

AN AUTOMATION TESTING USING SELENIUM TOOL

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Abstract

Software testing provides a means to reduce errors, cut maintenance and overall software costs. Testing has become most important parameter in the case of software development lifecycle (SDLC). Automation Testing tools enables developers and testers to easily automate the entire process of testing in software development Automated Software Testing Tools When we start or research for the right automated software testing tool, the major part is the selection of tools from a pool of various categories of tools. The aim of this research paper is to to conduct a comparative study of automated tools automated software testing tools to determine their usability and effectiveness. Software testing tools has major features likes: web testing, window application etc.

Keywords-- SDLC, STLC, automated testing, Selenium

I.INTRODUCTION

Testing identifies faults, whose removal increases the software quality by increasing the software's potential reliability. Testing is the measurement of software quality. In software testing, test automation is the use of special software to control the execution of tests and the comparison of actual outcomes with predicted outcomes. Test automation interface is a platform which provides a single workspace for incorporating multiple testing tools. Test automation can automate some repetitive but necessary tasks in a formalized testing process already in place, or add additional testing that would be difficult to perform manually. To improve the efficiency and flexibility of maintaining test scripts test automation interface is use. The objective of automated testing is to simplify as much of the testing effort as possible with a minimum set of scripts. Automated testing tools are capable of executing tests, reporting outcomes and comparing results with earlier test runs. Automation technologies improve test coverage and yield higher quality products Selenium was created by Jason Huggins working in Thought Works in 2004. He was working on a web application that required regular testing. He realized that manual testing replication was becoming more and more inefficient; he created a JavaScript program that would automatically control the browser's action. He named this program JavaScript Test Runner. Afterward he completed this JavaScript Runner open source which was later re-named as Selenium Core. Selenium is a set of different software tools each with a different approach to supporting test automation. The entire suite of tools results in a rich set of testing functions specifically geared

to the needs of testing of web applications of all types. These operations are highly flexible, allowing many options for locating. Selenium is an open source, robust set of tools that supports rapid development of test automation for web-based applications. Selenium provides a record tool for authoring tests without learning a test scripting language. Selenium is a portable software testing framework for web applications.

- Runs in many browsers and operating systems
- Can be controlled by many programming languages and testing frameworks.
- Selenium is a set of different software tools each with a different approach to supporting test automation. The entire suite of tools results in a rich set of testing functions specifically geared to the needs of testing of web applications of all types.

II.BASIC SELENIUM COMPONENTS

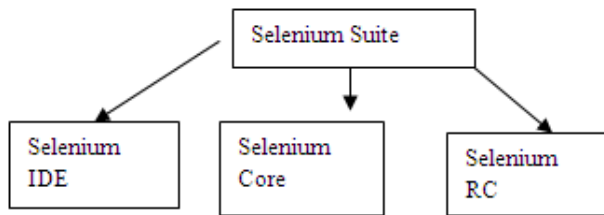
There are three versions of Selenium, which can be used in combination or isolation to create complete automation suite for the web applications. Each one has a specific role in aiding the development of web application test automation.

- Selenium IDE
- Selenium Core
- Selenium RC

1. Selenium IDE Selenium IDE is an integrated development environment for Selenium tests. Selenium IDE was originally created by Shinya Kasatani and donated to Selenium project in 2006. It is implemented as a Firefox extension, and has a recording feature. Selenium-IDE also offers full editing of test cases for more precision and control.

How to Use Selenium IDE: Select "Selenium IDE" from the Tools menu in Firefox. By default when the IDE comes up it has recording turned on. Go to a web site that you want to record, click on the record button and begin the browsing task(s). we will notice that as we click and type in the browser the IDE is recording everything we are doing. When we are done, simply end recording and click

on the green arrow to play back the script you just created. Don't forget to save your script before closing the IDE. Below are the screen shots of working of Selenium IDE and the script generated by IDE.



2. Selenium Core

Selenium Core is a test tool for web applications. It is a simpler form of Selenium, and suitable for non-developers. Browser compatibility testing: To test the application if it works correctly on different browsers and operating systems. The same script can run on any Selenium platform. Selenium Core tests run directly in a browser, just as real users do. They run in Internet Explorer, Mozilla and Firefox on Windows, Linux and Macintosh.

System functional testing: Create regression tests to verify application functionality and user acceptance.

Disadvantages:

- It cannot handle file upload.
- It cannot switch between http and https protocols.
- It is extremely complicated for first time users.

3. Selenium Remote Control

Selenium-RC is the solution for tests that need more than simple browser actions and linear execution. We can use Selenium-RC whenever our test requires logic which is not supported by Selenium-IDE. Selenium-RC uses the full power of programming languages to create more complex tests like reading and writing files, querying a database, and emailing test results.

