**What is a Test Case?**

A **TEST CASE** is a set of actions executed to verify a particular feature or functionality of your software application. A Test Case contains test steps, test data, precondition, postcondition developed for specific test scenario to verify any requirement. 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.

**Difference between Test Scenario Vs Test Case**

|  |  |
| --- | --- |
| **Test Case** | **Test Scenario** |
| Test case consist of test case name, Precondition, steps / input condition, expected result. | Test scenario consists of a detailed test procedure. We can also say that a test scenario has many test cases associated with it. Before executing the test scenario we need to think of test cases for each scenario. |
| Test cases are low level actions and it can be derived from test scenarios. | Test scenarios are the high level classification of test requirement grouped depending on the functionality of a module and it can be derived from use cases. |
| Test case is give detailed information about if any pre-condition, what to test, how to test and expected result etc. | Test scenario is one liner statement which tell us about what to test. |
| Test case means detailed documenting the cases which help executing while testing. | Test Scenario means talking and thinking requirements in detail. |
| Test cases are set of steps which performed on system to verify the expected output. | Test scenario is thread of operations. |
| Test cases are more importance in case where development is happening onsite and QA is happening Off shored. It will help to understand and make both developer and QA in sync. | Test scenarios are more important when time to write test cases is no sufficient and team members are agree with the detailed one liner scenario. |
| Writing test cases is one time effort which can be used in future while executing regression test case. While reporting defects it will help tester to link the defect with test case id. | In new software testing generation it is new idea and time saver activity. The addition and modification (easy maintainability) of test scenarios is easy and independent on specific person. |
| The detailed test case document is full proof guard for new software tester. If developer missed something then it is easy to catch while executing these full-proof test cases. | One of the most positive point about test scenario is good test scenarios reduces the complexity and repeatability of product. |
| It requires more time and resources due to detailed test case which talks about how to test and what to test. | If the test scenario not detailed enough then it might take some time to discussion and understand what test scenario is exactly talking about. |

**TEST CASE FORMAT**

**A picture containing calendar

Description automatically generated**

## Best Practice for writing good Test Case Example.

**1. Test Cases need to be simple and transparent:**

Create test cases that are as simple as possible. They must be clear and concise as the author of the test case may not execute them.

Use assertive language like go to the home page, enter data, click on this and so on. This makes the understanding the test steps easy and tests execution faster.

**2. Create Test Case with End User in Mind**

The ultimate goal of any software project is to create test cases that meet customer requirements and is easy to use and operate. A tester must create test cases keeping in mind the end user perspective

**3. Avoid test case repetition.**

Do not repeat test cases. If a test case is needed for executing some other test case, call the test case by its test case id in the pre-condition column

**4. Do not Assume**

Do not assume functionality and features of your software application while preparing test case. Stick to the Specification Documents.

**5. Ensure 100% Coverage**

Make sure you write test cases to check all software requirements mentioned in the specification document. Use Traceability Matrix to ensure no functions/conditions is left untested.

**6. Test Cases must be identifiable.**

Name the test case id such that they are identified easily while tracking defects or identifying a software requirement at a later stage.

**7. Implement Testing Techniques**

It's not possible to check every possible condition in your software application. Software Testing techniques help you select a few test cases with the maximum possibility of finding a defect.

* **Boundary Value Analysis (BVA):** As the name suggests it's the technique that defines the testing of boundaries for a specified range of values.
* **Equivalence Partition (EP):**This technique partitions the range into equal parts/groups that tend to have the same behavior.
* **State Transition Technique**: This method is used when software behavior changes from one state to another following particular action.
* **Error Guessing Technique:** This is guessing/anticipating the error that may arise while doing manual testing. This is not a formal method and takes advantages of a tester's experience with the application

8. **Self-cleaning**

The test case you create must return the[Test Environment](https://www.guru99.com/test-environment-software-testing.html)to the pre-test state and should not render the test environment unusable. This is especially true for configuration testing.

9. **Repeatable** **and self-standing**

The test case should generate the same results every time no matter who tests it.

**10. Peer Review.**

After creating test cases, get them reviewed by your colleagues. Your peers can uncover defects in your test case design, which you may easily miss.

**What is Web Testing?**

**WEB TESTING**, or website testing is checking your web application or website for potential bugs before its made live and is accessible to general public. Web Testing checks for functionality, usability, security, compatibility, performance of the web application or website.

During this stage issues such as that of web application security, the functioning of the site, its access to handicapped as well as regular users and its ability to handle traffic is checked.

**How to test Web Application**

In Software Engineering, the following testing types/technique may be performed depending on your web testing requirements.

**1. Functionality Testing of a Website**

**Functionality Testing of a Website** is a process that includes several testing parameters like user interface, APIs, database testing, security testing, client and server testing and basic website functionalities. Functional testing is very convenient, and it allows users to perform both manual and automated testing. It is performed to test the functionalities of each feature on the website.

Web based Testing Activities includes:

**Test**all **links**in your webpages are working correctly and make sure there are no broken links. Links to be checked will include -

* Outgoing links
* Internal links
* Anchor Links
* Mail To Links

**Test Forms**are working as expected. This will include-

* Scripting checks on the form are working as expected. For example- if a user does not fill a mandatory field in a form an error message is shown.
* Check default values are being populated.
* Once submitted, the data in the forms is submitted to a live database or is linked to a working email address.
* Forms are optimally formatted for better readability.

