**What is Selenium?**

Selenium is an open-source suite of tools and libraries that is used for [browser automation](https://www.browserstack.com/guide/what-is-browser-automation). Selenium us used to:

* It allows users to test their websites functionally on different browsers.
* Perform [Cross browser testing](https://www.browserstack.com/cross-browser-testing) to check if the website functions consistently across different browsers.

It provides a single interface that lets you write test scripts in programming languages like Ruby, Java, NodeJS, PHP, Perl, Python, JavaScript, and C#, among others. Selenium is very extensible and can be integrated with other tools and frameworks like TestNG, JUnit, Cucumber, etc.

Selenium allows developers and testers to automate the testing of web applications across different browsers and platforms.

1. **Language Support:** Selenium allows you to [create test scripts](https://www.browserstack.com/guide/run-selenium-test-script) in different languages like [Ruby](https://www.browserstack.com/guide/selenium-ruby-tutorial), [Java](https://www.browserstack.com/guide/selenium-with-java-for-automated-test), [PHP](https://www.browserstack.com/guide/selenium-and-php-tutorial), Perl, [Python](https://www.browserstack.com/guide/automate-with-selenium-python), [JavaScript](https://www.browserstack.com/guide/automation-using-selenium-javascript), and [C#](https://www.browserstack.com/guide/selenium-with-c-sharp-for-automated-test), among others.
2. **Browser Support:**Selenium enables you to test your website on different browsers such as [Google Chrome](https://www.browserstack.com/guide/run-selenium-tests-using-selenium-chromedriver), [Mozilla Firefox](https://www.browserstack.com/guide/run-selenium-tests-using-firefox-driver), [Microsoft Edge](https://www.browserstack.com/guide/launch-edge-browser-in-selenium), [Safari](https://www.browserstack.com/guide/run-selenium-tests-on-safari-using-safaridriver), [Internet Explorer (IE)](https://www.browserstack.com/guide/run-selenium-tests-using-ie-driver), etc.
3. **Scalability:** Automated testing with Selenium can easily scale to cover a wide range of [test cases](https://www.browserstack.com/guide/how-to-create-selenium-test-cases), scenarios, and user interactions. This scalability ensures [maximum test coverage](https://www.browserstack.com/guide/how-to-ensure-test-coverage) of the application’s functionality.
4. **Reusable Test Scripts:**Selenium allows testers to create reusable test scripts that can be used across different test cases and projects. This reusability saves time and effort in test script creation and maintenance.
5. [**Parallel Testing**](https://www.browserstack.com/guide/what-is-parallel-testing)**:** Selenium supports parallel test execution, allowing multiple tests to run concurrently. This helps reduce the overall testing time, making the development process more efficient.
6. **Documentation and Reporting:** Selenium provides detailed test execution logs and reports, making it easier to track test results and identify areas that require attention.
7. **User Experience Testing:**Selenium can simulate user interactions and behavior, allowing testers to assess the user experience and ensure that the application is intuitive and user-friendly.
8. **Continuous Integration and Continuous Deployment (CI/CD):** Selenium can be integrated into CI/CD pipelines to automate the testing of each code change. This integration helps identify and address issues earlier in the development cycle, allowing for faster and more reliable releases.

### **Selenium WebDriver**

[Selenium WebDriver](https://www.browserstack.com/guide/selenium-webdriver-tutorial) is a **powerful and enhanced version of Selenium RC**which was developed to overcome the limitations of Selenium RC. WebDriver communicates with browsers directly with the help of browser-specific native methods, thereby completely eliminating the need of Selenium RC.

WebDriver works closely with Selenium IDE and Selenium Grid resulting in reliable test execution at speed and scale.

### **When to use Selenium WebDriver**

Selenium WebDriver is primarily designed to test web applications. You can perform:

* [**Functional Testing**](https://www.browserstack.com/guide/functional-testing)**:** Test the functionality of web applications by automating user interactions such as clicking buttons, filling out forms, navigating pages, and verifying expected outcomes.
* [**Cross-Browser Testing**](https://www.browserstack.com/cross-browser-testing)**:** Test web application for consistency across different browsers and browser versions (e.g., Chrome, Firefox, Edge, Safari)