Software Engineering
(CSC492)

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SDLC(Software Development life cycle)

SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing

- How to develop
- Maintain
- Replace and alter
- Enhance specific software.

The life cycle also defines a methodology for improving the quality of software and the overall development process

SDLC-Stages

A typical Software Development life cycle consists of the following stages:

1. Planning and Requirement Analysis
2. Defining Requirements
3. Designing the product architecture
4. Building or Developing the Product
5. Testing the Product
6. Deployment in the Market and Maintenance

SDLC-Stage 1

Planning and Requirement Analysis

- The most important and fundamental stage in SDLC.
- It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts in the industry.
- This information is then used to plan the basic project approach
- Identification of the risks associated with the project is also done in the planning stage.
- Define the various technical approaches that can be followed to implement the project successfully with minimum risks.

SDLC-Stage 2

Defining Requirements

- Once the requirement analysis is done the next step is to clearly define and document the product requirements
- Get them approved from the customer or the market analysts.
- This is done through ‘SRS’ – Software Requirement Specification document which consists of all the product requirements to be designed and developed during the project life cycle.

SDLC-Stage 3

***Designing the product architecture* :**

- Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented in a DDS - Design Document Specification.
- This DDS is reviewed by all the important stakeholders
- The best design approach is selected for the product.
- A design approach clearly defines all the architectural modules of the product along with its communication and data flow representation with the external and third party modules (if any).

SDLC-Stage 4

Building or Developing the Product

- The actual development starts and the product is built.
- The programming code is generated as per DDS during this stage.
- Developers have to follow the coding guidelines defined by their organization and programming tools .
- Different high level programming languages such as C, C++, Pascal, Java, and PHP are used for coding.
- The programming language is chosen with respect to the type of software being developed

SDLC-Stage 5

Testing the Product

- This stage is usually a subset of all the stages as in the modern SDLC models
- The testing activities are mostly involved in all the stages of SDLC.
- Where products defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.

SDLC-Stage 6

Deployment in the Market and Maintenance

- Once the product is tested and ready to be deployed it is released formally in the appropriate market.
- Sometime product deployment happens in stages as per the organizations' business strategy.
- The product may first be released in a limited segment and tested in the real business environment (UAT- User acceptance testing).
- Then based on the feedback, the product may be released as it is or with suggested enhancements in the targeting market segment.

The following figure is a graphical representation of the various stages of a typical SDLC.