Manual Testing

# What is software testing

Software testing is a process of verifying and validating the developed software is working as per the customer requirements or not. The main goal of the software testing is to identify bugs, defects or issues within the software to ensure it is working as intended.

# What is manual testing?

Manual testing is the process of testing the software application manually by tester without using automation tools. The tester plays the role of an end user and checks for bugs, defects and issues. This testing approach requires human intervention to perform test cases, identify defects, and ensure that the software meets the specified requirements.

# steps of manual testing

## step 1

review the all documents related to the software and come up with a testing plan in the sense like which fields of the software have to be tested and note down them.

## Step 2

Analyse whether the developed software is as per the requirements of the end user. If not discuss with the developer team and try to rectify it.

## Step 3

Build test cases to test the software and run them. if any errors occurred discuss with the developer team and try to rectify it.

## Step 4

Check for bugs by using the methods of the manual testing like black box testing and white box testing. Report them to the developers if any found.

## Step 5

Finally check the overall software for the last time without leaving a type of bugs and whether it is as per the documentation.

# Types of manual testing

## White box testing

White box testing is one of the manual testing techniques where it is done by the developer who develops the software. he/she done the white box testing before sending the code to tester for testing.

## Types of white box testing

### Unit testing

Unit testing means test the small component or module of the code one after another. It is conducted by developers.

### Integration testing

Integration testing means combine all the units or modules one after another and check connection between them. It is done by developers.

## White box testing techniques

### Dataflow testing

Data flow testing focuses on the flow of the data across the program, ensuring that variables and data are properly initialized, assigned and used across different code paths.

### Control flow testing

This type of testing involves analysing the control flow of the software. Ensuring that all execution parts are validated.

## Black box testing

Black box testing is a method of testing software where the tester focuses on checking if the software works as expected, without knowing how it’s built or how it works inside. The tester only looks at the inputs and the outputs to make sure everything functions correctly.

## Types of black box testing

### Functional testing

Functional testing is also a one type of testing technique in which we check each and every function of a software is running without any bugs and running efficiently or not.

## Nonfunctional testing

Nonfunctional testing is also a one type of testing technique in which we test the nonfunctional aspects of the software like performance, security etc.,

## Types of nonfunctional testing

### Performance testing

Measures how well the software performs under various conditions, such as load, stress, and scalability.

### Compatibility testing

Verifies that the software works as expected across different devices, operating systems, browsers, and network environments.

### Security testing

Ensures that the software is secure from threats and vulnerabilities, protecting data and preventing unauthorized access.

## Black box testing techniques

### Decision table technique

Decision table testing involves creating a table of conditions and actions to test different combinations of inputs and their resulting actions.

### Boundary value technique

Boundary value testing involves testing the software with input values at the edges of input domains including just inside and just outside values.

### State transition testing

State transition technique involves testing the software in various states verifying that the system transition correctly between states on user actions or inputs.

# Grey box testing

Grey box testing is a type of software testing that combines the components of both black box testing and white box testing. In grey box testing the tester will have partial knowledge on the internal working of the applications. It ensures the testers to test the software on the basis of both internal code and external behaviour.

# Regression testing

**Regression testing** is a type of software testing that ensures that new changes, updates, or bug fixes to the software do not negatively affect its existing functionality.

# Retesting

When testing a software. Testers raise the bugs on the software and sent to the developers. Then the developers resolve them and send them to the testers . then the testers again test the bugs wether they are solved are not. This process is called retesting.

6.Non functional testing

Non functional

# What is automation testing?

**Automation testing** is a software testing technique that uses specialized tools, scripts, or frameworks to automatically execute test cases, compare actual outcomes with expected outcomes, and report results. automation testing relies on pre-scripted sequences to perform repetitive or complex tasks more quickly and efficiently.

# Difference between manual and automation testing

1. In manual testing we have to run test cases manually which takes more time where in automation testing we will write the code to run the testcases

2.In manual testing we have to write the test cases and check for bugs every time like after every update of the developing software where in automation testing once we write the code for testing it can use repetitively.

