**Manual Testing:**

* Manual Testing is a testing process in which test cases are **executed manually** without using any automation tool.
* Test cases are generated and planned and implemented manually and it is done according to the perspective of end users.
* Manual Testing is **mandatory** for every newly deployed software **before Automation Testing**. It requires the great efforts and time but it gives surety of 100% bug-free software.
* Manual Testing requires good knowledge of manual testing techniques but not of any automated testing tool.
* Manual Testing is essential because one of the basic fundamentals **of Software testing is 100% Automation is not Possible.**

**Why Manual Testing:**

* To give **stable, bug-free and good quality** product to the client.
* If the test engineer does manual testing, he/she can test the application as an **end-user perspective** and get more familiar with the product, which helps them to write the correct test cases of the application and give the quick feedback of the application.

**Types of Manual Testing:**

* White Box Testing
* Black Box Testing
* Gray Box Testing

**White Box Testing:**

* The white box testing **done by developer**. Developer will test each and every line of code and give it to the tester.
* Since the **code is visible to the developer** so it is called White box testing.

**Block Box Testing:**

* It is done by tester. The tester will check the functionalities of the software according to the client’s needs.
* Since the code is not visible to the tester so it is called black box testing.

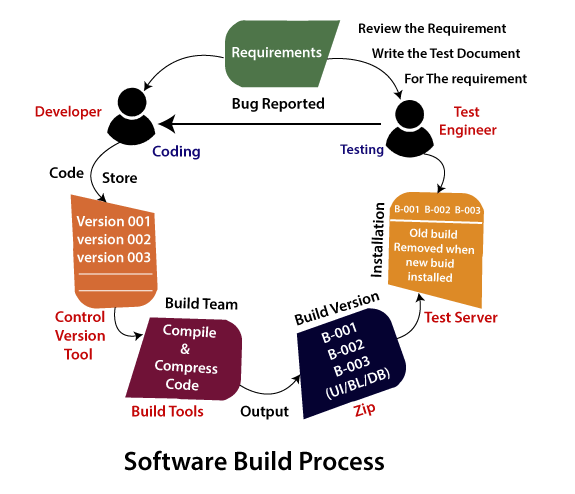
**Gray Box Testing:**

* The person who has good knowledge of **testing as well as coding** will do the code testing and functionality Testing.
* Since it is a combination of white box and black box testing so it is called Gray Box Testing

**How to Perform Manual Testing:**

* First Tester **observe** given **software related documents** to select testing areas.
* Tester analyses the requirement document to **cover all requirements** stated by **the customer**
* Tester develops **testing cases** according to requirement document
* All test cases are **executed manually** by using white box testing and block box testing.
* If bugs occurred the test team will inform to the development team
* The development team will rectify the problem and return to the testing team for retest.

**Software Build Process:**



1. Whenever the requirement is collected, it will provide to the two different team called Developer and Testing Team.
2. Then developer team will start writing the code.
3. Meantime the tester will go through the requirements and prepares the necessary documents. Up to now the developer may complete the code and store into the **control vison tool**.
4. After that, the code changes in the **UI**, and these changes handle by one separate team, which is known as the **build team**.
5. Then they start compile and compress the code with help of build tool. The output which we get will stored as zip file is called as **Build (App or Software)**
6. Then Build will be installed into the **test server**. After that the testing engineer will start do testing by accessing the test server through **Test URL**
7. If the Testing Engineer found any bug means they will inform to the concern developer.
8. Then, the developer will modify the bug by accessing the test URL. Once they fix the bug, they will again upload the new file and they will delete the old one.
9. The process will be going until the **build is getting stabled**.
10. Once the Build is stable, they deliver the Build or App to the Customer.

**Advantages of Manual Testing**

* It does **not require programming knowledge** while using the Black box method.
* It is used to test dynamically changing GUI designs.
* Tester interacts with software as a real user so that they are able to discover usability and user interface issues.
* It ensures that the software is a hundred percent bug-free.
* It is cost-effective.
* Easy to learn for new testers.

