

Software Testing

#04 - Testcase development



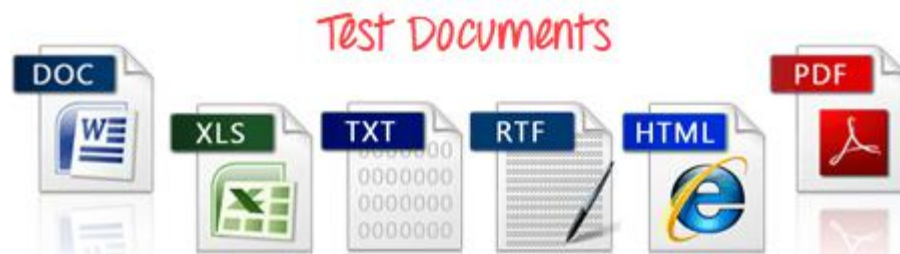
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Test Documentation

Test documentation is documentation of artifacts created before or during the testing of software. It helps the testing team to estimate testing effort needed, test coverage, resource tracking, execution progress, etc.

It is a complete suite of documents that allows you to describe and document test planning, test design, test execution, test results that are drawn from the testing activity.





Advantages of Test Documentation

- The main reason behind creating test documentation is to either reduce or remove any uncertainties about the testing activities. Helps you to remove ambiguity which often arises when it comes to the allocation of tasks
- Documentation not only offers a systematic approach to software testing, but it also acts as training material to freshers in the software testing process
- It is also a good marketing & sales strategy to showcase Test Documentation to exhibit a mature testing process
- Test documentation helps you to offer a quality product to the client within specific time limits
- In Software Engineering, Test Documentation also helps to configure or set-up the program through the configuration document and operator manuals
- Test documentation helps you to improve transparency with the client



Disadvantages of Test Documentation

- The cost of the documentation may surpass its value as it is very time-consuming
- Many times, it is written by people who can't write well or who don't know the material
- Keeping track of changes requested by the client and updating corresponding documents is tiring.
- Poor documentation directly reflects the quality of the product as a misunderstanding between the client and the organization can occur



Test Scenario

A Test Scenario is defined as any functionality that can be tested. It is also called Test Condition or Test Possibility.

Test Scenarios are created for the following reasons,

- Creating Test Scenarios ensures complete Test Coverage
- Test Scenarios can be approved by various stakeholders like Business Analyst, Developers, Customers to ensure the Application Under Test is thoroughly tested. It ensures that the software is working for the most common use cases.
- They serve as a quick tool to determine the testing work effort and accordingly create a proposal for the client or organize the workforce.
- They help determine the most important end-to-end transactions or the real use of the software applications.
- For studying the end-to-end functioning of the program, Test Scenario is critical.



How to Write Test Scenarios

- **Step 1:** Read the Requirement Documents like BRS (Business Requirement Specification), SRS (System Requirement Specifications), FRS (Functional Requirement Specification), of the System Under Test (SUT). You could also refer uses cases, books, manuals, etc. of the application to be tested.
- **Step 2:** For each requirement, figure out possible users actions and objectives. Determine the technical aspects of the requirement. Ascertain possible scenarios of system abuse and evaluate users with hacker's mindset.
- **Step 3:** After reading the Requirements Document and doing your due Analysis, list out different test scenarios that verify each feature of the software.
- **Step 4:** Once you have listed all possible Test Scenarios, a Traceability Matrix is created to verify that each & every requirement has a corresponding Test Scenario
- **Step 5:** The scenarios created are reviewed by your supervisor. Later, they are also reviewed by other Stakeholders in the project.



Test Scenario Example

Test Scenario 1: Check the Login Functionality



Sign in

Email (phone for mobile accounts)

Password

[Forgot your password?](#)

Sign in

☐ Keep me signed in. [Details](#) ▼

New to Amazon?

Create your Amazon account



Test Scenario Example

Specific test cases for this Test Scenario would be :

1. Check system behavior when valid email id and password is entered.
2. Check system behavior when invalid email id and valid password is entered.
3. Check system behavior when valid email id and invalid password is entered.
4. Check system behavior when invalid email id and invalid password is entered.
5. Check system behavior when email id and password are left blank and Sign in entered.
6. Check Forgot your password is working as expected
7. Check system behavior when valid/invalid phone number and password is entered.
8. Check system behavior when "Keep me signed" is checked



Test Scenario Example

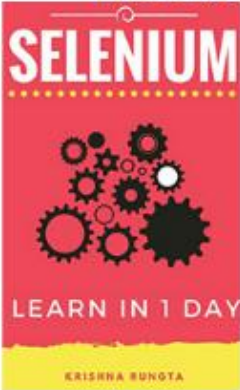
Test Scenario 2: Check the Search Functionality

