

The Software Development Life Cycle (SDLC) is a structured and well-defined sequence of stages in software engineering used to develop software products efficiently. It provides a framework consisting of several steps. The first step in the SDLC is Communication. Here, the user initiates a request for a desired software product and contacts the service provider.

After gathering the requirements for a software project, the next step is conducting a feasibility study. In this step, the development team creates a preliminary plan for the software development process. The purpose of the feasibility study is to analyze whether it is possible to create a software solution that meets all the user's requirements and to identify any potential issues that may render the software unusable.

Software design is the next step in the software development process, following requirement gathering and analysis. In this step, the development team takes the collected knowledge and requirements and creates a comprehensive design for the software product.

Testing is an integral part of the software development process and plays a critical role in ensuring the quality and reliability of the software product. It is estimated that approximately 50% of the entire software development process should be dedicated to testing.

The Operation and Maintenance phase of the software development life cycle focuses on ensuring the efficient operation of the software and addressing any issues that may arise after deployment. This phase involves activities aimed at enhancing the software's performance, minimizing errors, and providing ongoing support to users.

The Waterfall model is a straightforward software development paradigm that follows a linear and sequential approach. According to this model, each phase of the Software Development Life Cycle (SDLC) is executed one after another in a predetermined order.

In the Waterfall model, the development process progresses in a step-by-step manner, where each phase is completed before moving on to the next one. The assumption is that each phase is fully planned and executed perfectly, with no need to revisit past stages or address issues that may arise later. The phases typically followed in the Waterfall model include requirements gathering, system design, implementation (coding), testing, deployment, and maintenance.

The Iterative model is a software development approach that emphasizes an iterative and cyclic process. It involves repeating the steps of the Software Development Life Cycle (SDLC) in a series of iterations or cycles. In the Iterative model, the software development process begins with a small-scale implementation, often referred to as the initial or baseline version.

The Spiral model is a software development approach that combines elements of both the iterative model and one of the traditional Software Development Life Cycle (SDLC) models. It can be seen as a combination of an SDLC model and a cyclic iterative process.

The key feature of the Spiral model is its focus on addressing risks, which are often overlooked in other models. It recognizes that software development involves uncertainties and potential risks that need to be identified, analyzed, and managed throughout the project.

The Waterfall model is known for its major drawback, which is its strict linear progression, where each stage is completed before moving on to the next one. This means that once a stage is finished, there is no opportunity to go back and address any issues or changes that may arise in later stages