**Disadvantages of Manual Testing**

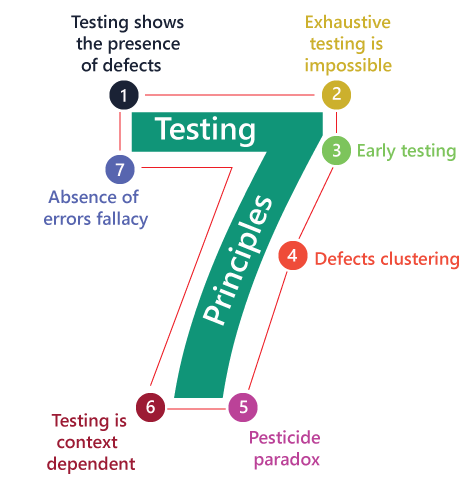
* It requires a large number of human resources.
* It is very time-consuming.
* Tester develops test cases based on their skills and experience. There is no evidence that they have covered all functions or not.
* Test cases cannot be used again. Need to develop separate test cases for each new software.

It does not provide testing on all aspects of testing.

* Since two teams work together, sometimes it is difficult to understand each other's motives, it can mislead the process.

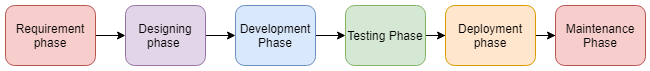
**Software Testing Principles:**

* Testing shows the presence of defects
* Exhaustive Testing is not possible
* Early Testing
* Defect Clustering
* Pesticide Paradox
* Testing is context-dependent
* Absence of errors fallacy



**Software Development Life Cycle (SDLC):**

SDLC is a process that creates a structure of development of software. There are different phases within SDLC, and each phase has its various activities. It makes the development team able to design, create, and deliver a high-quality product.



**Software Testing Life Cycle (STLC):**

The procedure of software testing is also known as STLC (Software Testing Life Cycle) which includes phases of the testing process. The testing process is executed in a well-planned and systematic manner. All activities are done to improve the quality of the software product.

**Steps**:

1. [Requirement Analysis](https://www.javatpoint.com/software-testing-life-cycle#requirement-analysis)
2. [Test Plan Creation](https://www.javatpoint.com/software-testing-life-cycle#test-plan-creation)
3. [Environment setup](https://www.javatpoint.com/software-testing-life-cycle#environment-setup)
4. [Test case Execution](https://www.javatpoint.com/software-testing-life-cycle#test-case-execution)
5. [Defect Logging](https://www.javatpoint.com/software-testing-life-cycle#defect-logging)
6. [Test Cycle Closure](https://www.javatpoint.com/software-testing-life-cycle#test-cycle-closure)

**SDLC MODELS:**

* Waterfall model
* Spiral model
* Verification and validation model
* Prototype model
* Hybrid model

**Water Models:**

It is a simple model that is easy to use as well as understand. The execution happens in the sequence order, which means that the outcome of the one-stage is equal to the input of another stage. That's why it is also known as the Linear-sequential life cycle model.

The waterfall model is divided into various stages, which are as follows:

1. Requirement collection
2. Feasibility study
3. Design
4. Coding
5. Testing
6. Installation
7. Maintenance

**Spiral Models:**

The biggest problem we face in the waterfall model is that taking a long duration to complete the product, and the software became outdated. To solve this problem, we have a new approach, which is known as the Spiral model. The spiral model is also known as the cyclic model.

we create the application module by module and handed over to the customer so that they can start using the application at a very early stage

 In this model, we develop the application in the stages because sometimes the client gives the requirements in between the process.

The different phases of the spiral model are as follows:

1. Requirement analysis
2. Design
3. Coding
4. Testing and risk analysis

**Hybrid Model**

The hybrid model is the combination of two or more primary (traditional) models and modifies them as per the business requirements. This model is dependent on the other SDLC models, such as spiral, V and V, and prototype models. The hybrid model is mainly used for small, medium, and large projects. It focuses on the risk management of the product

The most commonly used combination of two models is as follows:

1. **Spiral and prototype**
2. **V & V and Prototype**

**Protype Model:**

The most significant disadvantage of previous models (waterfall and spiral) is that there were lots of customer rejection that happens after the application was developed, and there was no involvement of the customers in between the project.

The prototype is just the sample or a dummy of the required software product. We should get the product reviewed by client then only we started develop the product.