Software testing

Software testing is used to finding the bug in the developed software and existing software.

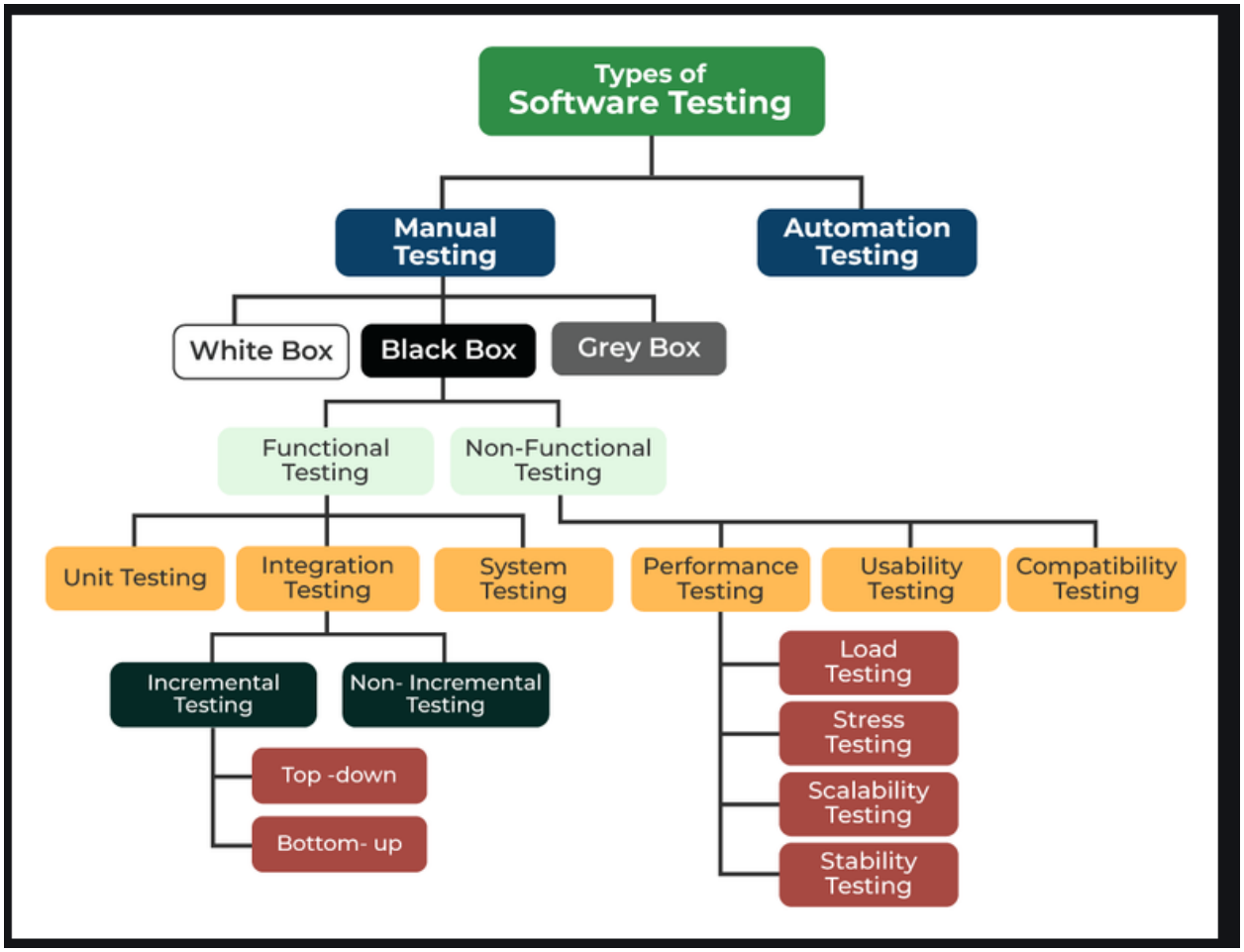
software development lifecycle:

- Planning stage
- analysis stage
- design stage
- development stage
- testing stage
- integration stage
- maintenance stage

Principle of Testing

- detection of bugs
- effectiveness testing
- early testing
- defect in clustering
- testing in context dependent
- error free testing is a myth
- 100% quality

Types of Software testing-



1-Functional testing-

1) Unit Testing:

done on an individual unit or component to test its corrections.
phase of operation: application development phase

Advantages: Find errors at unit level

a) White Box Testing:

White box testing is a form of application testing that provides the tester with complete knowledge of the application being tested, including access to source code and design documents.

Advantages: in-depth visibility identify issues invisible to gray and black box testing

b) Gorilla Testing:

Gorilla testing is a test technique in which the tester and/or developer test the module of the application thoroughly in all aspects.

