know the patterns used in them

http://www.mobile-patterns.com/

**Good example of consistency.**

Good example of external consistency is the user interface of Adobe products. Once you know Photoshop it is much easier to reuse the same knowledge to start using Illustrator and so on.

 **A bad example of consistent system interaction.**

This is a bad example of consistent interaction. This system provides clickable function to choose a date when filling the DOB of a new patient. But it does not provide this function when editing DOB of a current patient.



 **Question 5: (08)**

**Write the Shneiderman’s 8 Golden Rules.**

**Answer:**

**Shneiderman’s 8 Golden Rules:**

These rules were obtained from the text Designing the User Interface by Ben Shneiderman. Shneiderman proposed this collection of principles that are derived heuristically from experience and applicable in most interactive systems after being properly refined, extended, and interpreted.

To improve the usability of an application it is important to have a well designed interface. Shneiderman's "Eight Golden Rules of Interface Design" are a guide to good interaction design.

**1 Strive for consistency.**

Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent commands should be employed throughout.

**2 Enable frequent users to use shortcuts.**

As the frequency of use increases, so do the user's desires to reduce the number of interactions and to increase the pace of interaction. Abbreviations, function keys, hidden commands, and macro facilities are very helpful to an expert user.

**3 Offer informative feedback.**

For every operator action, there should be some system feedback. For frequent and minor actions, the response can be modest, while for infrequent and major actions, the response should be more substantial.

**4 Design dialog to yield closure.**

Sequences of actions should be organized into groups with a beginning, middle, and end. The informative feedback at the completion of a group of actions gives the operators the satisfaction of accomplishment, a sense of relief, the signal to drop contingency plans and options from their minds, and an indication that the way is clear to prepare for the next group of actions.

**5 Offer simple error handling.**

As much as possible, design the system so the user cannot make a serious error. If an error is made, the system should be able to detect the error and offer simple, comprehensible mechanisms for handling the error.

**6 Permit easy reversal of actions.**

This feature relieves anxiety, since the user knows that errors can be undone; it thus encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data entry, or a complete group of actions.

**7 Support internal locus of control.**

Experienced operators strongly desire the sense that they are in charge of the system and that the system responds to their actions. Design the system to make users the initiators of actions rather than the responders.

**8 Reduce short-term memory load.**

The limitation of human information processing in short-term memory requires that displays be kept simple, multiple page displays be consolidated, window-motion frequency be reduced, and sufficient training time be allotted for codes, mnemonics, and sequences of actions.

**Question 6: (10)**

**You are familiar with internet explorer. Explain any five usability goals in terms of internet explorer. Justify each goal with example.**

**Answer:**

Effectiveness

Efficiency

Engagement

Error Tolerance

Ease of Learning

**Effectiveness**

Effectiveness is about the high degree of accuracy under which users can complete their goals. The product has to be able to support the user while performing tasks.

For example, validating each field of a form accordingly (the postal code field has to be 5 characters long and only contain numbers) and be informative while doing it so, this can reduce data entry errors and help the user finish the task correctly.

**Efficiency**

Efficiency must not be mistaken for effectiveness as they are quite different and our goal is aiming to have both of them. Effectiveness, as we covered above, is about the accuracy of the user to complete a task, while efficiency is how fast can the user finish the task. It’s all about speed!

Take for example MailChimp’s web and mobile page shown below, as they follow the same structure and the content also remains the same; but the main menu on the mobile site is no longer displayed as a horizontal navigation but as a hamburger menu containing the same sections. The layout changed to a more simplified version of the desktop site and the shortcuts were only maintained for the sign-up option and the search.

**Engagement**

Engagement happens when the user finds your product enjoyable and satisfactory to use. Yes, aesthetics and great UI elements start to have relevance here, but they’re not the only factors implicated in creating a gratifying product that users like to interact with.

Here are 2 examples of engaging websites, that show not only great visual elements, but also play with interactive elements, they have a clear navigation, and they communicate their message crystal-clear.

**Error Tolerance**

Not one single interface ever created can be clean of errors as you can’t control the whole ecosystem under which the product is being used and certainly human error is only natural.

However, what we can do when designing a product, is trying to minimize errors from occurring but if an error does occur make sure the users can quickly and easily recover from it and get back to what they were doing. In Human-Computer Interaction (HCI) this is known as error tolerance.

Being tolerant to error means to make everything in our power to design a product in which is easy to achieve tasks and without letting the users get confused and do the wrong thing, for example:

1.Making all the navigation elements clear and visible so the users can know where they’re at and where to go next.

2.The right language comes into play again: communicate everything in a simple language.

3.The actions performed have to be consistent throughout the product to reduce the probability of mistakes.

4.Limit the options to only correct choices.

5.And always provide feedback, as in the image below.

**Ease of Learning**

When a product requires the users to remember a lot of information or learn to do several things in order to be able to use it, it’s really hard for them to stick and engage with the product regularly. On the contrary, if we have a product that lets the user learn to use it easily, the interaction will come as something natural the next time they use it.

For example, the app to find food trucks around town, Diamond Plate shows in just a few screens the whole concept of the product and its features, letting the user create a mental model of the app before even using it. As a result, when it’s time to interact with it, the users can easily navigate and make the best use of the app by reaching their goals.