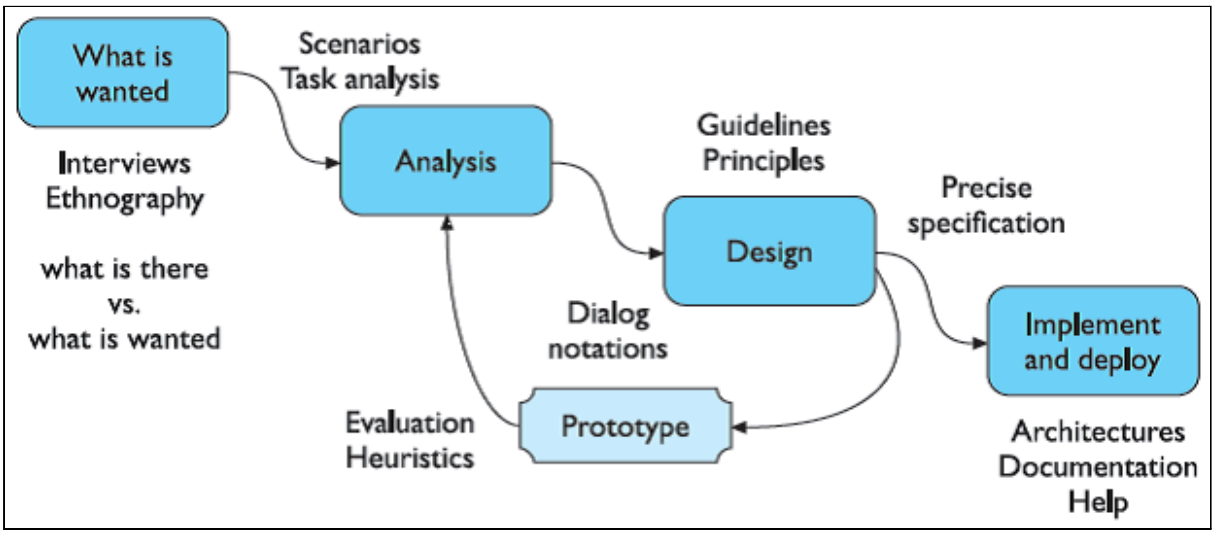
HMI Module - 4

Q1. Write a short note on the designing process. Draw the diagram for the interaction design process.

Ans:



- What is wanted: This is the first step where user requirements are gathered from the user. There are many ways to gather it such as interviewing people, brainstorming, videotaping, and surveys.
- Analysis: Results or interviews and observations are then ordered in order to analyse the user requirements and find out key issues for designing.
- Design: This is the stage where the main focus is how the system will work instead of what the user wants. Here various designing rules and principles are applied for a good system.
- Prototype: The prototype is made after the design has been decided but it can be changed. It needs to be evaluated to see how well it is working and what improvement can be done.
- Implementation and deployment: This is the final stage where we actually developed the product and deploy it with real users

Q2. What is screen designing? Explain its levels.

Ans:

- The objective of designing is not to use a computer system but to use a socio-techno environment in such a way that the user can easily interact with the system. User can interact with the system at various levels:
    a. Widget choices: The appropriate choice of widgets in menus bars and buttons will help the user to know how to use them for a particular reason.
    b. Screen design: user needs to find things on screen, understand the logical grouping of items like buttons, text boxes, colours, images, etc.
    c. Navigation design: user will be able to understand what will happen if a button is pressed.

Q3. Write a short note on Screen Navigation and flow.

Ans:

- Screen Navigation allows users to move from one place to another while accessing the system like web pages or websites.
- It encourages natural movement of sequences and it minimizes distance between pointer and eye movement.
- There are two types of navigation structure:
    a. Local Structure: looking from one screen or page
    b. Global Structure: structure of website, movement between the screens.
- Some websites have navigation bars which show all the links available all the time.
- Screen navigation provides information to understand where the user is on the webpage, what the user is doing, what the user can do and what the user has done.
- Screen Navigation provides the proper flow of the web pages.
- It maintains left to right and top to bottom orientation throughout the web pages.
- It provides control between user and screen items.

Q4. Explain Statistical Graphics in detail.

Ans:

- Graphical Representation of data gives a clear picture, presenting numbers in an ordered way.
- It helps us to avoid the data distortion and gives clear purpose of description, exploration, tabulation.
- It is used to minimize redundant data.
- It shows the variation of data in a single space.
- It helps comparing actual data and projected data.
- It provides meaningful organization of data in different formats.
- Types of statistical graphics:
    a. Curve and Line Graphs:
        - Curves and line graphs can be used to show relationships between sets of data defined by two continuous variables.
        - They are especially useful for showing data changes over time.
        - With a curve, the data relations are summarized by a smoothed line.
        - With a line, straight line segments connect the data plots.
    b. Pie Charts:
        - A pie chart (or a circle chart) is a circular statistical graphic.
        - It is divided into slices to illustrate numerical proportion.
        - In a pie chart, the arc length of each slice is proportional to the quantity it represents.

- Pie charts are very widely used in the business world and the mass media.
- Pie charts should be used with cautions.

c. Scatter Plots:
   - A Scatter (XY) Plot has points that show the relationship between two sets of data.
   - A scatter plot or scatter graph is a type of mathematical diagram using Cartesian coordinates to display values for two variables for a set of data.
   - The data is displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis.

d. Bar Graphs:
   - A Bar Graph (also called Bar Chart) is a graphical display of data using bars of different heights.
   - The bars can be plotted vertically or horizontally.
   - A vertical bar chart is sometimes called a column bar chart.
   - A bar graph is a chart that uses either horizontal or vertical bars to show comparisons among categories.
   - One axis of the chart shows the specific categories being compared, and the other axis represents a discrete value.
   - It is necessary to keep space between bars equal to one half the widths of the bars or less.