Advantages: checks robustness of application

2) Integration Testing:

It is a type of software testing where two or more modules of an Application are logically grouped together and tested as a whole.
phase of operation: application development phase

Advantages: Test to find defect on interface,communication and flow among modules.

Approaches:

→ top down: testing is performed 1st on top module then lower modules

→ bottom up: the lower level modules are tested first after lower level modules the higher level modules are tested

a) Gray box testing:

Testers have partial knowledge of the internal structure or code of An application

advantages: combination of black and white box testing

3) System Testing:

System testing is types of testing where tester evaluates the whole System against the specified requirements.

a) End to End Testing:

Testing whole application environment that mimics real world use.

Advantages: interacting with a database, using network
communications, or interacting with other hardware, applications, or systems

b) Black Box Testing:

software testing done without knowing the internal structure,design
or code of a system under test. focus on input and output

c) Smoke Testing:

All basic and critical functionality is checked under test to see if it works
On very high level.

Advantage: major bugs are removed

d) Sanity Testing:

Test to check new functionality working properly subset of regression
Test

e) Happy path Testing:

Test an app on a positive flow

f) Monkey Testing:

assuming that an app is used by a monkey inputs are put and the app is
Checked

4) Acceptance Testing:

test in real business problems
phase of operation: last phase before product is deployed to production
also called UAT (user accepted testing)

a) Alpha Testing:

find as many defects as possible

b) Beta Testing:

test conducted by clients/customer

Advantages: ensures no big issue

c) Operational acceptance testing (OAT):

The purpose of operational acceptance testing is to make sure that the system administrators can keep the system working properly for the users in a real-time environment.

The focus of the OAT is on the following points:

- Testing of backup and restore.
- Installing, uninstalling, upgrading software.
- The recovery process in case of natural disaster.
- User management.
- Maintenance of the software.

Non Functional Testing

1)Performance Testing

Performance testing is testing of an application's stability and response time by applying load.

a) Load testing

Load testing is testing of an application's stability and response time by applying load, which is equal to or less than the designed number of users for an application.

b) Stress Testing

Stress testing is testing an application's stability and response time by applying load, which is more than the designed number of users for an Application.

c) Scalability Testing

Scalability testing is testing an application's stability and response time by applying load, which is more than the designed number of users for an application.

d) Volume testing (flood testing)

Volume testing is testing an application's stability and response time by

transferring a large volume of data to the database. Basically, it tests the capacity of the database to handle the data.

e) Endurance Testing (Soak Testing)

Endurance testing is testing an application's stability and response time by applying load continuously for a longer period to verify that the application is working fine.

2)Usability Testing

Usability testing is testing an application from the user's perspective to check the look and feel and user-friendliness.

a) Exploratory testing

Exploratory Testing is informal testing performed by the testing team. The objective of this testing is to explore the application and look for defects that exist in the application.

b) Cross browser testing

Cross browser testing is testing an application on different browsers, operating systems, mobile devices to see look and feel and Performance.

c) Accessibility Testing

The aim of Accessibility Testing is to determine whether the software or application is accessible for disabled people or not.

3) Compatibility testing

This is a testing type in which it validates how software behaves and runs in a different environment, web servers, hardware, and network environment.

Compatibility testing ensures that software can run on different configuration, different databases, different browsers, and their versions.

Localization testing-

It is a technique to verify software behaviour ,accuracy,and suitabuilty for specific location and regions.

Regression Testing-

It is a type of software testing that verifies that changes made to the system,such as bug fix,new features do not impact previously defining Functionality.

● It involves re-executing test cases to check if the previous functionality of the application is still working fine and if the new changes have introduced any bugs.

● Regression testing is typically performed on a new build when there are significant changes in the original functionality.

● The goal of regression testing is to verify that the code still works even with changes occurring.

● Regression tests are also known as verification tests and are often automated to save time and resources.

● Regression testing can be performed in various scenarios, including when new functionality is added, when there is a change in requirements, when defects are fixed, when performance issues are resolved, and when there are environment changes.

● There are different techniques for performing regression testing, including re-testing all test cases, selecting a subset of test cases for execution, and prioritizing test cases based on business Impact.

● Regression testing can be time-consuming and complex, and it requires effective communication about the importance of maintaining existing functionality.

● The regression testing process can be performed across different builds and releases of a software product.

● Unit Regression Testing (URT) focuses on testing only the changed unit or component.

● Regional Regression Testing (RRT) involves testing the modification along with the impact areas or regions that may be affected by the changes.

● Full or Complete Regression Testing (FRT) involves retesting all

the test cases in the entire test suite.

● Regression testing helps identify any unintended side effects or issues introduced by code changes and ensures the stability of the Software.

● Regression testing is an important part of the QA process and helps maintain the quality and reliability of software products.
● There are various challenges associated with regression testing, including time consumption, identifying the impact area, handling a large number of test cases, resource limitations, accuracy concerns, and the repetitive nature of the task.