**FUNCTONAL AND NON FUNCTIONAL**

**Functional** **Testing:**

Functional testing assesses whether the software application performs its intended functions correctly. It focuses on the "what" the software does in terms of specific features and functionality.

**Types of Functional Testing:**

**Unit Testing**:

Testing individual components or functions of the software in isolation to ensure they work as intended.

**Integration Testing**:

Verifying that different modules or components of the software can work together as a complete system.

**Regression Testing:**

Ensuring that new code changes do not introduce defects into existing, previously tested functionality.

**User Acceptance Testing (UAT):**

Testing performed by end-users or stakeholders to validate that the software meets business requirements and is ready for production use.

**Smoke Testing:**

A preliminary test to check if the core functionalities of the software are working, typically performed before more comprehensive testing.

**Characteristics:**

* Involves testing various quality attributes such as performance, security, usability, and reliability.
* Often requires specialized testing tools and techniques.
* Focuses on user experience, system response times, and other non-functional aspects.

**Non-Functional Testing:**

It evaluates aspects of the software that are not directly related to its functionality but are crucial for its overall performance and user experience. It focuses on the "how" the software performs.

**Types of Non-Functional Testing:**

**Performance Testing:**

* Load Testing: Assessing how the software performs under expected load conditions.
* Stress Testing: Evaluating the software's behavior under extreme load conditions.
* Scalability Testing: Determining how the software can scale with increasing load.

**Security Testing:**

* Penetration Testing: Identifying vulnerabilities by attempting to exploit them.
* Security Scanning: Automated tools to find security issues like vulnerabilities and misconfigurations.

**Usability Testing:**

Evaluating the software's user interface, user-friendliness, and overall user experience.

**Reliability Testing:**

* Availability Testing: Ensuring the software is available and accessible when needed.
* Fault Tolerance Testing: Assessing how well the software handles failures and recovers.

**Compatibility Testing:**

* Browser Compatibility Testing: Ensuring the software works correctly across different web browsers.
* Device Compatibility Testing: Verifying compatibility with various devices (e.g., smartphones, tablets).

**Accessibility Testing:**

Ensuring that the software is accessible to individuals with disabilities, complying with accessibility standards.

**Scalability Testing:**

Assessing the software's ability to scale with increased user or data loads.

**Interoperability Testing:**

Checking how well the software interacts with external systems or third-party applications.

**Localization and Internationalization Testing:**

* Localization Testing: Ensuring the software functions correctly when adapted for different languages or regions.
* Internationalization Testing: Assessing the software's readiness for localization.

**Compliance Testing**:

Ensuring that the software complies with industry-specific regulations and standards (e.g., GDPR, HIPAA).

**Characteristics:**

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* Often requires specialized testing tools and techniques.
* Focuses on user experience, system response times, and other non-functional aspects.