Welcome to the Class

Department of Computing and Information System

What is Testing

Testing is a **group of techniques to determine** the **correctness** of the application under the predefined script but, testing **cannot find all the defect of application**. The main intent of testing is **to detect failures of the application** so that failures can be discovered and corrected. It does not demonstrate that a product functions properly under all conditions but only that it is not working in some specific conditions.

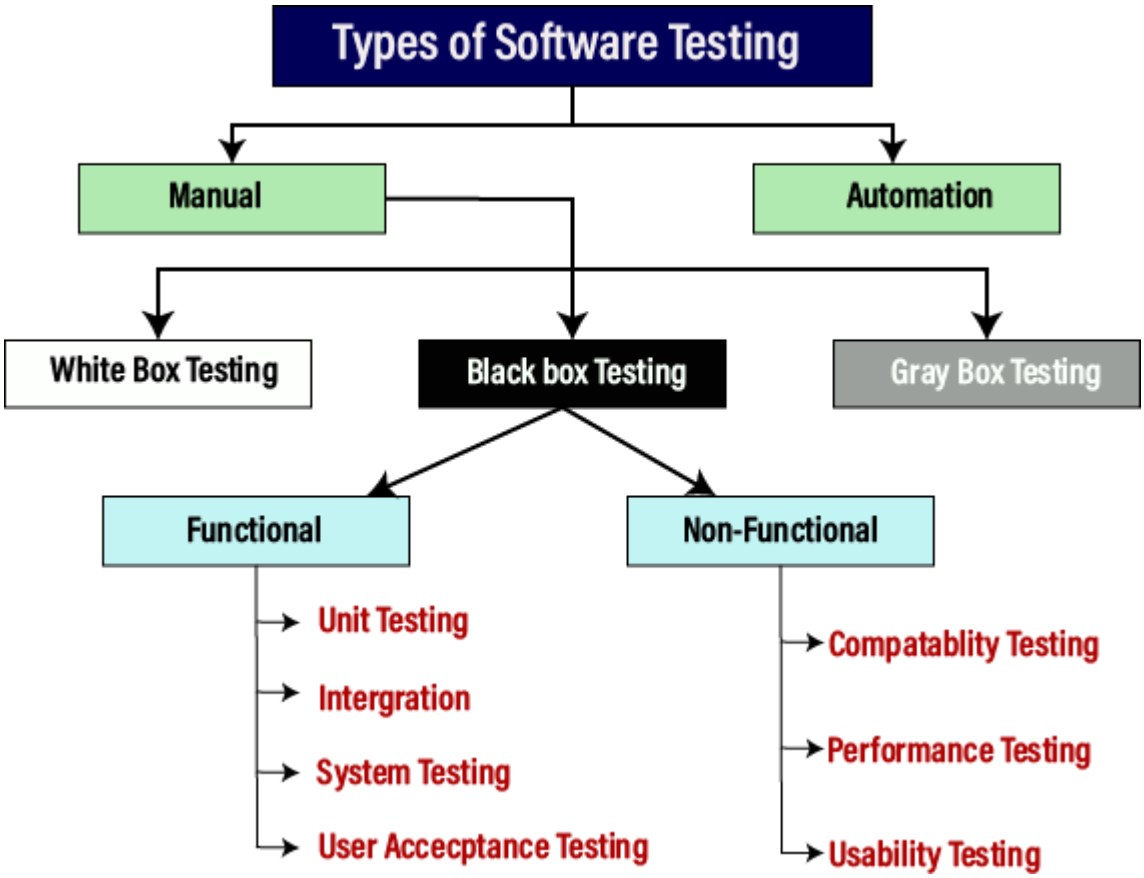
Testing includes **an examination** of code and also the **execution** of code in **various environments**, conditions as well as all the examining aspects of the code. In the current scenario of software development, a **testing team may be separate from the development team** so that Information derived from testing can be used to correct the process of software development.

Why Testing?

Type of Software testing

We have various types of testing available in the market, which are used to test the application or the software.

With the help of below image, we can easily understand the type of software 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. While performing the manual testing on any application, we **do not need any specific knowledge of any testing tool**, rather than have a **proper understanding of the product so we can easily prepare the test document.**

Manual testing can be further divided into three types of testing, which are as follows:

- **White box testing**
- **Black box testing**
- **Gray box 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. With the help of automation testing, **we can enhance the speed of our test execution** because here, we do not require any human efforts. **We need to write a test script and execute those scripts.**

Why we need manual testing

Whenever an application comes into the market, and it is unstable or having a bug or issues or creating a problem while end-users are using it.