3.Automation testing is not useful for some scenarios like testing the colour schema. In that scenario manual testing plays a key role.

4.when testing the small functions and unregular/rare functions it is a waste of time for testing using automation. Then manual is better choice.

# Agile Methodology

## Definition

First the term agile is an approach used for project development and project management

In agile methodology we don’t deal with whole part of the code we will divide the entire code into some of the small parts

In this methodology we prioritize flexibility, collaboration and customer satisfaction

## Life cycle of agile methodology

The agile software development life cycle mainly divided into 6 parts

## Requirement analysis

In this stage we will go through the required documents of the project and talk with end user, stakeholders and subject matter experts to gather the required data for the project.

## Designing

In this stage we will design the high-level architecture of the project on which functionalities we can add and what type of tech stack we can use etc.,

## Development

In this stage the developers develop the project by writing the code and they test their inline code by the white box testing methods.

## Testing

In this stage the testers team will test the software by various testing techniques like

Integration testing

In this testing we will test to ensure that the different components are working together.

User acceptance testing

In this testing we will test whether the developed software is according to the user requirement.

## Deployment

In this stage we will deploy the software into the real world where the   
people can experience the software.

## Maintenance

In this stage we will maintain the software by giving regular updates and ensures the software is running smoothly.

# Software development life cycle

Software development life cycle is a stage by stage or standard procedure for developing a software. By using software development life cycle we can evaluate whether we can build a software or not. It involves overall seven stages which are

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# Software development lifecycle models

# Waterfall Model

It is the basic and primary model used in the software development. It is easy to use model. This model is very time taking because it done int the sequential order as the output of the one stage is input of the next stage.

Following are the steps involved in the waterfall model.

1.requirement gathering

2.feasability testing

3.designing

4.coding

5.testing

6.deployment

7.maintenance

# Spiral model

It is the updated model of the waterfall model as the primary disadvantage of the waterfall model is it is taking much time developing the software.

In spiral model the software is deployed to the client after stage completion so the client can use the software parallelly when developing the software.

It is very useful when the client doesn’t have much knowledge about the software industry

# Prototype Model

It is solving the main problem in the last two models which is customer rejection. It is happening due to the lack of customer interaction with the team. To solve this problem we will firstly create a high level prototype according to the requirements. Then discuss with the customer and after the customer satisfied the further steps is followed

# Hybrid model

It is not a specific model. It is a combination of any two models. The mostly used combinations are

Spiral and prototype

V and v model and prototype

# V and V model

It is an updated model to the waterfall model. In this model the testing will be done from starting stage. It is used when building a large complex software as it became difficult to test the entire large software at once. And the project is a long term project.

# Bug Life cycle

The bug life cycle or defect life cycle refers to the process that a bug goes through from its identification to resolving and closure.

When a test engineer finds a bug in the software they will open a bug and it needs to be assigned to developing team. once the developer finds it as the bug needs to be solved they will mark it as assigned. Then the developer will work on the bug and after resolving it mark it as a fixed. Then the tester will retest the bug if it is solved then it is marked as closed else marked as reopen.

## Another some statuses in bug life cycle

### Duplicate

We will update status of the bug as a duplicate when the raised bug is already raised. It commonly occurs because of various testers were work in the same project

### Invalid

the developer will update the status of the bug as an invalid when he/she feels the raised bug is invalid. For this there will be a many reasons like the tester might be don’t give a full description of the bug or the problem which raised on the bug description is working fine etc.,

### cant fix

the developer will update the status as cant fix when it cant be fixed because of various reasons like there might be don’t have a required tech stack.

### Not reproducible

The developer will update the status of the bug as not reproducible when even the developer followed procedure mentioned in the bug report but cant reproduce the bug. It will cause due to there might be a difference in the servers and platform of the testers and testers

# Smoke testing

Smoke testing is a process of checking the working of all critical functionalities of the software to confirming that there is no errors In the software which causes the next test process invaluable.

## How to perform smoke testing

1.Decide how many number of testcases to perform

2.create the test cases to run.

3.run the test cases to check the software is running without errors or not

4. finally analyse the result where there are pass or fail.

