UNIT 1

An Engineering Perspective

An Engineering Perspective:

Software development follows an engineering approach provided that the following conditions are met: it is concerned with meeting a set of requirements that are defined as clearly as possible. it uses a defined process with clear activities, each of which has at least one identifiable end product.
Software Engineering is the systems engineering approach for software product/application development. It is an engineering branch associated with analyzing user requirements, design, development, testing, and maintenance of software products.
Some basic principles of good software engineering are –

1. One of the basic software Engineering principles is Better Requirement analysis which gives a clear vision of the project. At last, a good understanding of user requirements provides value to its users by delivering a good software product that meets users' requirements.

2. All designs and implementations should be as simple as possible mean the KISS (Keep it Simple, Stupid) principle should be followed. It makes code so simple as a result debugging and further maintenance become simple.

3. Maintaining the vision of the project is the most important thing throughout complete development process for the success of a software project. A clear vision of the project leads to the development of the project in the right way.

4. Software projects include a number of functionalities, all functionalities should be developed in a modular approach so that development will be faster and easier. This modularity makes functions or system components independent.

5. Another specialization of the principle of separation of concerns is Abstraction for suppressing complex things and delivering simplicity to the customer/user means it gives what the actual user needs and hides unnecessary things.

6. Think then Act is a must-required principle for software engineering means before starting developing functionality first it requires to think about application architecture, as good planning on the flow of project development produces better results.

7. Sometimes developer adds up all functionalities together but later find no use of that. So following the Never add extra principle is important as it implements what actually needed and later implements what are required which saves effort and time.

8. When other developers work with another's code they should not be surprised and should not waste their time in getting code. So providing better Documentation at required steps is a good

way of developing software projects.

9. Law of Demeter should be followed as it makes classes independent on their functionalities and reduces connections and inter dependability between classes which is called coupling.

10. The developers should develop the project in such a way that it should satisfy the principle of Generality means it should not be limited or restricted to some of cases/functions rather it should be free from unnatural restrictions and should be able to provide service to customers what actually they need or general needs in an extensive manner.

11. Principle of Consistency is important in coding style and designing GUI (Graphical User Interface) as consistent coding style gives an easier reading of code and consistency in GUI makes user learning easier in dealing with interface and in using the software.

12. Never waste time if anything is required and that already exists at that time take the help of Open source and fix it in your own way as per requirement.

13. Performing continuous validation helps in checking software system meets requirement specifications and fulfills its intended purpose which helps in better software quality control.

14. To exit in current technology market trends Using modern programming practices is important to meet users' requirements in the latest and advanced way.

15. Scalability in Software Engineering should be maintained to grow and manage increased demand for software applications.