Chapter 8

Software Testing and Techniques and Strategies

Testing Fundamentals:

As you can see below, these phases are:

1. Test Planning and Control
2. Test Analysis and Design
3. Test Implementation and Execution
4. Evaluating Exit Criteria and Reporting
5. Test Closure

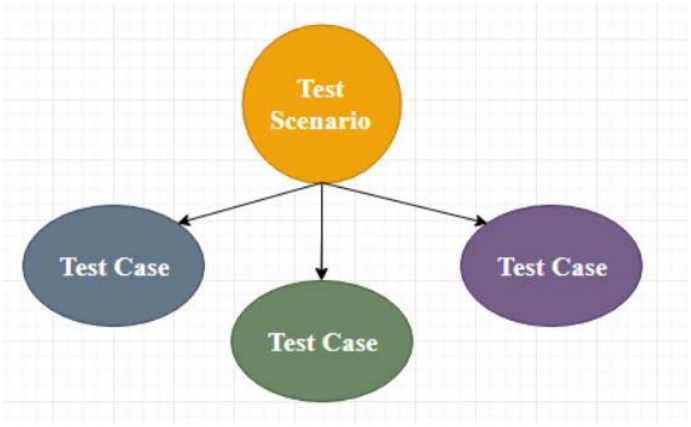
It is important to note that while these phases are sequential, they are also iterative in nature.

For example, during test execution, there may be a need to go back to test design to introduce more test cases or test data before the test execution process is resumed.

Alternatively, during exit criteria evaluation, it can be decided to execute some more tests before the application is considered fit for release. Hence, all phases interact and might transition from one to the other based on the needs of the project.

Test Case

The test case is defined as a group of conditions under which a tester determines whether a software application is working as per the customer's requirements or not. Test case designing includes preconditions, case name, input conditions, and expected result. A test case is a first level action and derived from test scenarios.



It is an in-details document that contains all possible inputs (positive as well as negative) and the navigation steps, which are used for the test execution process. Writing of test cases is a one-time attempt that can be used in the future at the time of regression testing.

When do we write a test case?

We will write the test case when we get the following:

- When the customer gives the business needs then, the developer starts developing and says that they need 3.5 months to build this product.
- And In the meantime, the testing team will **start writing the test cases**.
- Once it is done, it will send it to the Test Lead for the review process.
- And when the developers finish developing the product, it is handed over to the testing team.
- The test engineers never look at the requirement while testing the product document because testing is constant and does not depends on the mood of the person rather than the quality of the test engineer.

Why we write the test cases?

We will write the test for the following reasons:

- **To require consistency in the test case execution**
- **To make sure a better test coverage**
- **It depends on the process rather than on a person**
- **To avoid training for every new test engineer on the product**

To require consistency in the test case execution: we will see the test case and start testing the application.

To make sure a better test coverage: for this, we should cover all possible scenarios and document it, so that we need not remember all the scenarios again and again.

It depends on the process rather than on a person: A test engineer has tested an application during the first release, second release, and left the company at the time of third release. As the test engineer understood a module and tested the application thoroughly by deriving many values. If the person is not there for the third release, it becomes difficult for the new person. Hence all the derived values are documented so that it can be used in the future.

To avoid giving training for every new test engineer on the product: When the test engineer leaves, he/she leaves with a lot of knowledge and scenarios. Those scenarios should be documented so that the new test engineer can test with the given scenarios and also can write the new scenarios.

Test Case Design

Test case design refers to how you set-up your test cases. It is important that your tests are designed well, or you could fail to identify bugs and defects in your software during testing.

There are many different test case design techniques used to test the functionality and various features of your software. Designing good test cases ensure that every aspect of your software gets tested so that you can find and fix any issues.

A basic example of test case design:

Title: Login to the website or app
Description: User should be able to successfully log in to their account on the website/app
Preconditions: User must already be registered and use their correct login details
Assumptions: They are using a supported device or browser to log in
Test Steps:

1. Open website or app
2. Enter the username and password in the appropriate fields
3. Click “login”

Expected Result:	The user should log in successfully.