

Aim:

- I. Develop test cases for the project using white box testing and Automated testing with Selenium Automated testing tool
- II. Testing by White Box technique

Theory:

1. Define Testing.

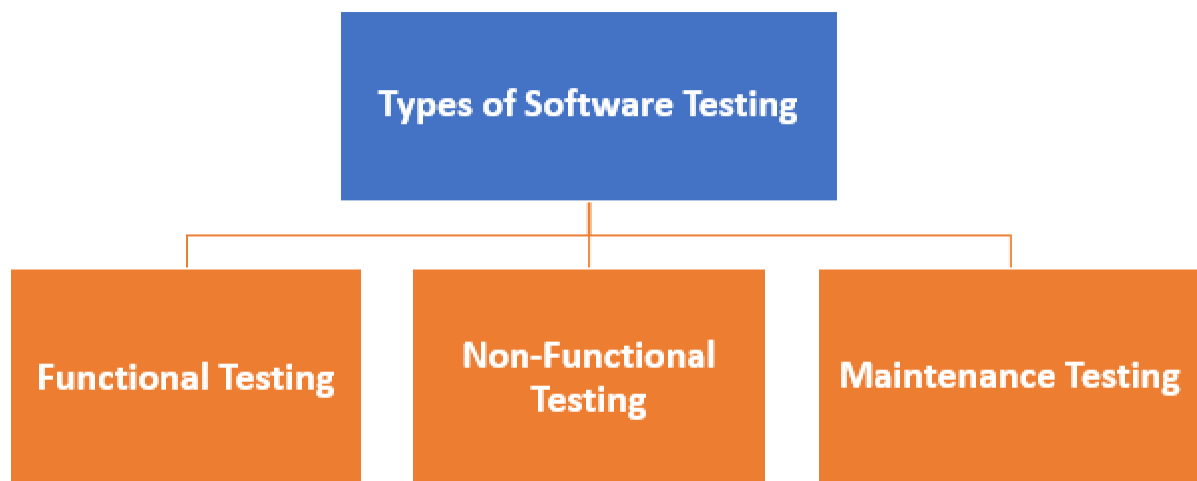
Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps or missing requirements in contrast to actual requirements.

Some prefer saying Software testing as a White Box and Black Box Testing. In simple terms, Software Testing means the Verification of Application Under Test (AUT). This tutorial introduces testing software to the audience and justifies its importance.

2. Types of testing techniques

Typically Testing is classified into three categories.

- Functional Testing
- Non-Functional Testing or [Performance Testing](#)
- Maintenance (Regression and Maintenance)



Testing Category	Types of Testing
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Functional Testing	Unit Testing Integration Testing Smoke UAT (User Acceptance Testing) Localization Globalization Interoperability So on
Non-Functional Testing	Performance Endurance Load Volume Scalability Usability So on
Maintenance	Regression Maintenance

3. Types of Testing Strategies:

Unit Testing: This software testing approach is followed by the programmer to test the unit of the program. It helps developers to know whether the individual unit of the code is working properly or not.

Integration testing: It focuses on the construction and design of the software. You need to see that the integrated units are working without errors or not.

System testing: In this method, your software is compiled as a whole and then tested as a whole. This testing strategy checks the functionality, security, portability, amongst others.

4. Compare white box and black box testing techniques

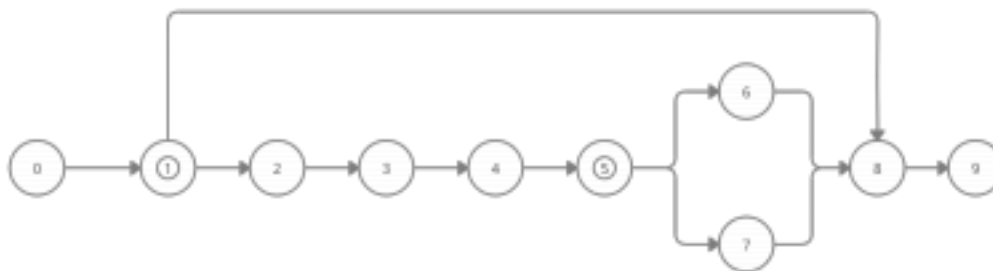
Black Box Testing	White Box Testing
It is a way of software testing in which the internal structure or the program or the code is hidden and nothing is known about it.	It is a way of testing the software in which the tester has knowledge about the internal structure or the code or the program of the software.
It is mostly done by software testers.	It is mostly done by software developers.
No knowledge of implementation is needed.	Knowledge of implementation is required.
It can be referred as outer or external software testing.	It is the inner or the internal software testing.
It is functional test of the software.	It is structural test of the software.
This testing can be initiated on the basis of requirement specifications document.	This type of testing of software is started after detail design document.
No knowledge of programming is required.	It is mandatory to have knowledge of programming.
It is the behavior testing of the software.	It is the logic testing of the software.
It is applicable to the higher levels of testing of software.	It is generally applicable to the lower levels of software testing.
It is also called closed testing.	It is also called as clear box testing.
It is least time consuming.	It is most time consuming.
It is not suitable or preferred for algorithm testing.	It is suitable for algorithm testing.
Can be done by trial and error ways and methods.	Data domains along with inner or internal boundaries can be better tested.
Example: search something on google by using keywords	Example: by input to check and verify loops
Types of Black Box Testing:	Types of White Box Testing:
<ul style="list-style-type: none">• A. Functional Testing• B. Non-functional testing• C. Regression Testing	<ul style="list-style-type: none">• A. Path Testing• B. Loop Testing• C. Condition testing

5. Apply white box to any of the project modules.

Basis path testing & Compute the Cyclomatic Complexity

Code:

```
Login()
If loginIsSucessfull()
    Homepage
    Browse Properties page
    Print("Enter property id");
    If propertyIsAvailable()
        Print('Is Bookable');
    Else
        Print('Unavailable');
    End if
End if
Logout()
```



Cyclomatic Complexity:

$$V(G) = 2 + 1 = 3$$

Paths:

0-1-2-3-4-5-6-8-9

0-1-2-3-4-5-7-8-9

0-1-8-9

6. Define Test case? Give template of test case.

- (i) A test case is a set of actions executed to verify a particular feature or functionality of your software application.
- (ii) A test case contains test steps, test data, precondition, postcondition developed for specific test scenario to verify any requirement.

(iii) The test case includes specific variables or conditions, using which a testing engineer can compare expected and actual results to determine whether a software product is functioning as per the requirements of the customer.

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
TU01	Check Customer Login with valid Data	<ol style="list-style-type: none">1. Go to site_ http://demo.guru99.com2. Enter UserId3. Enter Password4. Click Submit	UserId = guru99 Password = pass99	User should Login into an application	As Expected	Pass
TU02		<ol style="list-style-type: none">5. Go to site_ http://demo.guru99.com6. Enter UserId7. Enter Password8. Click Submit	UserId = guru99 Password = pass99	User should not Login into an application	As Expected	Pass

Conclusion:

In this experiment we learnt about Testing and different techniques of testing i.e., White-Box Testing and Black-Box Testing. We also learnt about various types of testing strategies defined in software engineering literature. Then we compared the white box and black box testing techniques. Using all that we learnt, we developed test cases for our project and then we applied white box testing to check availability of property of our Real Estate Management System project. We found the basis path testing then computed the Cyclomatic Complexity and made a test case table for identified logical paths to be tested. Thus, we successfully completed this experiment.