All ▾

Q

Test Scenario 3: Check the Product Description Page

Look inside ↴



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Test Scenario Example

Test Scenario 4: Check the Payments Functionality

Test Scenario 5: Check the Order History

Test Scenario #	Requirement	Test Scenario Description	Test Cases
1	S1.1	Check the Login Functionality	1.Check system behavior when valid email id and password is entered. 2.Check system behavior when invalid email id and valid password is entered. 3.Check system behavior when valid email id and invalid password is entered. 4.Check system behavior when invalid email id and invalid password is entered. 5.Check system behavior when email id and password are left blank and Sign in entered. 6.Check Forgot your password is working as expected 7.Check system behavior when valid/invalid phone number and password is entered. 8.Check system behavior when "Keep me signed" is checked
2	S1.2	Check the Search Functionality	
3	S1.3	Check the Product Description Page	
4	S1.4	Check the Payments Functionality	
5	S1.5	Check the Order History	



Test Scenario Example: Test Case

Test Case ID	FT_001	Specification	Test the Login Functionality						
Created By	Ignatius	Reviewed By	Yodha						
Tester's Name	Ignatius	Date Tested	1-Jan-2019		Test Case (Pass/Fail/Not		Pass		
S #	Prerequisites:			S #	Test Data				
1	Access to Chrome Browser			1	Userid = mg12345				
2	System is already using https			2	Pass = df12@434c				
3				3					
4				4					
Test Scenario	Verify on entering valid userid and password, the customer can login								
Step #	Step Details	Expected Results	Actual Results			Pass / Fail / Not Run / Blocked			
1	Navigate to http://demo.example.com	Site should open	As Expected			Pass			
2	Enter Userid & Password	Credential can be entered	As Expected			Pass			
3	Click Submit	Cutomer is logged in	As Expected			Pass			



Test Data

Test data is actually the input given to a software program. It represents data that affects or is affected by the execution of the specific module. Some data may be used for **positive testing**, typically to verify that a given set of input to a given function produces an expected result. Other data may be used for **negative testing** to test the ability of the program to handle unusual, extreme, exceptional, or unexpected input.

Poorly designed testing data may not test all possible test scenarios which will hamper the quality of the software.



Test Data

Test Data can be Generated

- Manually
- Mass copy of data from production to testing environment
- Mass copy of test data from legacy client systems
- Automated Test Data Generation Tools



Test Data for Functionality Test

- **No data:** Check system response when no data is submitted
- **Valid data:** Check system response when Valid test data is submitted
- **Invalid data:** Check system response when InValid test data is submitted
- **Illegal data format:** Check system response when test data is in an invalid format
- **Boundary Condition Dataset:** Test data meeting boundary value conditions
- **Equivalence Partition Data Set:** Test data qualifying your equivalence partitions.
- **Decision Table Data Set:** Test data qualifying your decision table testing strategy
- **State Transition Test Data Set:** Test data meeting your state transition testing strategy
- **Use Case Test Data:** Test Data in-sync with your use cases.



Traceability Matrix

A Traceability Matrix is a document that co-relates any two-baseline documents that require a many-to-many relationship to check the completeness of the relationship.



Requirement Traceability Matrix

Requirement Traceability Matrix or RTM captures all requirements proposed by the client or software development team and their traceability in a single document delivered at the conclusion of the life-cycle.

In other words, it is a document that maps and traces user requirement with test cases. The main purpose of Requirement Traceability Matrix is to see that all test cases are covered so that no functionality should miss while doing Software testing.



Advantages of RTM

- Confirms 100% test coverage
- Highlights any requirements missing or document inconsistencies
- Shows the overall defects or execution status with a focus on business requirements
- Helps in analyzing or estimating the impact on the QA team's work with respect to revisiting or re-working on the test cases



Requirement Traceability Matrix

Req No	Req Desc	Testcase ID	Status
123	Login to the application	TC01,TC02,TC03	TC01-Pass TC02-Pass
345	Ticket Creation	TC04,TC05,TC06, TC07,TC08,TC09 TC010	TC04-Pass TC05-Pass TC06-Pass TC06-Fail TC07-No Run
456	Search Ticket	TC011,TC012, TC013,TC014	TC011-Pass TC012-Fail TC013-Pass TC014-No Run



Requirement Traceability Matrix

- BRS

BR#	Module Name	Applicable Roles	Description
B1	Login and Logout	Manager Customer	Customer: A customer can login using the login page Manager: A manager can login using the login page of customer. Post Login homepage will show different links based on role
B2	Balance Enquiry	Manager Customer	Customer: A customer can have multiple bank accounts. He can view balance of his accounts only Manager: A manager can view balance of all the customers who come under his supervision

- TRS

Login

T92 User-ID must not be blank

T93 Password must not be blank

T94 If userid and password are valid. Login



Requirement Traceability Matrix

- RTM

Traceability #	Business Requirement ID	Technical Requirement ID	Test Case ID	Status
a	B1	T94	1	Pass
b	B1	T95	2	Pass
c	B3	T96	3	Pass
b	B4	T97	4	



Exercise!

- Making an RTM from your BRS and TRS