ASSIGNMENT 2 & 3(USER INTERFACE )

Q1: Explain basic principle of basic principle design

ANS: The principles of design are the rules a designer must follow to create an effective and attractive composition. The fundamental principles of design are Emphasis, Balance and Alignment, Contrast, Repetition, Proportion, Movement and White Space. Design differs from art in that it has to have a purpose.

Q2: What are the characteristics of a good interface.

Ans : Utility: Utility is the result of the value-effort ratio. Users need a certain level of motivation in a certain context with certain expectations in order to use and interface to complete various tasks.

Clarity: It is very important to make web site's content very clear, to avoid ambiguity that can cause confusion. Hierarchy and flow must feel natural and logical. Use titles, subtitles and captions in a consistent way.

Concision: We are often scared not to be clear enough and that makes some of us give too many details. That should absolutely be avoided. Keep texts short and don’t label everything. An interface must be light, not over clustered. Too many elements or to much informations leads to confusion and adds to mental load. The fact is that if there is too much text, users won't read any of it. The real challenge when producing a user interface is to be concise and clear.

User-friendliness: User-friendliness has to do with the level of user comfort and satisfaction associated with the use of an interface (user experience). It is closely related to familiarity.

Responsiveness : It is important for the interface to give feedbacks to the user at all times. For instance, if the user clicks on a module that can take some time to load, think of using a spinning pointer, a progress bar or a feature of some sort that let the users know that the feature is processing.

Q3: What is Cognitive Ergonomics? Explain briefly its components.

Ans : Cognitive ergonomics is a scientific discipline that studies, evaluates, and designs tasks, jobs, products, environments and systems and how they interact with humans and their cognitive abilities. It is a subset of the larger field of human factors and ergonomics.

Its components:

. Identification and understanding of interfaces elements

. The law of least effort

. Humanizing the information treatment

. Optimizing perceptual memory

. Reading speed and distance

. External cohesion

. Internal cohesion (consistency)

. Metaphors

. Pragmatism

. Considering users physical limitations

Q4: Explain 10 principles of cognitive ergonomics?

ANS :

1. Standardize : In every domain including interface design, there are widely common way of doing things. For instance, electricity wires are identified using colors the same way everywhere. In an interface, everybody will understand that an X placed on the up-right corner of a window will close it or that a magnifier next to a text field is used to make a search. Use these standards! Users learn from usage. The more they use a function, the more they develop reflexes which helps prevent errors and make using an interface fast and easy.
2. Use of stereotypes : The stereotype is a concept very closed to the use of standards. In facts, good standards generally follow a stereotype.
3. Controls matching equipment layout : Whenever possible, configure elements in a way that the usage becomes obvious. For instance, on a stove, the best practice is to position the power knobs using the same configuration as the burners.
4. Simplify the presentation of informations : Well organized informations makes understanding easier and faster. Using design principles such as unity, proximity and alignment greatly improves the interface quality. Whenever possible, use icons or images which replace a lot of text (an image worth a thousand words).
5. Present information in appropriate detail : Not all users and not all tasks require the same quantity of details. Learn to display just the necessary amount of information and use tool-tips instead of clustering the interface.
6. Present clear images : Using icons, metaphors or images, be careful to make it so the users is able to see and interpret them clearly. Images must be visible. They must be of appropriate size, location and distance. There should be no obstruction and they should contrast with the background or their environment.
7. Using redundancies: Redundancies have to do with consistency, standards and stereotypes. It means to repeat the message many times different ways to reduce the risk of errors to occur.
8. Using patterns (pop-out effect) : Using a pattern makes information easier to understand and anything unusual sticks out very efficiently. So, you can group elements by themes to simplify tasks, you can use graphs so number data become easier to understand or use charts to compare numbers or quantities.
9. Provide variable stimuli : Just like something unusual sticks out of patterns, anything new of a different aspect is easier to notice. That is actually why emergency vehicles sirens are changing pitch and rhythm in order to be more easily noticed.
10. Provide instantaneous feedback : Use feedbacks at all possible time to confirm an action or a process. Let users know that their content is downloading or tell them what action should be taken. You can also use transition from page to page to let them know they are leaving a page to another.

Q5: What are essential UI design laws?

ANS :

1. POLA principle : POLA stands for Principle of least astonishment. It states that if a necessary feature has a high astonishment factor, it may be necessary to redesign it. According to this principle, design should be adapted to the user’s experience, expectations, and mental models. Human being only able to pay full attention to one thing at a time, it is important to reduce the mental load and, even more important, novelty should be minimized.
2. MAYA principle : MAYA stands for Most advanced yet acceptable. It states that since people are naturally resistant to change, novelty and innovations, it is important to rely on standards as much as possible. Bringing novelties should be done gradually so users can get used to it. Since users have different levels of comfort, offer traditional fall-back options when novelties are integrated.
3. Baby duck syndrome : Linked to the MAYA principle, the baby duck syndrome define the users attitude using a new interface for the first time. The user then judges the new interface comparing it with similar features of the older version. Very generally, users will be disturbed by modifications made to a known interface, by any type of changes. That makes interfaces updates quite challenging
4. Habit formation : When an interface is used persistently, user develops habits. Using the interface becomes natural, easy. Be careful not to make bad assumption about users behaviours and ensure the users form good habits.
5. Hick’s Law : Hick's law states that the time it takes to make a decision increases with the number and complexity of choices. Knowing this, it is important to reduce the number of choices presented to users. Too many choices adds to their cognitive burden, their mental load. By giving too many choices, there are chances your users will run away to another web site. Learn to identify essential and secondary contents, apply hierarchy, make navigations shorter and use contextual navigation (sub-navigation) if needed.
6. Banner blindness : Just like in newspapers and magazines, users on the Internet have developed a mechanism to avoid anything resembling advertising while searching for content. For this reason, it is important to be careful, for instance, not to position navigational elements above an image or a logo grabbing a lot of attention. This would seem to much like an advertisement and the navigation would then probably be ignored.
7. Fitts’s Law : Fitts's law is stating that the time it takes to acquire a target is a function of the distance to and size of the target. In other words, it means: the farther away a target is, the larger it needs to be in order for a user to be able to reach it easily. It is important to keep this law in mind when creating buttons or any clickable elements. A large button acts like a call to action. Although, a button that would be too big can make users click inadvertently
8. Miller’s Law : Miller's law states that the average person can only keep seven (plus or minus two) items in their working memory. So, it is highly beneficial to fragment content within logically organized groups in order to ease complex tasks.
9. Zeigarnik effect : Zeigarnik effect states that people tend to remember better uncompleted or interrupted tasks than completed tasks and that it is very difficult for people to leave an uncompleted task. For instance, students studying for an exam taking breaks to go do something else will remember much more details of their studies than those studying without interruption. This is actually why long complex forms on the web use a progress bar. Knowing what is left to be done, users are more likely to complete the task.