



TESTING METHODS OR APPROACHES

Mansi Thakur

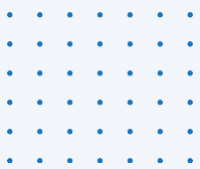


Table of Contents

1. Introduction.....	1
2. Manual Testing	1
2.1 Why Use Manual Testing?	1
2.2 Advantages of Manual Testing	1
2.3 Disadvantages of Manual Testing.....	1
3. Automated Testing	1
3.1 Why Use Automated Testing?	1
3.2 Advantages of Automated Testing	2
3.3 Disadvantages of Automated Testing.....	2
4. Hybrid Testing (Manual + Automated)	2
4.1 When to Use Hybrid Testing?.....	2
4.2 Advantages of Hybrid Testing.....	2
4.3 Disadvantages of Hybrid Testing	2

1. Introduction

Testing methods or approaches are systematic processes used to assess and verify the functionality, performance, and quality of software applications. These methods are employed to identify defects, ensure proper operation, and verify compliance with requirements. There are two primary types of testing methods: **manual testing** and **automated testing**. Both approaches can be used for different types of testing and are essential to delivering high-quality software.

2. Manual Testing

Manual testing refers to the process of manually checking software for defects without the use of automation tools. A tester performs all testing activities such as test case execution, result validation, defect reporting, and feedback based on their understanding of the application and requirements. Manual testing is a method in which human testers perform the testing process without relying on scripts or automated tools. Testers explore the application, execute test cases, and report issues based on their observations.

2.1 Why Use Manual Testing?

- **Exploratory Testing:** Manual testing is effective for exploratory testing, where testers use their creativity to test the software from different perspectives and discover hidden defects.
- **Usability Testing:** It helps evaluate user experience (UX), where human testers can provide valuable feedback on the ease of use and intuitiveness of the application.
- **Small Projects or Ad-hoc Testing:** For smaller projects or quick testing cycles, manual testing can be quicker and more cost-effective, as it doesn't require setting up automation tools.

2.2 Advantages of Manual Testing

- Ideal for small, short-term, or unscripted tests.
- Helps with complex scenarios that require human judgment, such as visual appearance/UX.
- Offers flexibility for ad-hoc and exploratory testing.

2.3 Disadvantages of Manual Testing

- Time-consuming and error-prone when handling repetitive tasks.
- Not efficient for large-scale or regression testing.
- Limited scalability compared to automated testing.

3. Automated Testing

Automated testing uses specialized testing tools and scripts to perform tests, reducing the need for manual intervention. Automated tests can be executed quickly, repeatedly, and consistently, making them ideal for regression testing, load testing, and scenarios where repetitive tasks are required. Automated testing involves the use of scripts, software tools, and frameworks to execute tests, compare actual outcomes with expected outcomes, and report defects. The process is automated using programming languages, scripts, or test automation frameworks.

3.1 Why Use Automated Testing?

- **Efficiency:** Automated testing can execute large volumes of tests in a short amount of time, making it highly efficient for large applications and complex systems.
- **Reusability:** Automated test scripts can be reused across different test cases, reducing time and effort in testing.

- **Regression Testing:** Automated tests are well-suited for regression testing, as they can be executed repeatedly across different software versions to ensure that no new defects are introduced.
- **Continuous Integration/Continuous Deployment (CI/CD):** Automated testing integrates with CI/CD pipelines to validate code quality frequently during the development process.

3.2 Advantages of Automated Testing

- Saves time on repetitive tasks, making it highly efficient.
- Helps maintain consistent testing standards by eliminating human error.
- Ideal for large-scale testing, load testing, and stress testing.
- Supports faster feedback during agile and DevOps cycles.

3.3 Disadvantages of Automated Testing

- Initial setup cost and effort for creating automated scripts.
- Requires technical expertise in programming and automation tools.
- Not suitable for exploratory or ad-hoc testing where human judgment is required.

4. Hybrid Testing (Manual + Automated)

Hybrid testing is an approach where both manual and automated testing methods are used together. This approach maximizes the strengths of both testing strategies, using automation for repetitive and time-consuming tasks, while leveraging manual testing for exploratory and user-focused activities. Hybrid testing combines the benefits of both manual and automated testing approaches to strike a balance between efficiency, flexibility, and thoroughness. Automated tests handle repetitive and regression testing, while manual testing is used for user acceptance testing (UAT), exploratory testing, and tasks that require human intuition.

4.1 When to Use Hybrid Testing?

- For projects where a mix of testing tasks are required (e.g., automation for regression and manual for UAT).
- When a balance between speed, accuracy, and human judgment is needed.
- In agile projects where both flexibility and repeatability are essential.

4.2 Advantages of Hybrid Testing

- Provides the benefits of both manual and automated testing.
- Reduces testing time and effort while maintaining flexibility.
- Effective for projects with both high and low complexity.

4.3 Disadvantages of Hybrid Testing

- Requires managing both manual and automated test cases.
- Can increase the complexity of test management and reporting.
- Initial setup for automation can take time and resources.