Features:

- We can use Java syntax to write test script
- Easy to conduct Data Driven Testing
- We can read files to get test data
- We can store Test Results into files

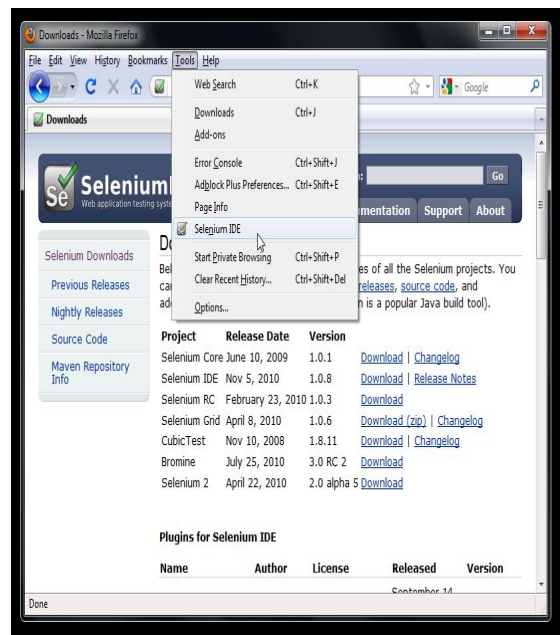
III. A TOUR FOR SELENIUM IDE

Follow the Following Steps for Use of Selenium

1. Installing the IDE: Using Firefox, first, download the IDE from the SeleniumHQ

Link- <http://seleniumhq.org/download/>

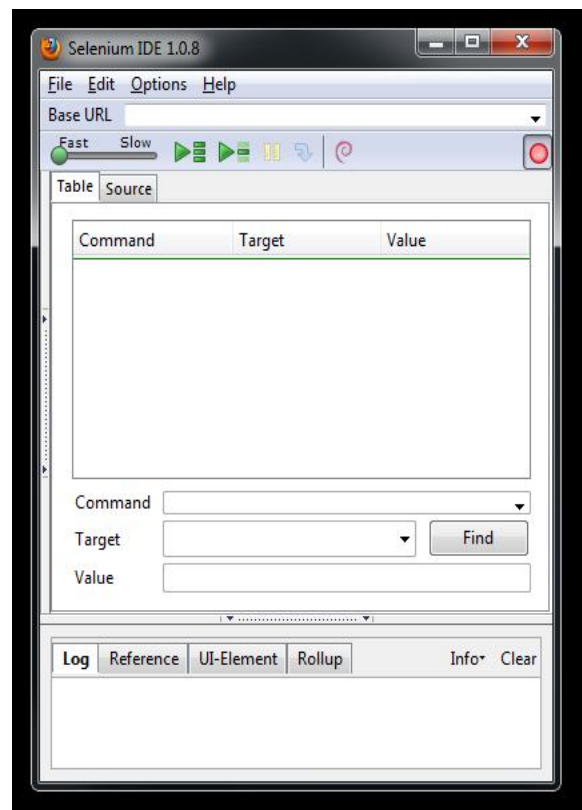
Restart Firefox. After Firefox reboots you will find the selenium



IDE listed under the Firefox Tools menu.

2. Opening the IDE

To run the Selenium-IDE, simply select it from the Firefox Tools menu. It opens as follows with an empty script-editing window and a menu



3. Building Test Cases

Recording:

Selenium-IDE is first opened, the record button is ON by default If you do not want Selenium-IDE to begin recording automatically you can turn this off by going under Options > Options... and deselecting "Start recording immediately on open."

During recording, Selenium-IDE will automatically insert commands into your test case based on your actions. Typically, this will include:

- Clicking a link - click or click and wait commands
• Entering values - type command
• Selecting options from a drop-down list box - select command
• Clicking checkboxes or radio buttons - click command

4. Running Test Cases

Run a Test Case

Click the Run button to run the currently displayed test case.

Run a Test Suite

Click the Run All button to run all the test cases in the currently loaded test suite.

Stop and Start

The Pause button can be used to stop the test case while it is running. The icon of this button then changes to indicate the Resume button. To continue click Resume.

Stop in the Middle

You can set a breakpoint in the test case to cause it to stop on a particular command. This is useful for debugging your test case. To set a breakpoint, select a command, right-click, and from the context menu select Toggle Breakpoint.

Start from the Middle

You can tell the IDE to begin running from a specific command in the middle of the test case. This also is used for debugging. To set a startpoint, select a command, right-click, and from the context menu select Set/Clear Start Point.

