

Open source manual testing tools for web applications

I'm not robot!

Automation testing is the process of testing software and other tech products to ensure it meets strict requirements. It is used to identify bugs and can be run without any functional knowledge. These testing tools support testing activities such as automation and manual testing, functionality, regression, load, performance, stress, and unit testing, as well as testing on the web, mobile devices, and desktop computers.

1. Selenium Selenium is one of the best open-source testing tools that is available today. It is a fantastic, automated testing solution for web apps since it works with a wide range of programming languages, testing frameworks, browsers, and OS systems. It helps you to create highly effective test scripts for regression testing, exploratory testing, and quick bug reproduction.
2. Cucumber It is an open-source tool based upon the concept of Behavioral Driven Development using which Cucumber allows you to do automated acceptance testing by executing examples that optimally describe the behavior of the application. It supports multiple operating systems and is compatible with Ruby, Java, and .NET. The amazing feature of Cucumber is that it enables you to have a single living document that serves as both the specification and test documentation.
3. Sikuli An open-source testing tool - Sikuli can automate anything that is displayed on the screen and is based on the idea of image recognition. Automating desktop programs that are not web-based is very handy. It is renowned for its rapid bug reproduction as well.
4. Appium Appium open-source test automation framework is primarily envisioned for mobile apps. It facilitates the development of iOS and Android applications thanks to its client/server architecture. Due to its simple installation and use, it is a popular mobile automation testing tool.
5. TestNG TestNG is an open-source testing framework enthused by JUnit and NUnit with some new features added to make it a more powerful tool. It supports practically all types of testing, including end-to-end testing, data-driven testing, functional testing, integration testing, and unit testing. Annotations, sizable thread pools, configurable test configuration, support for parameters, various tools, plug-ins, etc. are just a few of its amazing features.
6. k6 k6 is an open-source load and performance testing tool for testing cloud-native applications, APIs and microservices. It's a modern developer centric CLI tool with test cases written in ES6 JavaScript and with built in support for HTTP/1.1, WebSocket and HTTP/2 protocols. K6 was created with automation in mind and is simple to integrate into automation processes in Jenkins, GitLab, Azure DevOps Pipelines and other CI/CD tools for performance regression testing.
7. Marathon Marathon is an open-source test automation framework which is designed to test Java-based GUI applications. The primary use of this tool is acceptance testing. You can generate test reports as well as record and playback the tests. If you are testing a tiny project and your application's screen size is restricted to 10 screens, you should use Marathon.
8. Testlink Test Link is an open-source web-based test management tool, which is primarily featured for test plans, test cases, user roles, test projects and test specifications. It supports multiple operating systems and integrates nicely with other bug tracking tools like JIRA, Bugzilla, Redmine, etc.
9. SoapUI SoapUI is an extremely popular open-source API (Application Programming Interface) Test Automation Framework for SOAP & REST. It is the most widely used automation tool for testing web services and web APIs of SOAP and REST interfaces. It is a boon for testers to test functional and non-functional testing, such as automated testing, functional, load testing, regression, simulation and mocking without hindrance because its user interface is quite simple to use. It supports various standard protocols such as HTTP, HTTPS, REST, AMF, JDBC, SOAP, etc., that exchange information in structured data such as XML, plain text or JSON, etc.
10. Apache JMeter Apache JMeter is an open-source Java desktop app which is intended for web applications' load testing. It also supports unit testing and limited functional testing. Additionally, it enables some functional testing and unit testing. It supports several types of programs, protocols, shell scripts, Java objects, and databases and provides many useful features like dynamic reporting, portability, a strong test IDE, etc.
11. Robotium Robotium is an open-source tool that acts as a test automation framework which is mainly intended for Android UI testing. It supports Gray box UI testing, system testing, functional testing and user acceptance testing for both native and hybrid Android based applications.
12. Testia Tarantula Testia Tarantula is a modern web tool for software test management mainly intended for agile projects. With the help of its simple drag-and-drop interface and tagging tools, test executions can be organized fast. Smart tags for fix verification and dashboard for managers are also some of its cool features.
13. Katalon Studio Web, API, mobile, and desktop app test automation are all supported by Katalon Studio, a comprehensive solution. It is effective in facilitating cross-functional activities for large-scale product development teams. Katalon Studio, a codeless solution, has built-in keywords and project templates that make it simple to use, resilient to grow, and equipped to handle more complex needs. In addition, it provides a host of seamless integrations with SDLC management, CI/CD pipeline, team collaborate applications, etc. Users can use Katalon Store, a marketplace for plugins and extensions, to expand existing test automation tactics and improve them.
14. Wiremock Wiremock is an open-source testing tool for Http based application programming interfaces. It serves as a tool for service virtualization that simulates the API to deliver quick and effective end-to-end testing. It allows us to configure the response returned by the HTTP API when it receives a specific request. Capture the incoming HTTP requests and write assertions for the captured HTTP requests.
15. Capybara Capybara is an open-source acceptance test framework that is helpful in testing web applications. It mimics how a genuine user might behave when interacting with the application. Along with other testing tools like Cucumber, RSpec, Minitest, etc., it can be utilized.
16. QA Wolf One of the quickest methods we've seen to develop QA tests is via the open-source end-to-end automated testing tool - QA Wolf. No downloads or installations are needed because it is entirely hosted. Your whole team, from non-technical team members to senior developers, may participate in test creation thanks to its automatic code generation and minimal learning curve.
17. WatiN WatiN is the short form for Web Application Testing in .NET. WatiN is an open-source test automation framework that aids in UI and functional web app testing. This tool is primarily designed to work with the Firefox and Internet Explorer browsers.
18. Watir Watir (enunciated as water) is the short form for Web Application Testing in Ruby. This is an extremely lightweight, technology independent open-source testing tool for web automation testing. It enables you to create straightforward, flexible, understandable, and maintainable automated tests.
19. Xmind Xmind is an open source and free mind mapping software useful for regression testing. It is built on java platform and has cross-OS support. It is a light-weight app, provides good encapsulation and produces an artifact that talks about the total time spent on testing. In addition to the management elements, the software can be used to capture ideas, clarify thinking, manage complex information, and promote team collaboration.
20. Windmill Windmill is an open-source web testing tool created for automating and debugging the web applications. Windmill is a cross-domain, cross-platform and cross-browser testing software. It runs on Microsoft Windows, Mac OS X, and Linux. It supports all major browsers: IE, Firefox, Safari, Chrome and Opera. In all these browsers you can use sterling IDE. There is no need to additionally use Visual Studio or Eclipse since tests for any of the mentioned browsers can be written directly in the Windmill IDE. These software testing tools come in both licensed and open-source varieties. Any software tool is referred to as open source if its source code is freely usable and modifiable from the original layout. Open-source tools don't have a commercial license. All such open-source tools that serve a specific purpose of software testing are known as open-source testing tools. There are many tools available to automate software testing. Some of these software testing tools are licensed and some are open source. These testing tools aid in areas of testing like, functional, regression, load, performance, stress & unit testing, web, mobile & desktop testing, etc. Let's take an in-depth look at 10 Best Open Source Testing Tools for Web and Mobile Apps.

