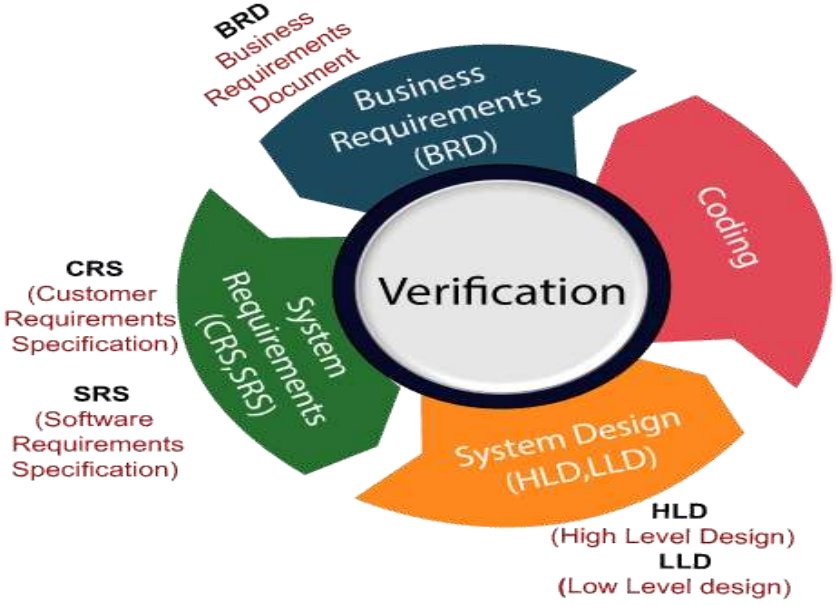
Verification and Validation

Note: **Verification is followed by Validation.**

Verification: Verification is software testing is the process of checking the documentation, user manual, codes, design and flow of the program in order to check whether the software meet the requirement of the customers or users. Main goal of verification of software is to ensure the architecture and design of the software is up to the mark.

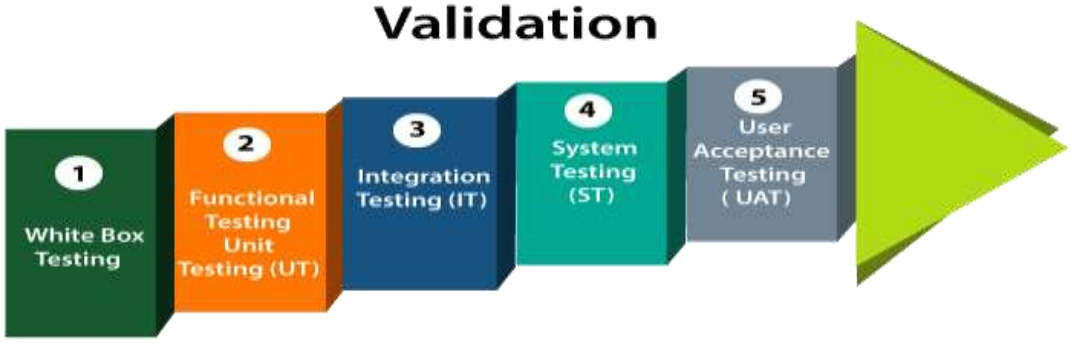


Validation: validation in software testing is the process of fixing the bugs and errors in different environment. And also make the software high level so that the product we develop is works for all the platforms.

Validation ensures that we develop the right product. Before deliver the product we need to run or dragonised the entire code manually.

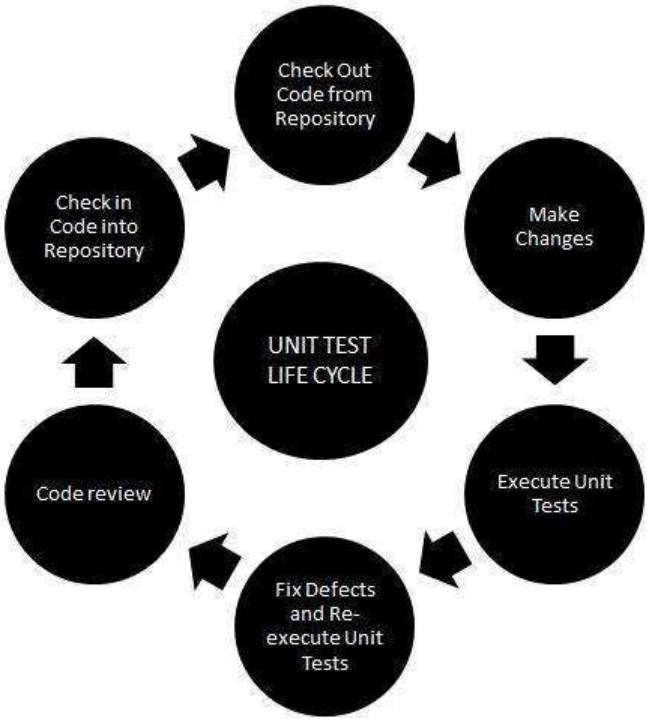
Validation process includes different dynamic testing such as:--

1. Unit testing(UT) (White box and black box testing)
2. Integration testing(IT)
3. System testing(ST)
4. User acceptance testing(UTA) (Alpha and Beta Testing)



Unit Testing

Unit testing in software testing is the process of testing a unit, a module or a individual component of the software is testing by the programmer. Unit testing basically done by the developer during the development phase or coding phase of the software. Unit testing is the first level of testing before the integration testing.



Unit testing include three type of testing:--

1. White Box Testing
2. Black Box Testing
3. Gray Box testing

Black Box testing mainly focus on input/output of the software. Black box testing is done without having knowledge of internal code structure of the software. Design and implementation of the software. First requirement and specification of the software are examine and after that some valid and invalid input are pass to the software and examine the output.

White box testing mainly focus on internal code structure, flow of the program and architecture of the software. It is also known as glass box and clear box testing. This validation testing basically test internal workflow of the software.

Integration Testing

In integration testing individuals modules or components of software are combining or integrated and tested as a group. This test gives the performance, connection, communication, relation and reliability between the modules that are integrated.

There are several integration testing such as:--

1. Big- Bang integration Testing
2. Top down integration testing
3. Bottom up integration testing
4. Hybrid or sandwich integration testing

In Big –Bang integration testing all the modules are combine and tested at the same time consider as a one unit

In Top down integration testing first of all higher level modules are tested first then the lower level modules

In bottom up integration testing is done from bottom first of all lower level modules are tested then higher level modules.

In hybrid or sandwich integration testing lower level modules are tested with higher level modules at the same time and again higher level modules are tested with lower level modules at the same time

System testing

System testing is the complete integrated system testing. In this system the software is connected with the hardware or other software and test is done. In this testing entire system is consider as a one and test is conducted.

User acceptance testing

User acceptance testing is usually done by the client or users or the end users before release the software to product environment. It is called **beta version** of the software.

Two major UAT testing are:--

1. Alpha Testing
2. Beta Testing

Alpha Testing is a type of acceptance testing; performed to identify all possible issues and bugs before releasing the final product to the end users. Alpha testing is carried out by the testers who are internal employees of the organization. The main goal is to identify the tasks that a typical user might perform and test them.

Beta Testing is performed by "real users" of the software application in "real environment" and it can be considered as a form of external User Acceptance Testing. It is the final test before shipping a product to the customers. Direct feedback from customers is a major advantage of Beta Testing. This testing helps to test products in customer's environment.

Beta version of the software is released to a limited number of end-users of the product to obtain feedback on the product quality.