SDLC

It's pretty evident that technology is accelerating at a rapid pace and humans are becoming further dependent on it for every purpose. Gradually, software development has become more and more crucial, since the demand for software is fast rising from every imaginable corner. In fact, almost every machine that we use can be a by-product of some software empowering it. It is agreed that software development is a highly intelligent and precise process, involving various steps to make it successful.

Generally speaking, any software process must include the four activities that are:

a) Software Specification or Requirements Engineering:

Software specification or requirements engineering is the process of understanding and defining what services are required and identifying the constraints on these services. It ensures your software will meet the user's expectations.

It's a critical stage of the software process as errors at this stage will reflect later on the next stages, which definitely will cause you higher costs. At the end of this stage, a requirements document that specifies the requirements will be produced and validated with the stockholders.

b) Software Design and Implementation:

The implementation phase is the process of converting a system specification into an executable system. A software design is a description of the structure of the software to be implemented, data models, interfaces between system components, and maybe the algorithms used. The software designers develop the software design iteratively; they add formality and detail and correct the design as they develop their design.

### c) Software Verification and Validation:

Software verification and validation (V&V) is intended to show that a system both conforms to its specification and that it meets the expectations of the customer. Validation may also involve checking processes, such as inspections or reviews at each stage of the software process, from defining the requirements till the software development. Testing, where the system is executed using simulated test data, is an important validation technique.

d) Software Maintenance and Evolution:

Requirements are always changing, even after the system has been put into its operating environment. The flexibility of software systems is one of the main reasons why software is being used in large, complex systems.

Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop and test high quality software. The SDLC aims for the production of high quality software that meet customer's expectations and reaches completion within times and cost estimates. It is a conceptual framework defining tasks performed at each step in the software development process.

SDLC is a process followed in a software project. It consists of a detailed plan describing how to develop, maintain, alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process. The following figure is a graphical representation of the various stages of a typical SDLC.
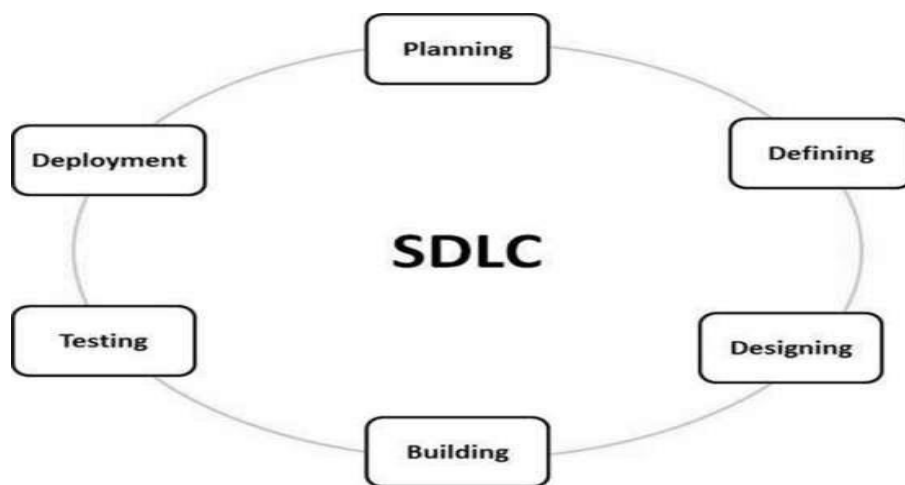
There are various software development life cycle models defined and designed which are followed during the software development process. Each model follows a series of steps unique to its type to ensure success in the process of software development. Some of the most important and popular SDLC models followed in the industry are: Waterfall Model, Iterative Model, Spiral Model, V-Model, Agile Model, RAD Model …etc.