Design and Implementation in Selenium IDE with Web Driver

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ABSTRACT

Selenium is open source software tool for automation testing .In this paper Firstly, we made analysis of selenium IDE with selenium Web Driver and Secondly, how we can enhance the Selenium IDE with using Web Driver and compatible with others browser. Now days the Web applications being developed to be compatible with all browsers but in Selenium IDE tool is limited to Firefox browser only and Selenium IDE cannot be tested on all browsers .If users wants to run recorded tests in different browsers like IE or Chrome then Selenium tools web driver has features to support with others browser .In this paper we had described Integrating Selenium IDE and web driver in one single package so that recorded tests on IDE can be run as web driver tests from single UI.

Keywords

Selenium IDE, Web Driver.

1. INTRODUCTION

Automation testing is an emerging field that draws maximum benefits with minimum effort automation testing is to increase the quality and reliability of the software. While there are several software testing tools are used in automation testing.

Test automation means using a software tool to run repeatable tests against the application to be tested. For regression testing this provides that responsiveness. There are many advantages to test automation. Most are related to the repeatability of the tests and the speed at which the tests can be executed. There are a number of commercial and open source tools available for assisting with the development of test automation. Selenium is possibly the most widely-used open source solution Selenium users in learning effective techniques in building test automation for web applications. .In this paper ,we introduce one particularly software testing tool: Open source tool selenium .Selenium tool is used in web application testing its support multiple browsers and multiple platforms. In selenium tool we define the components and its functionalities. The advantages of software testing process is to identify all the defects existing in a software product. However, some practical systems testing, even after there is no possibility of software is error free. Even with this practical limitation of the testing process, we should not underestimate the importance of testing. We must remember that testing does expose many defects existing in a software product. Therefore, we can safely conclude that testing provides a practical way of reducing defects in a system and increasing the users' confidence in a developed system. The solution of this problems is only automation testing. It is the process of automating the manual test case using software test tool for example Selenium. And it also removes human errors. The Selenium developers strive to continuously improve Selenium. Integrating Web Driver is another step in that process. The developers of Selenium and of Web Driver felt they could make significant gains for the Open Source test automation community be combining forces and merging their ideas and technologies. Integrating Web Driver into Selenium is the current result of those efforts.

Benefits:

1)Reusabilty: The code for the same object can be used across different applications .Duplication of work is minimized at every level.

2)Increased quality: The scripts will be of uniform quality since they make use of the same code.

*3)No scripting skills required by the end user:*No coding skills are required to automate and review the scripts. The scripts are user-friendly with good readability.

*3)Maintenance***:**Simple modifications to the application can be easily handled in the code.

4)Less effort: The amount of rework required for migrating from one application to the other on the same platform is reduced since the code remains the same of the tool.

5)Repeatability: when we automate the process of testing we can repeat the testing many times as we required.

6)Reliability: As the test cases are stored and well maintained, if any error comes, we can easily check against that error. So, reliability is here.

2. SELENIUM TOOLS: IDE AND WEB DRIVER

2.1Selenium:

Selenium is a welLestablished testing framework and it is used with a large number of browsers and allows you to write yours test in almost every language like java,.net,c#. Selenium is a open source tool Selenium is written in javascript. Its support multiple browsers and multiple platforms.in selenium components used in selenium IDE, RC ,Web Driver. Selenium is a robust set of tools that supports rapid development of test automation for web-based applications. Selenium provides a rich set of testing functions specifically geared to the needs of testing of a web application. These operations are highly flexible, allowing many options for locating UI elements and comparing expected test results against actual application behaviour .One of Selenium's key features is the support for executing one's tests on multiple browser platforms.

2.1.1Selenium IDE:

Selenium-IDE is the Integrated Development Environment Selenium IDE doesn't provide iteration or conditional statements for test scripts.It operates as a Firefox add-on and provides an easy-to-use interface for developing and running individual test cases or entire test suites. Selenium-IDE has a recording and play back feature. It also has a context menu and integrated with the Firefox browser, which allows the user to pick from a list of assertions and verifications for the

selected location. Selenium-IDE also offers full editing of test cases for more precision and control.

2.1.2Selenium Web Driver:

Web Driver is a tool used in selenium and it is easier to used. Than the selenium RC automating web application testing, and in particular to verify that they work as expected. It aims to provide a friendly API that's easy to explore and understand, easier to use than the Selenium-RC (1.0) API, which will help to make your tests easier to read and maintain.. Web driver is the latest version of selenium and is very strong. Its removed lots of drawbacks in RC and introduced many more features in selenium. Web Driver is a tool for automating web application testing, and in particular to verify that they work as expected. It aims to provide a friendly API that's easy to explore and understand, easier to use than the Selenium-RC (1.0) API, which will help to make your tests easier to read and maintain. Web Driver is designed to providing an simpler, more concise programming interface along with addressing some limitations in the Selenium-RC API. Selenium-Web Driver was developed to better support dynamic web pages where elements of a page may change without the page itself being reloaded.

