**SOFTWARE**

A software is a computer programs along with the associated documents and the configuration data that make these programs operate correctly.

*A program is a set of instructions (written in form of human-readable code) that performs a specific task.*

**TYPES OF SOFTWARE SYSTEMS**

There are many different types of software systems from simple to complex systems. These systems may be developed for a particular customer, like systems to support a particular business process, or developed for a general purpose, like any software for our computers such as word processors.

Many systems are now being built with a generic product as base, which is then adapted to suit the requirements of a customer such as SAP system.

**Successful software system**

A good software should deliver the main required functionality.

Other set of attributes — called quality or non-functional — should be also delivered. Examples of these attributes are, the software is written in a way that can be adapted to changes, response time, performance (less use of resources such as memory and processor time), usable; acceptable for the type of the user it’s built for, reliable, secure, safe, …etc.

**SOFTWARE ENGINEERING**

Software engineering is an engineering discipline that’s applied to the development of software in a *systematic*approach (called a software process).

It’s the application of theories, methods, and tools to design build a software that meets the specifications efficiently, cost-effectively, and ensuring quality.

It’s not only concerned with the technical process of building a software, it also includes activities to manage the project, develop tools, methods and theories that support the software production.

*Not applying software engineering methods results in more expensive, less reliable software, and it can be vital on the long term, as the changes come in, the costs will dramatically increase.*

Different methods and techniques of software engineering are appropriate for different types of systems. For example, games should be developed using series of prototypes, while critical control systems require a complete analyzable specification to be developed.

**SOFTWARE ENGINEERS**

The job of a software engineer is difficult. It has to balance between different people involved, such as:

* **Dealing with users**: User don’t know what to expect exactly from the software. The concern is always about the ease of use and response time.
* **Dealing with technical people**: Developers are more technically inclined people so they think more of database terms, functionality, etc.
* **Dealing with management**: They are concerned with return on their investment, and meeting the schedule.

**Objectives of Software Engineering:**

1. **Maintainability –**  
   It should be feasible for the software to evolve to meet changing requirements.
2. **Correctness –**  
   A software product is correct, if the different requirements as specified in the SRS document have been correctly implemented.
3. **Reusability –**  
   A software product has good reusability, if the different modules of the product can easily be reused to develop new products.
4. **Testability –**  
   Here software facilitates both the establishment of test criteria and the evaluation of the software with respect to those criteria.
5. **Reliability –**  
   It is an attribute of software quality. The extent to which a program can be expected to perform its desired function, over an arbitrary time period.
6. **Portability –**  
   In this case, software can be transferred from one computer system or environment to another.
7. **Adaptability –**

In this case, software allows differing system constraints and user needs to be satisfied by making changes to the software.