**What is software testing?**

It is a process. Satisfy the specified requirement.

It can also be stated as the **process of**[**validating**](http://istqbexamcertification.com/what-is-validation-in-software-testing-or-what-is-software-validation/)**and**[**verifying**](http://istqbexamcertification.com/what-is-verification-in-software-testing-or-what-is-software-verification/)that a software program or application or product:

Software testing is an activity to check whether the actual results match the expected results and to ensure that the software system is[Defect](https://www.guru99.com/the-unconventional-guide-to-defect-management.html)free.

Testing the product against the requirement document(SRS,BRD)

( directly we can not go for testing. We need to plan something. Need make strategies. you find defect give it to developer. Fix it..Retest it.)

Verification:- Are we building the product right?(how it is done?)

* + - As per the requirement ,it is working fine or not.
    - It will perform by developer.
    - Whitebox testing

Validation:- Are we building the right product?(what is done?)

* As per the requirement, It is working fine or not along with that he will try to check some user actions.(Navigation,links,positive,negative scenarios).
* It will be done by tester.
* Blackbox testing

**Why we need to do testing?**

To deliver of higher quality software product

Undetected errors are costly to detect at a later stage.

**Bug- A bug is the result of a coding error**

**Defect- A defect is a deviation from the requirements**

**Bugs** are usually found either during unit testing done by developer of module testing by testers. A **defect** is found when the application does not conform to the requirement specification. A **defect** can also be found when the client or user is testing.

**Error:-**indicates serious problems that a reasonable application should not try to catch

**Exception-**indicates conditions that a reasonable application might want to catch.

**What is manual testing?**

[Manual Testing](https://www.guru99.com/manual-testing.html) is a type of Software Testing where Testers manually execute test cases without using any automation tools.

[Manual Testing](https://www.guru99.com/manual-testing.html) is the most primitive of all testing types and helps find bugs in the software system.

 Any new application must be manually tested before its testing can be automated. Manual testing requires more effort,

**100% Automation is not possible**

**Types of Software Testing**

Typically Testing is classified into three categories.

1. Functional Testing

Unit,Smoke, integration, UAT ( User Acceptance Testing)

* [Unit Testing](https://www.guru99.com/unit-testing-guide.html):- testing performed on each module or block of code during development. [Unit Testing](https://www.guru99.com/unit-testing-guide.html) is normally done by the programmer who writes the code.(dev will perform)
* [Integration Testing](https://www.guru99.com/integration-testing.html):-In [Integration Testing](https://www.guru99.com/integration-testing.html), individual software modules are integrated logically and tested as a group.

(qa/dev- white/black/gray)

A typical software project consists of multiple software modules, coded by different programmers.

A Module in general is designed by an individual software developer whose understanding and programming logic may differ from other programmers. Integration testing becomes necessary to verify the software modules work in unity

**Eg.**  loginUI,SignupUI, LoginAPI(business logic), signupApi(businesslogic), combine these and test login page all together.

Try to combine individual units and test the interaction between the individual units is working fine.

**Approaches/Methodologies/Strategies of Integration Testing:**

The Software Industry uses variety of strategies to execute Integration testing , viz.

* **Big Bang Approach** : Here all component are integrated together at **once**, and then tested.
* Incremental Approach: which is further divided into following

In this approach, testing is done by joining two or more modules that are **logically related**. Then the other related modules are added and tested for the proper functioning. Process continues until all of the modules are joined and tested successfully.

**Top Down Approach:-** testing takes place from top to down following the control flow of the software system.

**Bottom Up Approach:-** In the bottom up strategy, each module at lower levels is tested with higher modules until all modules are tested.

**Smoke Testing:-**

[Smoke Testing](https://www.guru99.com/smoke-testing.html) is a kind of Software Testing performed after software build to ascertain that the critical functionalities of the program is working fine. It is executed "before" any detailed functional or regression tests

Smoke testing is like General Health Check Up

For Example a typical smoke test would be - Verify that the application launches successfully, Check that the GUI is responsive

**Sanity testing:-** Sanity Testing is done to check the new functionality / bugs have been fixed

Sanity Testing is like specialized health check up

**UAT:-**After the system test has corrected all or most defects, the system will be delivered to the user or customer for **Acceptance Testing** or **User Acceptance Testing (UAT)**.

UAT has two types of testing:-

**Alpha testing:-**This **test takes place at the developer’s site**. Developers observe the users and note problems.

**Beta tesing:-Beta Testing** is also known as field testing. It takes place at **customer’s site**. It sends the system/software to users who install it and use it under real-world working conditions.

1. **Non-Functional Testing**

Performance, Load, Volume, Scalability,Usability

**Usability Testing -** [Usability Testing](https://www.guru99.com/usability-testing-tutorial.html) mainly focuses on the user's ease to use the application, flexibility in handling controls and ability of the system to meet its objectives

**Performance testing🡪** Load,Stress,Volume

Performance testing🡪Concurrent users to application

**What do we analyze in performance testing?**

**Response time-** time to get total response

**Latency-** time taken to get the first byte of information

**Throughput-** no of requests server per unit time

Response time, Latency should be less throughput should be more.

**Stress-** try to find the break point for application

**Volume-** testing with more volume of data in database

Load Runner, Jmeter, silk performance

**Scalability testing:-**It is non functional testing. Testing the ability of a system, a network, or a process to continue to function well when it is changed in size or volume in order to meet a growing need

Example: An ecommerce site may be able to handle orders for up to 100 users at a time but scalability testing can be performed to check if it will be able to handle higher loads during peak shopping seasons.

**Load testing:-** type of [**non-functional testing**](http://istqbexamcertification.com/what-is-non-functional-testing-testing-of-software-product-characteristics/).A load test is type of [**software testing**](http://istqbexamcertification.com/what-is-a-software-testing/) which is conducted to understand the behavior of the application under a specific expected load.Load testing is performed to determine a system’s behavior under both normal and at peak conditions.

Eg. Multiple file downloading, assigning more file to printer.

**Stress testing:-**It is a type of [**non-functional testing**](http://istqbexamcertification.com/what-is-non-functional-testing-testing-of-software-product-characteristics/).It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results.

[**Volume Testing**](http://istqbexamcertification.com/what-is-volume-testing-in-software/) = Large amounts of data  
[**Load Testing**](http://istqbexamcertification.com/what-is-load-testing-in-software/) = Large amount of users  
[**Stress Testing**](http://istqbexamcertification.com/what-is-stress-testing-in-software/) = Too many users, too much data, too little time and too little room

1. **Maintenance (Regression and Maintenance)**

**Regression Testing:-** After the defect fix or enhancement or defect fix did not break the existing things. (mostly

**Retesting:-** Test the defect that is properly fixed to make sure if it is properly fixed..

**System Testing:-**

[System Testing](https://www.guru99.com/system-testing.html) is the testing of a complete and fully integrated software product.

**Phases:-**

Dev-in development phase(unit testing)

Sit- system integration phase(system configuration testing,, functionalities testing)

UAT- user acceptance phase(user point of you)

Prod- live (production)

**WHITEBOX TESTING:-**

Testing the functionality by knowing the design and code details.

In whitebox testing we write code to test the code.

Generally developer will do it🡪 unit testing

**Black box testing:-**

Testing the functionality by not knowing the code details.

Done by QA

**What is test case?**

**Test cases:-** can be written in excel in excel/word/rally/jira

A Test Case is a document that describes step by step process how to test the application. A Test Case includes Test Case ID, Steps Description, Expected Output, Actual Output, Pass/Fail, Remarks.