3. PROBLEMS OF THE APPROACH

The approach of there are certain limitations that hinder choosing selenium as tool for automating test cases. Here is a list of limitation of selenium. Selenium IDE provides test record and playback of recorded test scripts, playback generates results but those results cannot be saved or exported for analysis or for future references, for e.g. in case user wants to send result to team. Also Selenium IDE does not support recording of function keys. Selenium IDE does not provide logic implementation in recorded scripts, for example if a user wants to perform an action on basis of condition e.g. click "Search" button on Google's search only if it is available or skip step click. Software organizations always there is a need to maintain data and password security and often passwords are not provided to all team members, in this scenario Selenium cannot be used for testing as passwords are not much secure within testing team. Some almost every software viz. QTP provides automatic password encryption so that password security is maintained within team recording and running tests in Selenium IDE is limited to Firefox browser only, user cannot run recoded scripts in any other browser like IE or Chrome etc. Web applications being developed now days are commonly developed to be compatible with all browsers. In case testing team uses Selenium IDE only as test automation tool the functionality cannot be tested on all browsers. Though users can run recorded tests in different browsers using Selenium RC with a little effort and modification in test running procedure but that need development efforts and programming expertise. Selenium Web driver has same problems as listed for Selenium RC. Selenium tools provide functionality and features at different levels individually, all components have their own features and for using any of the feature users have to use different tools and manual efforts are very time consuming. Most the steps are repeated and efforts are wasted in repeating same tasks. The proposed work will focus on exploring major flaws in Selenium tools, find workaround to those and implement them in selenium.

Selenium IDE:

- Selenium IDE does not provide proper result logging. Generated result cannot be saved for reference or publishing result.

- Selenium IDE does not provide recording of function keys and special keys.
- IDE does not provide a way to embed logic in the test scripts.
- IDE does not provide password encryption, in case password security is maintained between testing team selenium does not provide a way to encrypt password.

Web Driver: Selenium Web driver provides better support but here are some updates:

- Extending web driver to be used with windows.
- Integrating Selenium IDE and web driver in one single package so that recorded tests on IDE can be run as web driver tests from single UI.

4. IMPLEMENTATION IN SELENIUM IDE WITH USING WEB DRIVER.

A) Integrating Selenium IDE and Web Driver in one single package so that recorded tests on IDE can be run as web driver tests from single UI.
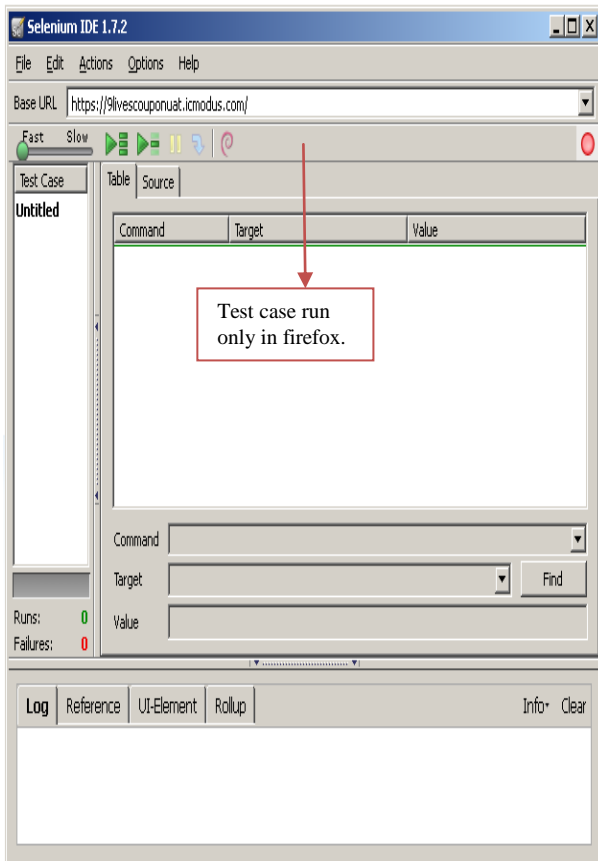
4.1 INTEGRATING SELENIUM IDE AND WEB DRIVER

4.1.1 Selenium IDE

Selenium IDE is a complete Integrated Development Environment (IDE) for Selenium tests. It is implemented as a Firefox Extension, and allows recording, editing, and debugging tests. It was previously known as Selenium Recorder. The IDE provides excellent support for writing automated test scripts in Selenium .The Biggest drawback of Selenium IDE is its limitation in terms of browser support. Selenium IDE is limited to Firefox browser only, user cannot run recoded scripts in any other browser like IE or Chrome etc.In this paper we have discussed about web driver that is an another tool of selenium.In figure1,we don't have options of IE or Chrome and the options of IE or Chrome that is used in figure2, with the help of Web Driver. Selenium IDE tool is limited to Firefox browser only and Selenium IDE cannot be tested on all browsers .If users wants to run recorded tests in different browsers like IE or Chrome then Selenium tools web driver has features to support with others browser .In this paper we had described Integrating Selenium IDE and web driver in one single package so that recorded tests on IDE can be run as web driver tests from single UI.