## Types of smoke testing

### Manual smoke testing

In this type of testing the testers write the test cases and run the test cases manually.

### Automation smoke testing

In this type of testing the testers take the help of the tools to create and the test cases.

### Hybrid smoke testing

Qa testers and tools create test cases in this type of smoke testing.

# Sanity testing

Sanity testing is performed to ensure that the code changes that are made are working properly. Sanity testing is at initial stage to check whether the testing for the build can proceed or not.

## Sanity testing process

### Identification

Identification is the initial stage of the sanity testing where we look for newly added and code modifications to address bugs.

### Evaluation

After the identification phase we will examine added features and a component and make necessary modifications to ensure they function as intended and in accordance with the specifications.

### Testing

Upon the successful completion of the identification and evaluation phases. We examine and evaluate each of the associated parameters, elements and critical components of the previously analysed attributed and adjusted them to ensure optimal functionality.

# Software test life cycle

Software test lifecycle is a part of the software development lifecycle. It is a step by step or standard procedure of how to test a software.

## Phases of stlc

### Requirement analysis

when testing software, one important task is to make sure all necessary requirements are met. This is done by analysing what your customers need and how your product can meet those needs. So the testing team will understand the requirements and inform the developing team accordingly, and user stories are prepared.

### Test plan

In this stage the testing team will prepare a well plan regarding the various aspects like budget, tools etc.,

### Test case development

Creating detailed test cases, test scripts. It also includes Preparing test environment.

### Test execution

Executing the test cases to identify any defects or issues in the software.

### Defect reporting

The defects or bugs which are found during the test execution will be reported to developing team and they will track by the testing team until they are solved.

### Test closure

After the successful resolving the bugs the test closure report will be done.

# Adhoc testing

Adhoc testing is a type of testing where we perform when all the testing process is completed.

It is also known as monkey testing/gorilla testing.

In this testing it doesn’t have any sequential order to perform test cases.

## Advantages of adhoc testing

Adhoc testing cannot follow any specific process, that’s why we can perform at any time.

The test engineer can perform in their own ways that help us to find many number of bugs.

## Disadvantages of adhoc testing

Adhoc testing is dependent on the product knowledge of the test engineer because he/she knows software well. But it is difficult for new test engineers as they have less knowledge on the software.

Sometimes reproducing the bug is difficult because we did not follow any planning.

# Alpha testing

Alpha testing is a type of software testing performed by internal development team before the software is released to the external users for testing.

# Beta testing

Beta testing is a type of testing that occurs after alpha testing and involves releasing the software to a selected group of external users outside of the development team

# Severity and priority in software testing

## Severity

Severity can be defined as the impact of the bug on the software application.

It can be blocker, critical, major and minor.

### Blocker

If the severity of the bug is blocker which means we cant proceed to the next module and the tester will be idle.

### Critical

If the severity of the bug is critical which means the major functionality is not working and tester cant proceed further.

### Major

If the severity of the bug is major which means the supportive functions or modules are not working and testers can proceed further.

### Minor

If the severity of the bug is minor which means the ui modules are not proper but testing process can be done.

## Priority

Priority is nothing but the which bug has to solve first and how soon the bug must be solved.

It can be high, medium and low.

### High

If the priority is high that bug must be solve first which shows major impact on the software application.

### Medium

If the priority is medium that bug must be solved before the software release

### Low

If the priority is low that bug can be solved in present release if having time or can be done at next release as it shows minor impact on the software application.

# System integration testing

System integration testing is a type of software testing which is the high level integration testing focuses on the testing of the entire system including the interaction of various components and external systems such as database, third party services, APIs and more.

## Types of system integration testing

### Big bang sit

All components and external systems are integrated and tested together at once.

### Incremental sit

Components and external systems are integrated one by one and tested progressively.

### Continuous integration testing

Integration testing is performed continuously throughout the development cycle.

# API testing

API testing is a type of software testing which focuses on the verifying functionality, reliability, security, and performance of application programming interfaces. Unlike traditional ui testing, which interacts with an application interface, api testing checks how api handle requests and responses directly.