

Programming Lifecycle: Concept

This reading provides a brief overview of the software development process.

Software goes through various stages from its conception to its end. The term *software development life cycle* (SDLC) refers to the steps taken to develop software. There is no hard-and-fast rule to developing software, and many methodologies have been used. Though each takes a different approach, the various phases of the software development process can be broadly summarized as follows:

1. Planning and Analysis
2. Design
3. Implementation
4. Testing and Debugging
5. Deployment
6. Maintenance

The first stage of software development is planning and analysis. In this stage a requirement analysis is done, which includes finding out what the client's needs are. Often, the client has an abstract idea about the requirements and an adept software engineer can get information about the project from the client through a series of one-on-one interviews, group sessions, and some brainstorming sessions. Based on the information gathered in this stage, a scope document—which serves as the starting point for next stage—is prepared.

Once the requirements are gathered, the second and third phase of the software development process begins. In these phases, a simple version of the program is implemented using a programming language chosen by the team lead. As the software is written, it is tested and debugged to eliminate as many bugs as possible.

Once the software is tested and works according to specification, it is deployed and given to the client. In the maintenance stage, the software is enhanced and any newfound bugs are fixed. If there are new requirements at this stage they can be added.

One can add additional features and repeat the steps of implementation, testing, and deployment as often as required. Software development is an iterative process, so during any stage of development one can go back to the previous stage and add or fix things.

There are several software development models that are used in the industry. A popular one called the *waterfall model* is shown in figure 1 below. The figure shows various stages of development. As you can see, in this approach, there is a path leading back from each stage to all previous stages. In the maintenance stage, the development process can return to any of the previous stages if a drawback is encountered, so a bug or flaw in any stage can be fixed in the maintenance stage of the SDLC.

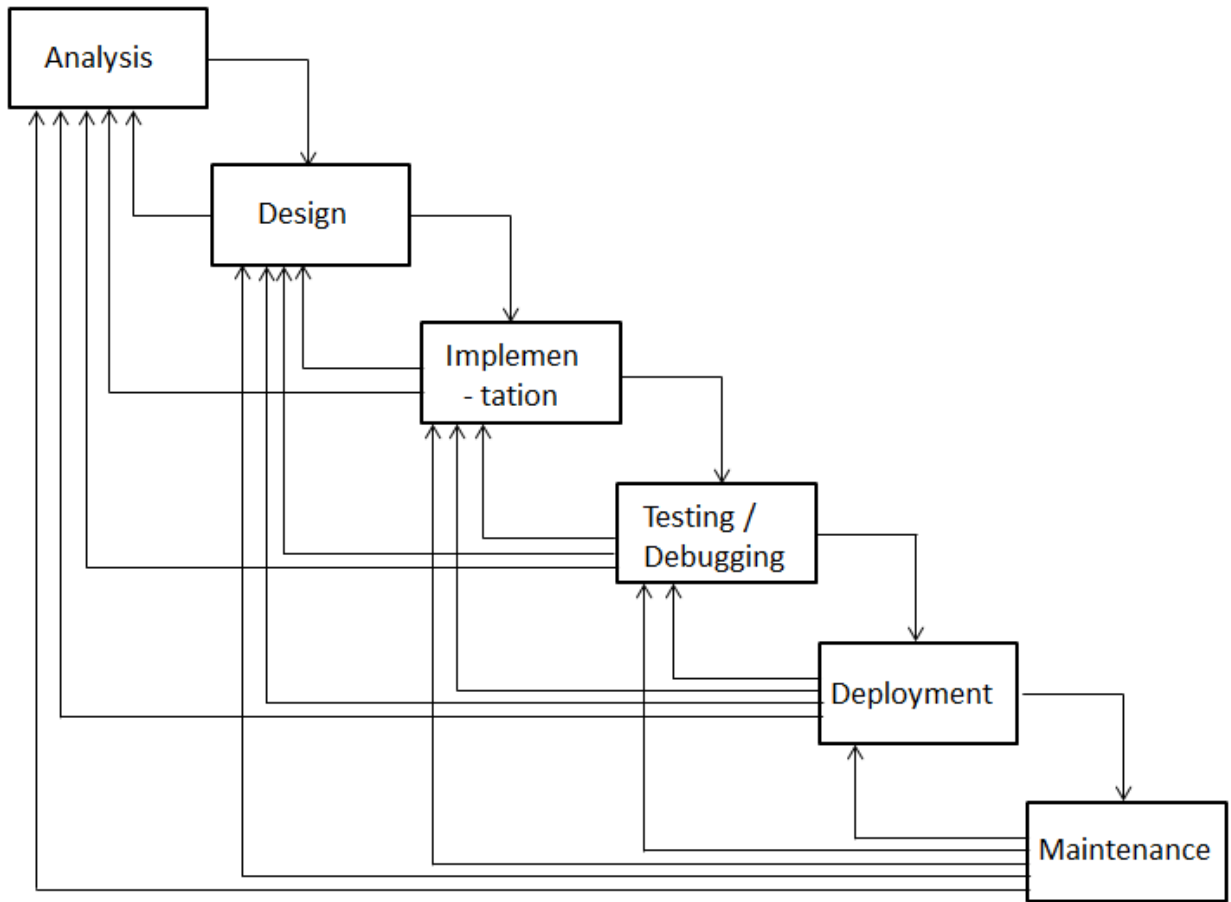


Figure 1: Waterfall model.