- The Selenium IDE is an add-on to Firefox
- Record user actions when browsing in Firefox
- Replay recorded scripts
- Convert recorded scripts into programming languages such as Java, Ruby , and more
- Add verification and synchronization steps to the script during the recording process.

Figure1: Current selenium IDE window:

4.1.1.1 Selenium Web Driver and Changes done to achieve running test cases in IE or Google Chrome from Selenium IDE:
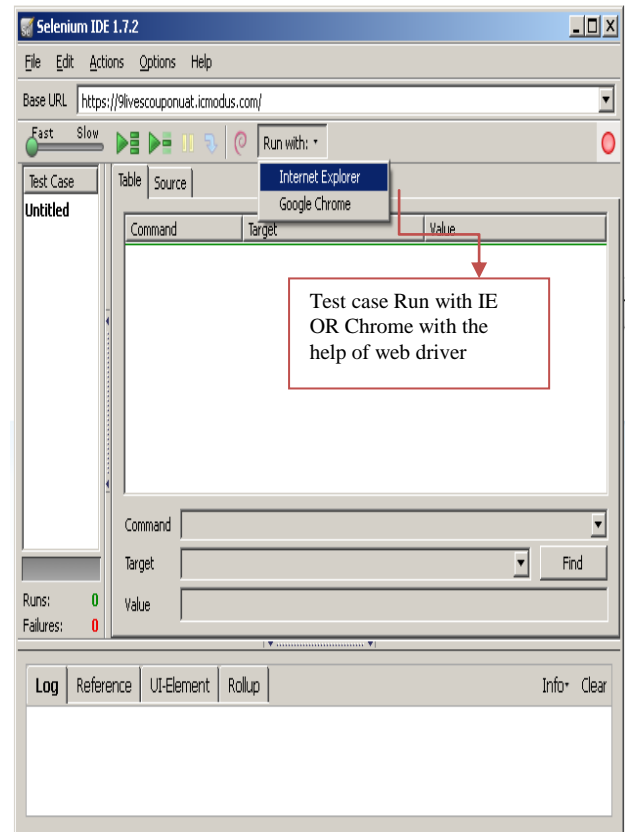
Selenium tools web driver has features to support with others browser. Web driver is the latest version of selenium and is very strong. Its removed lots of drawbacks in selenium IDE. WebDriver supports language bindings for Java, C#, Python and Ruby. It offers support for Chrome, Firefox, Internet Explorer, Opera, and the Android and iPhone browsers. One should use Web Driver when requiring improved support

for:

1. Multi-browser testing including improved functionality for

browsers not well-supported   by Selenium IDE.

2.Handling multiple frames, multiple browser windows.

1. Added a drop down button in Selenium IDE window, to do following:
   a. Call Formatter to save test case in Junit Web driver format to a temporary location.
   b. Execute a java code to compile and rung Web driver test case.
   c. Display result in DOS mode.
2. Developed a library in java to do following:
   a. Collect java files that were saved by Selenium Web driver code formatter.
   b. Update Test scripts to run test cases with IE or Chrome.
   c. Compile code of the scripts in compiled repository folder.
   d. Start executing all tests one by one.

3. And the code that calls Batch file to execute scripts:

Figure2: Updation of Web Driver in selenium IDE window:

4.1.1.2 Implementation details

1. Clicking on selenium IDE window will
   a. Call script formatters in selenium IDE.
   b. Save script in a temporary location in selenium Web driver compatible format.
   c. Call a Batch file to do following:
      i. Execute Java code to compile and run test case with Selenium web driver.
      ii. Save result in a temporary folder.
      iii. Show result to user once test script is executed completely.

5 .CONCLUSION

This paper described the drawbacks in Selenium IDE tools, and find out the problems and implement them in selenium. In case testing team uses Selenium IDE only as test automation tool the functionality cannot be tested on all browsers, For that we has used Selenium IDE with Web Driver because Selenium Web Driver compatible with all browsers .So, that Integrating Selenium IDE and web driver in one single package so that recorded tests on IDE can be run as web driver tests from single UI. In this paper we had described the running and recording testing scripts in Selenium IDE with others browser like IE, Chrome and it can only possible with web driver and its also improved functionality of browsers .

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