

SOFTWARE QUALITY

Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free.

The purpose of software testing is to identify errors, gaps or missing requirements in contrast to actual requirements.

Testing is important because software bugs could be expensive or even dangerous. Software bugs can potentially cause monetary and human loss, and history is full of such examples.

Benefits of software testing are:

- Cost-Effective
- Security
- Product quality
- Customer Satisfaction

Principles of Software Testing

It is important that you achieve optimum test results while conducting software testing without deviating from the goal. But how you determine that you are following the right strategy for testing? For that, you need to stick to some basic testing principles.

7 Principles of Software Testing:

- Exhaustive testing is not possible
- Defect Clustering
- Pesticide Paradox
- Testing shows presence of defects
- Absence of Error - Fallacy
- Early testing
- Testing is content dependent

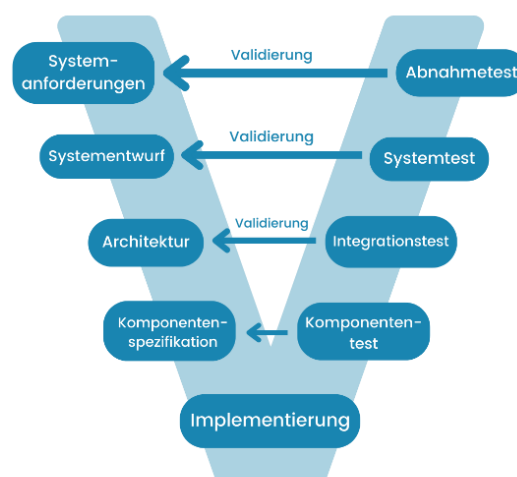
Types of software Testing:



The **V-Model** is a process model in software development. Similar to the waterfall model, it organizes the software development process in stages. In addition to these development stages, the V-Model also defines the procedure for quality assurance by contrasting the individual development stages with test stages.

The left side of the model is the Software Development Life Cycle – SDLC. SDLC is the sequence of phases performed by developers to design and develop high quality software.

The right side of the model is the Software Test Life Cycle - STLC. STLC is the life cycle of software testing. It consists of a series of stages methodically performed by developers to test their software.



Unit testing, also called module testing or component testing, is a software development process in which the smallest testable parts or units of an application are examined, individually and independently, to determine whether they are operating properly. The main goal of unit testing is to isolate the code that is being tested and determine whether it works as intended. Unit tests are an important step in the development process because, if done correctly, they can help uncover bugs in the code early on that may be harder to find in later stages of testing. In practice, a unit test is carried out by the developers themselves. The main advantage of internal testing is that individual components can be tested at an early stage or parallel to development. In addition, the correctness of the code to be tested can also be determined automatically. The unit tests can therefore be carried out continuously and ensure the runnability and quality at each iteration. However, the prerequisite for conducting a meaningful unit test is the actual isolation of the components that are being tested. Communication with other systems and interactions with other software should be excluded in order to be able to really look at a unit on its own.

Integration Testing is defined as a type of testing where software modules are integrated logically and tested as a group. A typical software project consists of multiple software modules, coded by different programmers. This testing level aims to expose defects in the interaction between these software modules when they are integrated.

System Testing is a level of testing that validates the complete and fully integrated software product. The purpose of a system test is to evaluate the end-to-end system specifications. Usually, the software is only one element of a larger computer-based system. Ultimately, the software is interfaced with other software/hardware systems. System Testing is defined as a series of different tests whose sole purpose is to exercise the full computer-based system.

User Acceptance Testing (UAT) is a type of testing performed by the end-user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final testing phase after functional, integration, and system testing are done.