USER INTERFACE

User Interface Prototyping

- The aim of prototyping is to allow the users to gain direct experience with the interface
- When prototyping a user interface a two staged prototyping process is used
  - Develop a paper prototype, mock ups of screen designs and walk through these with end users
  - Refine the design and develop sophisticated automated prototypes and make them available for to users for testing and activity simulation
- Paper prototype is a cheap and surprisingly effective approach to prototype development
- Storyboarding technique can be used to present the interface design which is a series of sketches that illustrate a sequence of interactions

User Interface Prototyping approach

- There are 3 approaches that can be used for user interface prototyping

  - **Script Driven Approach** – In this approach create screens with visual elements such as buttons and menus and associate a script with these elements. So when a user interacts with these screens the script is executed and the next screen is presented showing them the results of their actions. There is no application logic involved

  - **Visual Programming Language -** These incorporate a powerful development environment, access to a range of reusable objects and a user interface development system that allows interfaces to be created quickly with components and scripts associated with interface objects

  - **Internet Based Prototyping –** These solutions based on web browsers offer a ready made user interface. By adding functionality of segments information can be displayed. These segments are executed automatically when the page is loaded on the browser. This is a fast way to develop user interface prototype

Interface Evaluation

- It is a process of accessing the usability of an interface and checking that it meets user requirements.
- Hence it should be a part of normal verification and validation process
- Systematic evaluation of a user interface design can be an expensive process
- There are simpler, less expensive techniques of user interface evaluation that can identify particular user interface design deficiencies
  - Questionnaires that collect the information from the users
  - Observation of users at work with the system
  - Video snapshots of typical system use
  - The inclusion in software of code which collection information about the most used facilities and the most common errors
- An evaluation should be conducted against a usability based on usability attributes shown in figure below

Interface Evaluation

Attribute	Description
Learnability	How long does it take a new user to become productive with the system?
Speed of operation	How well does the system response match the user's work practice?
Robustness	How tolerant is the system of user error?
Recoverability	How good is the system at recovering from user errors?
Adaptability	How closely is the system tied to a single model of work?

Project Management

- Good management guarantees software success where as bad management guarantees software failure.
- Software managers are responsible for planning and scheduling project development.
- They supervise the work to ensure that it is carried out to the required standards and monitor progress to check that the development is on time and within the budget
- Project management is needed because professional software engineering is always subject to organizational budget and scheduled constraints
- Project managers job is to ensure that the software project meets these constraints and delivers software

Differences between other types of engineering and software engineering

- **Product is intangible** – Manager of a civil engineering project can see the product being developed and hence if schedule slips the effect on the product is visible. Software is intangible. It cannot be touched or seen and hence managers cannot see progress. They rely on others to produce the documentation

- **No standard software processes** – In engineering disciplines with a long history are tried and tested. However, software processes vary dramatically from one organization to another

- **Large software projects are often one-off projects** – Large software projects are usually different in some ways from previous projects. Therefore, even managers with large experience find it difficult to anticipate problems. Lessons learned from previous projects may not be transferrable to new projects

Management Activities

- **Proposal Writing** – Describes the objectives of the project and how it will be carried out and includes cost and schedule estimates and justifies why the project should be awarded to a particular organization.

- **Project Monitoring** – It is a continuing project activity where the manager must keep a track of the progress of the project and compare it with actual planned process.
- During monitoring it is necessary to take a review to check whether the goals of the paying organisation are aligned or not.
- Project managers may select an inexperience staff on their project due to budget constraints, experience staff unavailability or internal inexperienced staff must get experience.

- **Project Planning** – Effective project management depends thoroughly on planning the progress of the project. Managers anticipate the problems that might arise during the project and prepare tentative solutions to those problems.