

Different Types of Software Testing



Software testing is a crucial process in software development to ensure that the software functions correctly and meets user requirements. Here are the main types of software testing:

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1. Functional Testing

Ensures that the software meets all functional requirements.

Unit Testing – Tests individual components or modules.

Integration Testing – Checks interactions between integrated modules.

System Testing – Tests the entire system as a whole.

User Acceptance Testing (UAT) – Conducted by end-users to verify if the system meets business needs.

Regression Testing – Ensures new changes don't break existing functionality.

Sanity Testing – Quick checks to verify basic functionality.

Smoke Testing – Preliminary testing to ensure the software is stable enough for further testing.

2. Non-Functional Testing

Evaluates performance, usability, security, and other aspects.

Performance Testing – Assesses speed, responsiveness, and stability.

Load Testing – Checks system behavior under expected load.

Stress Testing – Tests system limits under extreme conditions.

Scalability Testing – Measures the system's ability to scale up/down.
Volume Testing – Assesses system performance with large data volumes.
Security Testing – Identifies vulnerabilities and ensures data protection.
Usability Testing – Evaluates user-friendliness and ease of navigation.
Compatibility Testing – Ensures software works across different environments, devices, and browsers.
Reliability Testing – Checks software stability over time.
Compliance Testing – Ensures adherence to industry regulations and standards.

3. White Box Testing

Tests internal code structures and logic.

Statement Coverage – Ensures each statement in the code executes at least once.

Branch Coverage – Tests all possible decision branches in the code.

Path Coverage – Tests all possible execution paths.

4. Black Box Testing

Focuses on software behavior without looking at the internal code.

Equivalence Partitioning – Divides inputs into valid and invalid groups for testing.

Boundary Value Analysis – Tests boundary limits of input values.

Decision Table Testing – Uses decision tables to test business logic.

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5. Grey Box Testing

Combines both White Box and Black Box testing to evaluate software from both an internal and external perspective.

6. Manual Testing vs. Automated Testing

Manual Testing – Test cases are executed manually without automation.

Automated Testing – Uses testing tools/scripts to execute test cases automatically (e.g., Selenium, JUnit, TestNG).

types of Automation testing

Automation testing involves using software tools to execute test cases, compare actual outcomes with expected outcomes, and ensure software quality. There are several types of automation testing, including:

7. API Testing

Tests the communication between different software systems via APIs.

Ensures data accuracy, security, and response times.

5. Data-Driven Testing

Uses various input data sets to validate functionality.
Helps ensure the application handles multiple scenarios.

8. Keyword-Driven Testing

Uses keywords to define test actions, separating test logic from test scripts.
Often used in tools like Selenium and UFT.

9. Continuous Testing

Automated tests are run continuously in CI/CD pipelines (e.g., using Jenkins, GitHub Actions).
Ensures quick feedback on code changes.

10. Cross-Browser Testing

Checks compatibility across different browsers (Chrome, Firefox, Safari, etc.).
Ensures consistent user experience.

11. Mobile Automation Testing

Tests mobile applications on various devices and platforms (iOS, Android).
Uses tools like Appium, Espresso, and XCUITest.

12. Cloud-Based Testing

Uses cloud platforms to execute tests on multiple environments.
Helps in scalability and reducing infrastructure costs.

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