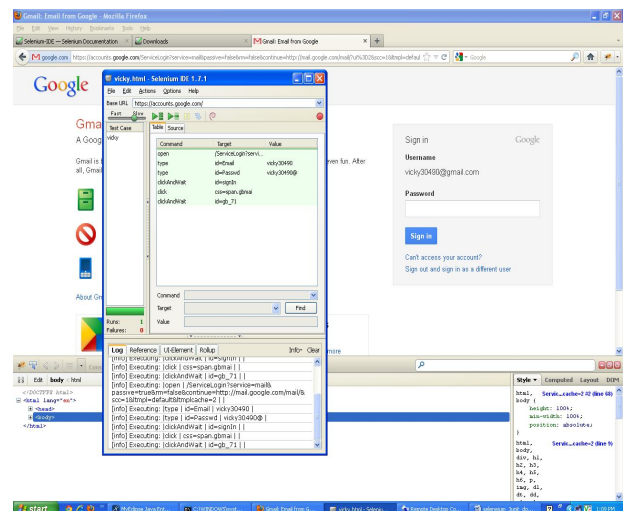
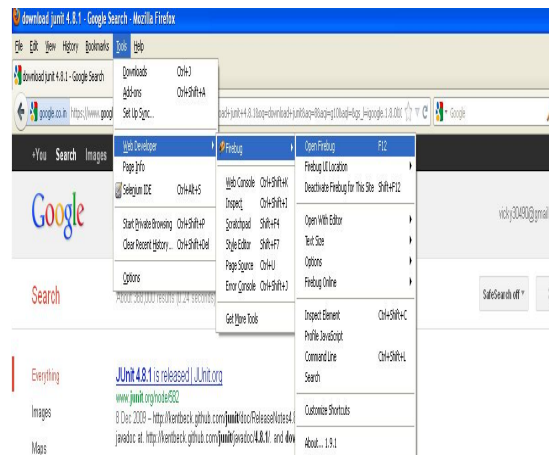
Run Any Single Command

Double-click any single command to run it by itself. This is useful when writing a single command. It lets you immediately test a command you are constructing, when you are not sure if it is correct. You can double-click it to see if it runs correctly. This is also available from the context menu.

5. Implementation Of Test Case

Test Case for A Login Page:

- Step1- Open Firefox go to Tools -> Selenium IDE.
Step2- Now in URL of browser type www.gmail.com
Step3- Enter username and password and click on login button.
Step4- Now logout.
Step5- stop recording in selenium ide & save the test case with an HTML extension.
Step6- Remove or delete the select frame commands from commands As it will create a error.
Step7- now set the speed of execution slow. Run the test case.
Step8- If it have any error in running i.e. finding any elements than use Path to find that element.
Step9- Use firebug software to find a particular element in web page.
Step10- Set Xpath like //html tag[@element-attribute='value'] to find a particular Element in any web page by different way. E.g-//input[@type='text']
Step11: Now when you click on Run it get executed.



It will show a green strip in Selenium IDE that means running without any error.

Drawback: - It will execute test cases in a particular order. You cannot apply any condition or any control on execution of test commands so we need any programming language like java, c#, etc.

IV. SUMMARY

In this paper discuss about selenium framework. The main benefit of using automated tools is to avoid manual effort. Manual testing is time consuming, tedious and requires heavy investment in human resources. Automation tools enable us to record the test suite and re-play it if required. Once the test suite is automated, no human intervention is required. In automation testing the initial investments are bigger than manual testing and you cannot automate everything but automatable test cases, determine which ones (manual or automated) would provide the biggest return on investment. Selenium is a very good framework for testing the user interface of a web application. Selenium is a web based automation framework which uses different platform and programming languages Automation testing tools helps the tester to easily automate the whole testing process. Automation testing improves the accuracy and also save time of the tester as compared to the manual testing.

Advantages of Selenium:

- It is a Open source
- Simple, Easy to install, Easy to work
- Selenium IDE is the only flavor of Selenium which allows you to record user action on browser window
- Can also record user actions in most of the popular languages like Java, C#, Perl, Ruby
- It will not record any operation that you do on your computer apart from the events on Firefox browser window
- During recording if you right click on any element it will show all the selenium commands available
- we can also edit existing command, by selecting it and editing on the boxes available
- we can also insert/delete commands by choosing appropriate option after right clicking
- Choose appropriate run option – i.e walk, run or test runner and review your results

Disadvantages of Selenium:

- Limitation in terms of browser support (It runs only in Mozilla).Scripts written using Selenium IDE can be used for other browsers only if it is used with Selenium RC or Selenium Core.
- We can't run recorded script if it is converted to Java, C#, Ruby etc.

- Not allowed to write manual scripts like conditions and Loops for Data Driven Testing

REFERENCES

- [1]. Manjit Kaur, Raj Kumar, Department of IT, UIET, PanjabUniversity, Chandigarh, India, Comparative study of automated testing Tools: Test Complete and Quick TestPro, International Journal of Computer Applications (0975-8887) Volume 24-No. 1, June 2011.
- [2]. Vishawjyoti and Sachin Sharma,dec 2012,Study and Analysis of Automation Testing Techniques, Dept of Computer Applications, Manav Rachna International University, Faridabad, Vol3, No 12,36- [3] Software Test Automation - http://en.wikipedia.org/wiki/Test_automation
- [3]. NidhikaUppal, AP,may 2012, Design & Implementation in Selenium IDE,IT Department ,GIMET, Amritsar, International Journal of Computer Applications (0975 – 8887) Volume 46– No.
- [4]. Rifa Nizam Khan and Shobhit Gupta , Comparative Study Of Automated Testing Tools: Rational Functional Tester, Quick Test Professional, Silk Test And Loadrunner at International Journal Of Advanced Technology In Engineering And Science ,Volume No 03, Special Issue No. 01, February 2015

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