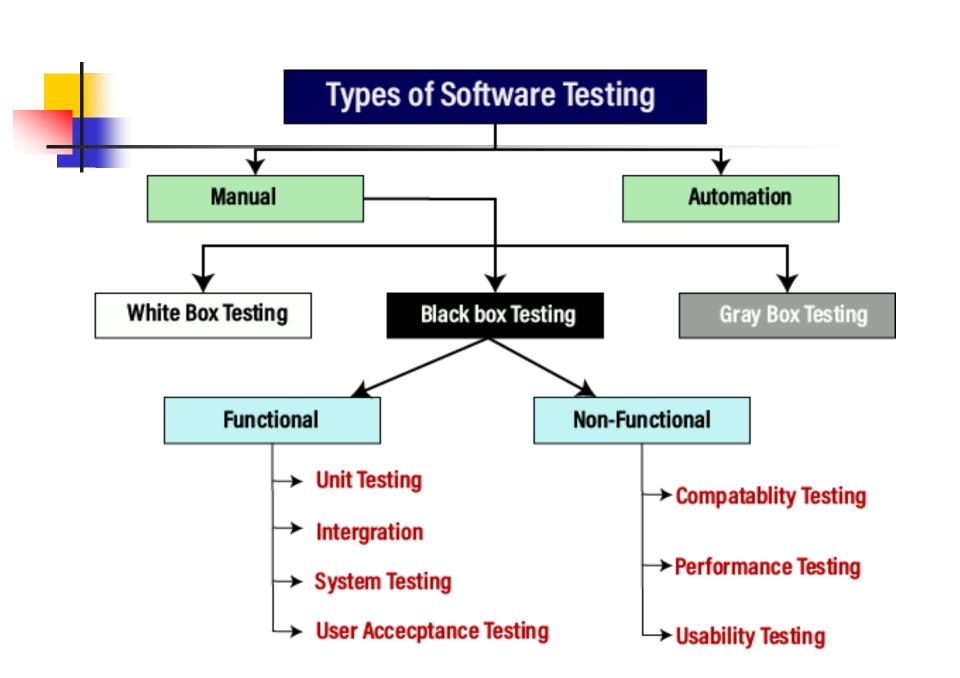# Software Testing

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Agenda

- What is Software Testing
- Types of Testing
- Methods Of Testing

- **Software Testing**

  Software testing is a technique to check whether the actual result matches the expected result and to ensure that the software has not any defect or bug.

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

Types of Software Testing

- **Manual**
- **Automation**

Manual:
- White Box Testing
- Black box Testing
- Gray Box Testing

Black box Testing:
- Functional
- Non-Functional

Functional
- Unit Testing
- Intergration
- System Testing
- User Accecptance Testing

Non-Functional
- Compatablity Testing
- Performance Testing
- Usability Testing

What is Manual And Automation Testing
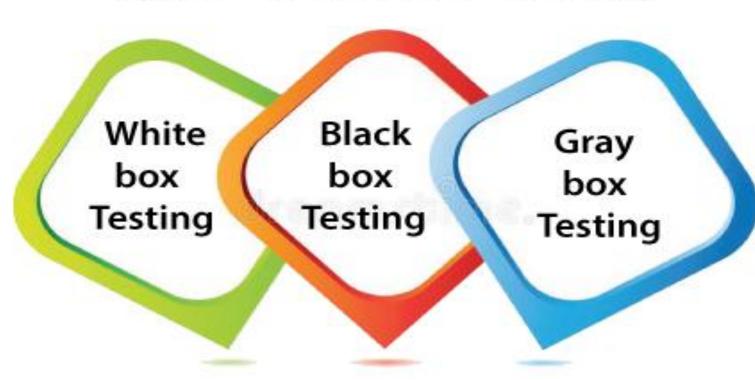
- **Manual testing**

    The process of checking the functionality of an application as per the customer needs without taking any help of automation tools is known as manual testing.

- **Automation testing**

    Automation testing is a process of converting any manual test cases into the test scripts with the help of automation tools, or any programming language is known as automation testing.

Types of Manual Testing

White box Testing

Black box Testing

Gray box Testing

Functional Testing

- Unit Testing (White Box)
- Integration Testing
- Function Testing (Black Box)
- Regression Testing
- System Test

Unit Testing (White Box)

- It is the first level of functional testing.
- Individual components are tested.
- It is a path test.
- To focus on a relatively small segment of code and aim to exercise a high percentage of the internal path

- Disadvantage: the tester may be biased by previous experience. And the test value may not cover all possible values.

Integration Testing

- It is the second level of the software testing process comes after unit testing.

- units or individual components of the software are tested in a group.

- To expose defects at the time of interaction between integrated components or units.

- Unit Testing uses modules for testing purpose, and these modules are combined and tested in integration testing.
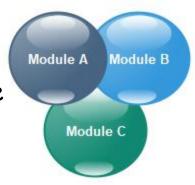
Tested in Unit Testing

Under Integration Testing

Once all the components or modules are working independently, then we need to check the data flow between the dependent modules is known as **integration testing**.

▪Example of a banking application:

First, we will login as a user **P** to amount transfer and send Rs200 amount, the confirmation message should be displayed on the screen as **amount transfer successfully**. Now logout as P and login as user **Q** and go to amount balance page and check for a balance in that account = Present balance + Received Balance. Therefore, the integration test is successful.
Also, we check if the amount of balance has reduced by Rs200 in P user account.

Function Testing (Black Box)

- Used to verify the functionality of the software application Testers not biased by knowledge of the program's design.

- It also called as black-box testing.

- Each function tested by giving the value, determining the output, and verifying the actual output with the expected value.

Regression Testing

- Test the effects of the newly introduced changes on all the previously integrated code.

- Test cases are re-executed to check the previous functionality of the application is working fine, and the new changes have not produced any bugs.

- It can be performed on a new build when there is a significant change in the original functionality.

- Regression means Re-test those parts of the application, which are unchanged.

A Comparison of Testing Methods

Black-Box Testing

- The internal workings of an application need not be known.
- Also known as closed-box testing, data-driven testing, or functional testing
- Performed by end-users and also by testers and developers.
- Testing is based on external expectations - Internal behavior of the application is unknown.
- It is exhaustive and the least time-consuming.
- This can only be done by trial-and-error method.

White-Box Testing

- Tester has full knowledge of the internal workings of the application.
- Also known as clear-box testing, structural testing, or code-based testing.
- Normally done by testers and developers.
- Internal workings are fully known and the tester can design test data accordingly.
- The most exhaustive and time-consuming type of testing.
- Data domains and internal boundaries can be better tested.

References

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THANKS