**Software Engineering**

• Software engineering is a discipline whose aim is the production of fault-free software, delivered on time and within budget, that satisfies the client’s need.

The software must be easy to modify when the user’s needs change.

**Software**

• Software consists of not just code in machine-readable form but also all the

documentation that is an intrinsic component of every project.

– The specification document

– The design document

– Legal and accounting documents of all kinds

– The software project management plan and other management documents

– All types of manuals.

**People: Three Parties Involved**

**• Client:**The client is the individual who wants a product to be built (developed).

**• Developers:**The developers are the members of a team responsible for

 building that product.

**•User:**The user is the person or persons on whose behalf the client

 has commissioned the product and who will utilize the software.

**Software characteristic or Quality:-**

The ISO 9126-1 software quality model identifies six main quality or characteristics .The international standard on software product quality suggests that software characteristic or quality comprise six main attributes. These attributes can be defined as follows

1. Functionality
2. Reliability
3. Usability
4. Efficiency
5. Maintainability
6. Portability

1.Functionality:- The capability to provide functions which meet stated and implied needs when the software is used.

2.Reliability :- The capability to provide failure free operation/service.

3.Usability:- The capability to be understood , learn and used.

4.Efficiency :- The capability to provide appropriate performance relative to the amount of resource used.

5.Maintainability:- The capability to be modified for purpose of making corrections , improvements or adaption.

6.Portability :- The capability to be adapted for different specified environments without applying actions or means other than those provided for this purpose in the product.

The Role of the Software Engineer

The evolution of the software engineering field has defined the role of the software engineer.

A software engineer must of course be a good programmer, be well-versed in data structure and algorithms, and be fluent in one or more programming languages. These are requirements for the small scale software development to be done by a single individual. But a software engineer is also involved in very large sale software, which requires more professional..

The software engineer must be familiar with several design approaches, be able to translate vague requirements into precise specifications, and be able to communicate with the user of a system in terms of the applications terms rather than in computer buzz words. These in turn require the flexibility and openness to grasp, and become conversant with, the exentials of different applicant areas. The software engineer needs the ability to move among several levels of abstraction at different stages of the project, from specific application procedures.and requirements, to abstractions for the software system, to a specific design for the system, and finally to the detailed design testing and delivery level.

Modeling is another requirement. the software engineer must be able to build and use a model of the application to guide choices of the many trade-off that he or she will face. The model is used to answer questions about both the behaviours of the system and its performance. Preferably, the model can used by the engineer as well as the user.

The software engineer is a member of a team and therefore needs communication skills and interpersonal skills. The software engineer also needs the ability to schedule work, both of his or her own and that of others.

As discussed above, a software engineer is responsible for many things. In practice, many organisation divide the responsibilities among several specialists with different titles. For example, an analyst is responsible for deriving the requirements, and a programmer is responsible for coding the system. A rigid fragmentation of role, however, is often counter productive.