**Test Cookies** are working as expected. Cookies are small files used by websites to primarily remember active user sessions so you do not need to log in every time you visit a website. Cookie Testing will include

* Testing cookies (sessions) are deleted either when cache is cleared or when they reach their expiry.
* Delete cookies (sessions) and test that login credentials are asked for when you next visit the site.

**Test business workflow**- This will include

* Testing your end - to - end workflow/ business scenarios which takes the user through a series of webpages to complete.
* Test negative scenarios as well, such that when a user executes an unexpected step, appropriate error message or help is shown in your web application.

**2. Usability testing:**

Usability Testing has now become a vital part of any web based project. It can be **carried out by testers** like you **or a small focus group** similar to the target audience of the web application.

**Test**the site **Navigation**:

* Menus, buttons or Links to different pages on your site should be easily visible and consistent on all webpages.

**Test**the **Content**:

* Content should be legible with no spelling or grammatical errors.
* Images if present should contain an "alt" text

**3.Interface Testing:**

Three areas to be tested here are - Application, Web and Database Server

* **Application:** Test requests are sent correctly to the Database and output at the client side is displayed correctly. Errors if any must be caught by the application and must be only shown to the administrator and not the end user.
* **Web Server**: Test Web server is handling all application requests without any service denial.
* **Database Server:**Make sure queries sent to the database give expected results.

**Test system response** when **connection between the three layers**(Application, Web and Database) **cannot be established** and appropriate message is shown to the end user.

**4. Database Testing:**

Database is one critical component of your web application and stress must be laid to test it thoroughly. Testing activities will include-

* Test if any errors are shown while executing queries
* Data Integrity is maintained while creating, updating or deleting data in database.
* Check response time of queries and fine tune them if necessary.
* Test data retrieved from your database is shown accurately in your web application

**5. Compatibility testing.**

Compatibility tests ensures that your web application displays correctly across different devices. This would include-

**Browser Compatibility Test**: Same website in different browsers will display differently. You need to test if your web application is being displayed correctly across browsers, JavaScript, AJAX and authentication is working fine. You may also check for[Mobile](https://www.guru99.com/mobile-testing.html)Browser Compatibility.

The rendering of web elements like buttons, text fields etc. changes with change in **Operating System**. Make sure your website works fine for various combination of Operating systems such as Windows, Linux, Mac and Browsers such as Firefox, Internet Explorer, Safari etc.

**6. Performance Testing/Non Functional Testing:**

This will ensure your site works under all loads. Software Testing activities will include but not limited to -

* Website application response times at different connection speeds
* Load test your web application to determine its behavior under normal and peak loads
* Stress test your web site to determine its break point when pushed to beyond normal loads at peak time.
* Test if a crash occurs due to peak load, how does the site recover from such an event
* Make sure optimization techniques like gzip compression, browser and server side cache enabled to reduce load times

**7. Security testing:**

Security Testing is vital for e-commerce website that store sensitive customer information like credit cards. Testing Activities will include-

* Test unauthorized access to secure pages should not be permitted
* Restricted files should not be downloadable without appropriate access
* Check sessions are automatically killed after prolonged user inactivity
* On use of SSL certificates, website should re-direct to encrypted SSL pages.

## What is Database Testing?

**Database Testing** is a type of software testing that checks the schema, tables, triggers, etc. of the Database under test. It also checks data integrity and consistency. It may involve creating complex queries to load/stress test the Database and check its responsiveness.

## Why Database Testing is Important?

**Database Testing is Important** in software testing because it ensures data values and information received and stored into database are valid or not. Database testing helps to save data loss, saves aborted transaction data and no unauthorized access to the information. Database is important for any software application hence testers must have good knowledge of SQL for database testing.

The GUI is usually given the most emphasis by the test and development team members since the Graphical User Interface happens to be the most visible part of the application. However, what is also important is to validate the information that is the heart of the application, aka DATABASE.

**DIFFERENCE BETWEEN UI & DATABASE TESTING**

|  |  |
| --- | --- |
| **User-Interface testing** | **Database or Data testing** |
| This type of testing is also known as Graphical User Interface testing or Front-end Testing. | This type of testing is also known as Backend Testing or data testing. |
| This type of testing chiefly deals with all the testable items that are open to the user for viewership and interaction like Forms, Presentation, Graphs, Menus, and Reports, etc. (created through VB, VB.net, VC++, Delphi - Front-end Tools ) | This type of testing chiefly deals with all the testable items that are generally hidden from the user for viewership. These include internal processes and storage like Assembly, DBMS like Oracle,[SQL](https://www.guru99.com/sql.html)Server, MYSQL, etc. |
| This type of testing includes validating the   * text boxes * select dropdowns * calendars and buttons * Page navigation * display of images * Look and feel of the overall application   . | This type of testing involves validating:   * the schema * database tables * columns * keys and indexes * stored procedures triggers * database server validations * validating data duplication |
| The tester must be thoroughly knowledgeable about the business requirements as well as the usage of the development tools and the usage of automation frameworks and tools. | To be able to perform backend testing, must the tester have a strong background in the database server and Structured Query Language concepts. |