

05/08/2020

PRACTICAL NO. 1

Aim: To study about the introduction to software testing.

Description: Introduction to software testing, Func & NonFunc Testing, Writing Test Case.

Q1] Define Software Testing?

It is defined as an activity to check whether the actual results match the expected results and to ensure that the software system is defect free. It's involves the execution of a software component or system components to evaluate one or more properties of interest. It's also helps to identify errors, gaps or missing requirements in contrary to the actual requirements and can either be done manually or using automated tools. Software testing is also called as white Box and Black Box. Testing There are ^{three} ~~two~~ types of software testing

- i) Functional Testing
- ii) Non-Functional Testing
- iii) Maintenance

Q2] Define Functional Testing?

It is a type of software testing that validates the software system against the functional requirements. The purpose of this testing is to test each function of software application. It's mainly involves black box testing and it is not concerned about the source code of application. The prime objectives of this testing is checking the functionalities of software system. It's mainly concentrates

on Mainline functions, Basic Usability, Accessibility, and Error Conditions.

- > Process of Functional Testing involves:
 - Understand the software engineering requirements
 - Identify test input (test data)
 - Compute the expected outcomes with selected test input values.
 - Execute test cases.
 - Comparison of actual and computed expected result.
- > Types of Functional Testing are:
 - Unit Testing
 - Smoke Testing
 - Sanity Testing
 - Integration Testing
 - White Box Testing
 - Black Box Testing
 - User Acceptance Testing
 - Regression Testing

(Q3) Non-Functional Testing?

Non-Functional Testing is defined as a type of software testing to check non-functional aspects of a software application. It is designed to test the readiness of a system by per non functional parameters which are never addressed by functional testing. An example of non-functional testing is to check how many people can simultaneously login into a software. It is equally important as functional testing and affect client satisfaction.

> Parameters of Non Functional Testing:

- 1) Security:- It's defines how system is safeguard against deliberate and sudden attacks from internal & external sources. Its tested via security testing.
- 2) Reliability:- It is an extent to which any software system continuously performs the specified functions without failure , and it is tested by Reliability Testing.
- 3) Survivability:- Its checks that the system continues to functions and recovers itself in case of system failure. This is checked by Recovery Testing.
- 4) Availability: It determine the degree to which user can depend on the system during its operation. It checked by stability testing.
- 5) Usability :- The user can learn, operate, prepare, input & outputs through interaction with a system. This checked by Usability Testing
- 6) Scalability : The degree in which any software application can expand its processing capacity to meet an increase in demand. This is tested by scalability testing.
- 7) Interoperability : It check a software system interface with other software system. Its checked by Interoperability Testing.
- 8) Efficiency: The extent to which any software system can handles capacity, quantity and response time.
- 9) Flexibility : Its refers to the ease with which the application can work in different hardware and software configuration.
- 10) Portability: The flexibility of software to transfer from its current hardware or software environment.
- 11) Reusability: The portion of software system that can be converted to use in another application.

- > Types of Non Functional Testing
- Performance Testing
 - Load Testing
 - Failover Testing
 - Compatibility Testing
 - Usability Testing
 - Stress Testing
 - Maintainability Testing
 - Security Testing
 - Recovery Testing

Q4) Define i) Test case

i) A test case is a set of actions encased to verify a particular feature or a functionality of your software application. A test case contains test steps, test data, precondition, post condition, development for specific test scenario to verify the requirement. It includes specific variables or conditions using which a testing engineer can compare expected and actual result to determine whether a software product is functioning as per the requirement of the consumer.

ii) Test Scenario.

i) A test scenario is defined as any functionality that can be tested. It is also called as test condition or test possibility. As a tester, you should put yourself in the end user's shoes and figure out the real world scenarios & use case of application under test.

Scenario Testing is a variant of software testing where scenarios are used for testing. It helps in an easier way of testing of the more complicated system.

(iii) Test Suite:-

A test suite is a container that has a set of tests which help testers in executing & reporting the test execution status. It can take any three states namely Active, Inprogress and completed. A test case can be added to multiple test suites and test plans. After creating test plan, test suites are created which in turn can have any number of tests. It contains any types of tests, viz functional or non-functional.

(iv) Manual Testing:-

Manual Testing is a type of software testing where testers manually execute test cases without using any automation tools. Manual testing is the most primitive of all testing types and help finding bug in the software system. Any new application can be manually tested before its testing can be automated; also it does not require any knowledge of testing tool. Black Box, White Box, Unit, System, Integration, Acceptance Testings are the types of Manual Testing.

Q6] Automation Testing Tools & Script:

a) It means using an automation tool to execute your test case suit. Manual testing is performed by human sitting in front of computer carefully executing test steps. The automation software can also enter test data into the system under test, compare expected and actual results & generate detailed test reports. It demands considerable investments of money and resources.

Testing Tools are largely depends on the technology the application under test is built on. There are tons of functional and regression testing tools available in the market. They are

- i) Ranorex Studio
- ii) Test Project
- iii) Selenium
- iv) SilkTest

Automation Script are executed during the phase where the script need to input test data before they are set to run. Once executed they provide detailed test report. It can be performed using the automation tool directly or through test management tool which invoke the automation tool.

Q7] Define Testing Framework and its types?

It is a set of guidelines or rules used for creating and designing test case. A framework is comprised of a combination of practice and tools that are designed to help QA professional test more efficiently.

Types of Testing Frameworks are:-

i) Modular Based Testing Framework

Its require tester to divide an application under test into two separate units, functions, or sections, each of which will be tested in isolation. After breaking down the application into two individual modules, a test script is created for each part and then combined to build larger test in a hierarchical fashion.

ii) Data Driven Framework

Its separate the test data from script logic. Its very frequently, tester find themselves in a situation where they need to test the same features or function of an application multiple times with different sets of data.

iii) Keyword Driven Framework

In this, each function of application under test is laid out in a table with series of instruction in consecutive order for each test that need to be run. In a similar fashion to data driven framework, the test data and script logic are separated in a keyword driven framework.

iv) Hybrid Test Automation Framework

Automated testing framework have started to become integrated and overlap with one another. It is a combination of any of the previously mentioned framework set up to leverage the advantages of some and mitigate the weakness of others. It can be more easily adapted to get the better test results.

a) Test Documents and its types?

It is a document of artifacts created before or during the testing of software. It helps the testing team to estimate testing effort needed, test coverage, resources tracking, execution progress etc. It is a complete suite of document that allows you to describe and document test planning, design, execution, results that are drawn from the testing activity.

- > Types of Test Documents
 - Test policy: It describes all the important testing goal of an organisation.
 - Test Strategy: High level documentation which identifies test levels.
 - Test Plan: Complete planning document which contains testing activities.
 - Requirement Traceability: Document which connects the requirement to the test case.
 - Test Scenario: Items or event which should be verified by one or more test cases.
 - Test Case: Groups of input values and execution process.
 - Test Data: Data which exist before test is executed.
 - Defect Report: defect report of any flaws in a system which fails to perform expected functions.
 - Test Summary: High level documentation which summarizes testing activities conducted as well as test results.

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Conclusion:

We have written the introduction related to software testing.