1. JUnit JUnit is an instance of the xUnit architecture's unit testing framework for the Java programming language. It is a simple framework to write repeatable tests. JUnit features include assertions for testing expected results, test fixtures for sharing common test data and test runners for running tests. Also, it supports Test-driven development.
2. Mocha Mocha JS JS is a JavaScript testing framework which runs on NodeJS. Despite being designed as an easy-to-use testing framework, Mocha simplifies JavaScript application testing by providing a number of robust features. In addition to supporting asynchronous testing, Mocha supports major web browsers and is compatible with several JavaScript libraries. These features further make Mocha different from other JavaScript testing frameworks.
3. Selenium Selenium is the most popular automation testing framework for web applications. It is an open source tool having a strong community support. There are many test automation tools that are built on selenium framework. Selenium supports multiple system environments (Windows, Mac, Linux) and browsers (Chrome, Firefox, IE, and Headless browsers). Its scripts can be written in various programming languages such as Java, Groovy, Python, C#, PHP, Ruby, and Perl. While testers have flexibility with Selenium and they can write complex and advanced test scripts to meet various levels of complexity, it requires advanced programming skills and effort to build automation frameworks and libraries for specific testing needs.
4. Soap UI SoapUI by Smartbear is an open source functional testing tool. It provides an end to end API test automation framework for SOAP and REST. Apart from API testing, it provides other features like simulation and mocking, invoking, web service inspection etc. Also, you can perform functional testing, load testing, and compliance testing. It's possible to create test cases using graphical user interfaces or in an embedded fashion with either Apache Ant or Apache Maven.
5. Cucumber Cucumber is a very fun and cool tool for writing automated acceptance tests to support software development in the behavior-driven development (BDD) style. Cucumber gives the business, developers, and testers a way to collaborate and specify, in plain English, how the system should work. You can implement the tests using the same language you use to discuss them with the business.
6. Katalon Studio Katalon studio is a powerful automation testing tool for Web, mobile and API testing. It provides a comprehensive set of features for test automation, including recording actions, creating test cases, generating test scripts, executing tests, reporting results, and integrating with many other tools in the software development life-cycle. Katalon Studio runs on both Windows and MacOS, supporting automated testing of iOS and Android apps, web applications on all modern browsers, and API services. It can integrate with tools such as JIRA, qTest, Kobiton, Git, and Slack.
7. Calabash Calabash is an automated acceptance testing framework for mobile apps. It's cross-platform and supports both iOS and Android native apps. Calabash works by enabling automatic UI interactions within an application such as pressing buttons, inputting text, validating responses, etc. Calabash tests can be configured to run on hundreds of different Android and iOS devices, providing real-time feedback and validation across many different form factors, OS versions, OEM customizations and hardware specs.
8. Appium Appium test automation framework is mainly intended for mobile applications. The good news is that it is an open source tool. It supports automation of native, hybrid and mobile web applications built for iOS and Android. Appium uses vendor-provided automation frameworks and is based on client/server architecture. Appium is easy to install and use, it has gained huge popularity and stability over the last few years as one of the best mobile automation testing tools.
9. Apache JMeter Apache JMeter is a performance testing tool written entirely in Java. It can be used to load test websites (HTTP, HTTPS) as well as Web Services (SOAP and REST) and Databases. The HTTP(S) Test Script Recorder can be used to record and replay requests. Jmeter can be extended by plugins to support further functionalities and there is also a Jenkins plugin which means you can run performance tests as part of the delivery pipeline.
10. Meissa Meissa is an open source distributed tests runner. It is built using the latest technologies such as .NET Core, ASP.NET Core and more. So it is completely cross-platform. It is designed to be programming language agnostic which means that it can run tests written in different languages. The tests execution tremendously speeds up from the distribution on multiple machines. However, it can be further improved by executing the tests in parallel on the tests agents. It can parallelize the tests even in a single container. Conclusion There are many advantages of using Open source testing tools. There is no direct cost involved and open source permits customization. However, there are certain limitations as well. Lack of professional technical support, limited protocols support and script maintenance can be challenging at times. In order to choose the right Open source testing tool, you should ensure that the tool is actively maintained, the type of tool matches the skills of your team and you have the experts in the team. The features, benefits, and challenges offered by the tool should align with your testing requirements and organizational goals.

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