What is Functional Testing? Types & Examples (Complete Tutorial)

What is Functional Testing?

FUNCTIONAL TESTING is a type of software testing that validates the software system against the functional requirements/specifications. The purpose of Functional tests is to test each function of the software application, by providing appropriate input, verifying the output against the Functional requirements.

Functional testing mainly involves black box testing and it is not concerned about the source code of the application. This testing checks User Interface, APIs, Database, Security, Client/Server communication and other functionality of the Application Under Test. The testing can be done either manually or using automation.

What do you test in Functional Testing?

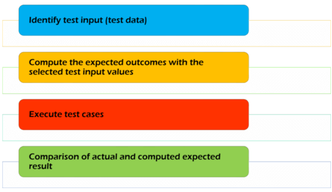
The prime objective of Functional testing is checking the functionalities of the software system. It mainly concentrates on -

- **Mainline functions**: Testing the main functions of an application
- **Basic Usability**: It involves basic usability testing of the system. It checks whether a user can freely navigate through the screens without any difficulties.
- **Accessibility**: Checks the accessibility of the system for the user
- **Error Conditions**: Usage of testing techniques to check for error conditions. It checks whether suitable error messages are displayed.

How to do Functional Testing

Following is a step by step process on **How to do Functional Testing** :

- Understand the Functional Requirements
- Identify test input or test data based on requirements
- Compute the expected outcomes with selected test input values
- Execute test cases
- Compare actual and computed expected results



Functional Vs Non-Functional Testing:

Functional Testing	Non-Functional Testing
Functional testing is performed using the functional specification provided by the client and verifies the system against the functional requirements.	Non-Functional testing checks the Performance, reliability, scalability and other non-functional aspects of the software system.
Functional testing is executed first	Non-functional testing should be performed after functional testing
Manual Testing or automation tools can be used for functional testing	Using tools will be effective for this testing
Business requirements are the inputs to functional testing	Performance parameters like speed, scalability are inputs to non-functional testing.
Functional testing describes what the product does	Nonfunctional testing describes how good the product works
Easy to do Manual Testing	Tough to do Manual Testing
Examples of Functional testing are • Unit Testing • Smoke Testing • Sanity Testing • Integration Testing • White box testing • Black Box testing • User Acceptance testing • Regression Testing	Examples of Non-functional testing are • Performance Testing • Load Testing • Volume Testing • Stress Testing • Security Testing • Installation Testing • Penetration Testing • Compatibility Testing • Migration Testing

Functional Testing Tools

Here is a list of popular **Functional Testing Tools.** They are explained as follows:

- Selenium - Popular Open Source Functional Testing Tool
- QTP - Very user-friendly Functional Test tool by HP
- JUnit- Used mainly for Java applications and this can be used in Unit and System Testing
- soapUI - This is an open source functional testing tool, mainly used for Web service testing. It supports multiple protocols such as HTTP, SOAP, and JDBC.
- Watir - This is a functional testing tool for web applications. It supports tests executed at the web browser and uses a ruby scripting language

Conclusion:

In Software Testing, Functional testing is a process of testing functionalities of the system and ensures that the system is working as per the functionalities specified in the business document. The goal of this testing is to check whether the system is functionally perfect!!!

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