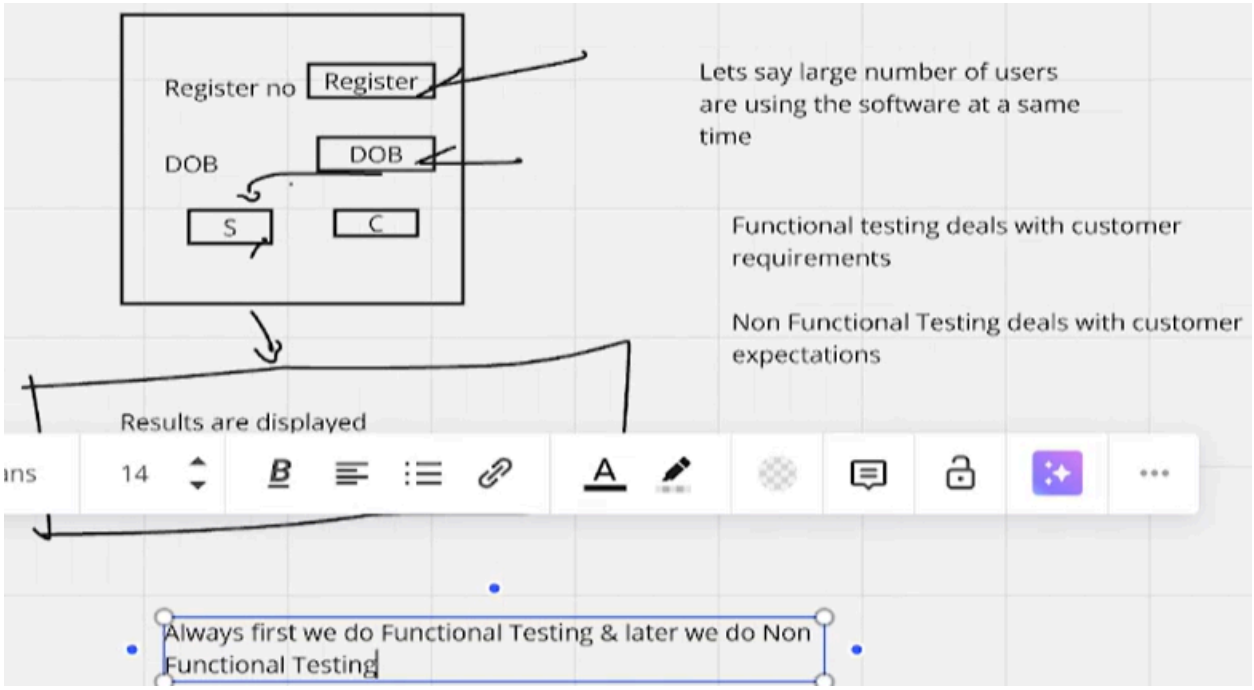
Introduction

Non-functional testing is a type of software testing to test non-functional parameters such as reliability, load test, performance and accountability of the software. The primary purpose of non-functional testing is to test the reading speed of the software system as per non-functional parameters. The parameters of non-functional testing are never tested before the functional testing.



Why Non Functional Testing?

Non-functional testing is essential to ensure that software meets performance, reliability, usability, and scalability standards, providing an optimal user experience and meeting business goals.

While functional testing verifies *what* the system does, non-functional testing evaluates *how* well the system performs under real-world conditions, ensuring it delivers more than just functionality.

For instance, a functional e-commerce website might allow users to place orders, but if it cannot handle high traffic during a sale, it fails to meet user expectations.

Parameters to be tested under Non-Functional Testing

Performance Testing

Performance Testing helps identify and fix issues that cause software to run slowly or inefficiently. The goal is to make sure the software operates as quickly as possible, with smooth and responsive performance.
To do effective Performance Testing, it's essential to set clear, measurable goals for how fast the software should run. Without these specific speed requirements, it will be difficult to tell if the test results are successful or not.
Example: Testing how quickly an e-commerce site loads during a holiday sale with increased user traffic.

Advantages of Performance Testing

- Increased customer satisfaction
- Better scalability
- Improved user experience

Tools Used: LoadRunner, Apache JMeter, WebLOAD.

Load Testing

Load testing involves testing the system's loading capacity. Loading capacity means more and more people can work on the system simultaneously.
Example:
For an e-commerce website during a big sale, load testing would involve simulating thousands of users browsing, adding items to their cart, and checking out simultaneously.

Security Testing

Security testing checks for weaknesses or flaws in a software application to protect it from attackers. This type of testing involves looking at how the system is built and thinking like an attacker to find areas where the software might be vulnerable. Testers examine parts of the code that are most likely to be targeted by hackers to ensure the application is safe and secure.

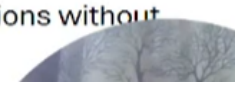
Example: Testing if an online banking app can handle sudden disconnections without losing data.

Tools used-Burp Suite, OWASP ZAP (Zed Attack Proxy)

Reliability Testing

Reliability Testing is a type of software testing that ensures a software application performs consistently and without failure under specified conditions over a defined period of time. The primary goal is to ensure the software's dependability, robustness, and fault-tolerance.

- **Example**: Testing if an online banking app can handle sudden disconnections without losing data.



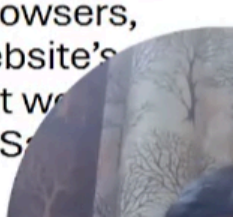
Compatibility Testing

Compatibility Testing evaluates the compatibility of a software application or system with different hardware, software, operating systems, browsers, and other devices or components.

Types of Compatibility Testing

a. Cross Browser Testing

Cross Browser Testing is a type of software testing that ensures a web application or website works correctly across multiple browsers, operating systems, and devices. It involves testing the website's functionality, performance, and user interface on different w such as Google Chrome, Mozilla Firefox, Microsoft Edge, S Opera, among others.



Advantages of Non-functional testing

•It provides a higher level of security. Security is a fundamental feature due to which system is protected from cyber-attacks.

•It ensures the loading capability of the system so that any number of users can use it simultaneously.

•It improves the performance of the system.

- **Disadvantages of Non-Functional Testing**

  Every time the software is updated, non-functional tests are performed again.
- Due to software updates, people have to pay to re-examine the software; thus software becomes very expensive

Mind map:

A **mind map** is a visual representation of information. It is a diagram used to organize ideas, concepts, or tasks in a non-linear format, typically branching out from a central topic. Mind maps are widely used for brainstorming, planning, studying, or problem-solving because they mimic the way our brain organizes thoughts.
Mind maps are especially useful in web development for mapping out complex concepts like web architecture, user flows, or feature plans.

Mind Mapping Tools:

1-OmniGraffle

2-Miro

3-Mind Meister

4-Lucid chart

5-X Mind