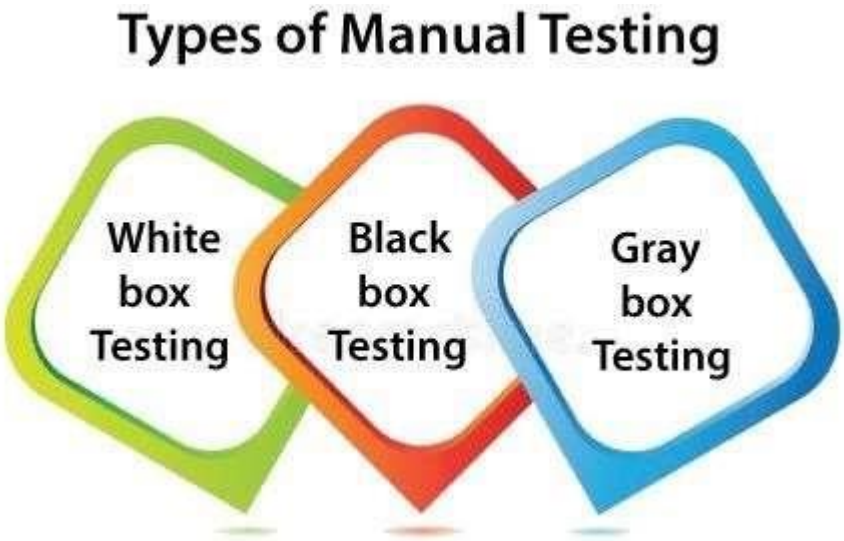
If we don't want to face these kinds of problems, we **need to perform one round of testing to make the application bug free** and stable and deliver a quality product to the client, because if the application is **bug free**, the end-**user will use the application more conveniently**.

If the test engineer does manual testing, **he/she can test the application as an end-user perspective** and get more familiar with the product, which **helps them to write the correct test cases of the application** and give the quick feedback of the application.

Types of Manual Testing

There are various methods used for manual testing. Each technique is used according to its testing criteria. Types of manual testing are given below:

- White Box Testing
- Black Box Testing
- Gray Box Testing



White Box Testing

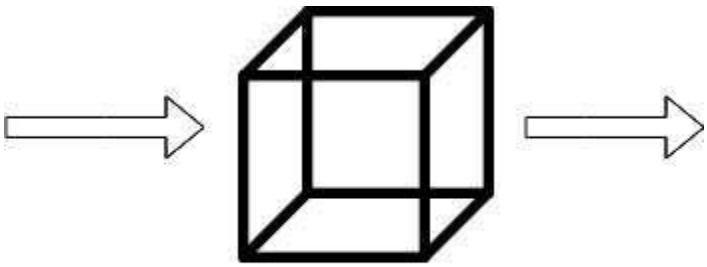
The box testing approach of software testing consists of black box testing and white box testing. We are discussing here white box testing which also known as glass box is **testing, structural testing, clear box testing, open box testing and transparent box testing**. It **tests internal coding and infrastructure** of a software focus on checking of predefined inputs against expected and desired outputs. It is based on inner workings of an application and revolves around internal structure testing. In this type of testing programming skills are required to design test cases. **The primary goal of white box testing is to focus on the flow of inputs and outputs through the software** and strengthening the security of the software.

The term 'white box' is used because of the internal perspective of the system. The clear box or white box or transparent box name denote the ability to see through the software's outer shell into its inner workings.

Developers do white box testing. In this, the developer will test every line of the code of the program. The developers perform the White-box testing and then send the application or the software to the testing team, where they will perform the black box testing and verify the application along with the requirements and identify the bugs and sends it to the developer.

The white box testing contains various tests, which are as follows:

- Path testing
- Loop testing
- Condition testing



Whitebox Testing

White box testing follows some working steps to make testing manageable and easy to understand what the next task to do. There are some basic steps to perform white box testing.

Generic steps of white box testing ○ **Design all test scenarios, test cases and prioritize them according to high priority number**.

- This step involves the study of code at runtime to examine the resource utilization, not accessed areas of the code, time taken by various methods and operations and so on.
- In this step testing of internal subroutines takes place. Internal subroutines such as nonpublic methods, interfaces are able to handle all types of data appropriately or not.
- This step focuses on testing of control statements like loops and conditional statements to check the efficiency and accuracy for different data inputs.
- In the last step white box testing includes security testing to check all possible security loopholes by looking at how the code handles security.

Thanks to All