**03-02-2025**

**Testing:**

The process of identifying the products is satisfying the needs/requirements of the client or not.

**Objectives of Testing:**

* Identify defects, errors, or missing requirements to the products.
* Ensuring the correctness of project/software development.
* Reducing maintenance costs.
* Ensuring the product is bug free before shipment/release end user.
* Ensuring the reliability of the software.
* Identify usability issues and improve user satisfaction.

**Why Testing?**

Testing is essential in software development and other fields to ensure that to meet all standards before deployment.

**Quality:**

Quality is a continuous process throughout the software development life cycle.

**Software Testing:**

* Software Testing is a continuous process.
* High-quality software is delivered quickly and consistently at every stage of the development.
* Software Testing is used to detect and identify the defect present in the developed

Software.

**Need for Software Testing:**

* Continuous testing reduces the risk of deployment failures.
* Check whether the developed software is a user friendly or not.
* Security improvement.
* Check whether the customer is satisfying or not.
* Reduces cost of fixing bugs.

**Quality Software:**

* Continuous Testing.
* User friendly.
* When we develop the software in time with no bugs.
* Testing starts early in the development cycle.

**Project:**

If the software is developed based on the requirement of single customer, then it is known as project.

**Product:**

If the software is developed based on the requirement of multiple customers in the market, then it is known as product.

**Error:**

* Incorrect logic.
* Human mistake during development.

**Bug/Defect:**

* Incorrect implementation.
* Performance.

**Failure:**

* A bug that was not detecting during testing.
* Complete deviation from the system.

**04-02-2025**

**Software Testing:**

Software Testing is used to detect and identify the defect present in the developed software.

**They are two types of Software Testing**

1. Manual Testing
2. Automation Testing
3. **Manual Testing**

Manual Testing is a process where testing execute test cases without using automation tools.

**Advantages**

* More flexible for small projects.
* Less cost.
* It gives quick feedback.
* Easy to understand

**Disadvantages**

* Time consuming.
* Difficult to scale for large applications.

1. **Automation Testing**

Automation Testing involves using scripts and testing tools to execute test cases automatically.

**Advantages**

* Reduce human errors.
* Fast execution.

**Disadvantage**

* Maintenance cost high.
* Requires programming knowledge.

**Categories/Techniques of Software Testing**

1. Static testing
2. Dynamic Testing
3. **Static Testing**

Static Testing is a software testing technique that involves reviewing and analyzing code without executing.

1. **Dynamic Testing**

Dynamic Testing is a software testing technique that involves executing the code

1. White Box Testing
2. Black Box Testing
3. **White Box Testing**

White Box Testing is focuses on internal logic and code structure.

1. Unit Testing/Component Testing
2. Integration Testing
3. **Unit Testing/Component Testing**

Unit Testing is a software testing technique where individual components are tested.

1. **Integration Testing**

Integration Testing is a type of software testing where multiple components are tested together.

1. **Black Box Testing**

The funcationally of application are tested with out knowing its internal code.

1. System Testing
2. User Acceptance Testing
3. **System Testing**

System Testing is a type of software testing is to test whole applications.

1. **User Acceptance Testing**

User Acceptance Testing is a level of software testing in which software is tested for user acceptance.

1. Alpha Testing
2. Beta Testing
3. **Alpha Testing**

Testers will test the application software in the presence of customer.

1. **Beta Testing**

Testing is done by the customer to check whether software is working properly or not.

**Smoke Testing**

Basic test to check if the applications is stable for further testing.

**Difference between Bug & Defect**

|  |  |
| --- | --- |
| **Bug** | **Defect** |
| Identified by the testers | Identified by the developer |
| Fault in the software | Variance of the output |
| Bugs are caused by incorrect logic | Defect are caused by misunderstanding |

**Difference between Error & Failure**

|  |  |
| --- | --- |
| **Error** | **Failure** |
| If a program can’t run | If an end-user discover an issue with the s/w |
| Occurs during coding or designing | Occurs during runtime or testing |
| Mistake made by the developer | Software doesn’t meet the expected output |

**05-02-2025**

**Software development life cycle**

Software Development Life Cycle is a structured process used by software developers to design, develop, test, and deploy software.Software development life cycle is to ensure that the final product meets user requirements and is delivered efficiently.

1. **Planning**

* Planing is the foundation for the entire project.
* Identify risks and allocate resources.
* Develop a high-level project.
* Define project goals and objectives.

1. **Requirement Analysis**

* Define functional and non-functional requirements.
* It is the process of identifying, gathering, analyzing, and documenting the needs and expectations of stakeholder for a software.
* In this phase all the gathered requirements are documented as software requirement specification(SRS).

1. **Design**

* Design in the software development life cycle is the phase where the database structure, technical specifications are planned before coding begins.
* Select technologies, tools, and frameworks.

1. **Development**

* Development in the software development life cycle is the phase where the actual coding of the software takes place.
* Perform unit testing on individual components.

1. **Testing**

* Testing in the software development life cycle is the process of identifying the bugs.
* The process of checking whether the project is stratifying the requirements of the client.

1. **Deployment**

* Deployment in the software development life cycle is the phase where the software is released into the production environment.

1. **Maintenance**

* Monitor software performance
* Maintenance in the software development life cycle is the phase that occurs after the software has been developed

**Waterfall model**

Waterfall model follows a linear and sequential approach.It is one of the earliest software development life cycle.

* It is mainly used in small projects.
* Testing will be done only after completely the software was developed.
* Difficult to measure the progress of the project.
* Client involvement is very less.

**Phases of waterfall model**

1. **Requirement Gathering**

It is the process of identifying, gathering, analyzing, and documenting the needs and expectations of stakeholder for a software.

1. **System design**

Based on the gathering information planning is done by architects

1. **Implementation**

After the designing the plane the developer develop the code based on the blue print

1. **Testing**

Testers will perform different types of testing and produces relevant report

1. **Deployment**

Software application must be available for the end user to make use of it.

1. **Maintenance**

Maintenance in the software development life cycle is the phase that occurs after the software has been developed.

**Advantages of the Waterfall Model**

* Simple and easy to understand
* Clear documentation
* Suitable for smaller projects
* Early planning and design
* Easy to maintain

**Disadvantages of the Waterfall Model**

* Lack of flexibility
* Not ideal for large or complex projects
* Testing is done after coding

**Agile Methodology**

* Agile Methodology is a modern approach to software development
* Requirement of client is taken throughout the process
* Changes can be made at any stage
* Agile Methodology is delivering the piece of software which was develop
* Testing is done on piece of software developed
* Mostly used to develop large projects

**Agile Methodology has 3 basic principle**

* Customer no need to wait till the whole software is developed
* Delivering the piece of software which contains small functionalities which is developed and tested
* We can adopt/ Accept the requirements changes from the customer at any point of process

**Advantages of the Agile Methodology**

* Flexibility and Adaptability
* Release will be very fast
* Improved product quality
* Customer satification

**Disadvantages of the Agile Methodology**

* High dependency on team collaboration
* Difficult to measure progress
* Lack of documentation

**Agile Scrum meeting**

Scrum is a specific Agile Framework designed to help teams work together to deliver high

Quality software

**Agile Sprint meeting**

A Sprint is a cycle within the scrum process where the team work on a subset of tasks to create a product increment.

**Agile review meeting**

The agile review meeting is focused on demonstrating the work done during the spirit and gathering feedback from stockholder.

**Agile Retrospective Meeting**

The Agile Retrospective Meeting often called the sprint retrospective is focused on reflecting on the process used during the sprint