

Performance Evaluation & Comparison of Software Testing Tool

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Abstract

Testing automation tools enables developers and testers to easily automate the entire process of testing in software development. The objective of the paper is to conduct a comparative study of automated tools such as market leading vendor tool in functional test automation, HP (QTP) Quick test professional with popular & free Selenium. This research is intended to check the viability of selenium as FTA solution by implementing on web based application. The performance of these testing tools is evaluated and compared and their inferences, implication and results are presented and discussed.

Keywords: Software Testing, Functional automation testing, QTP, Selenium, Testing Metrics, POC.

Introduction

The aim of software testing process is to identify all the defects existing in a software product. It is the process of exercising and evaluating a system or system components by manual automatic means to verify that it satisfies specified requirements or to identify differences between expected and actual results^[1]. Automation testing covers all the problems of manual testing. Automation testing automates the steps of manual testing using automation tools such as Quick Test Pro (QTP) and Selenium. It increases the test execution speed, more reliable, repeatable, programmable, comprehensive, and reusable.

Objective

The objective of the research is to conduct a comparative study of automated tools such as the Mercury Quick Test Professional and selenium based on criteria such as the efforts involved with generating test scripts, capability to play back the scripts, result reports, speed and cost. The fundamental goal is to analyze the features supported by these two functional testing tools that aid in minimizing the resources in script maintenance and in creating efficiency for script reuse. For the purpose of this project we took an existing web based application that was irctc and perform functional testing on it by these two automated testing tools.

Background

Functional test Automation: - is the use of software to use of s/w to control execution of test, the comparison of actual outcomes to predicted outcomes, the setup of actual precondition & other test control & test reporting functions. When done properly functional test automation can increase efficiency & quality while reducing overall cost.

Research Methodology

We will evaluate 2 tool for their ability to satisfy a specific goal .the PROCESS OF CONCEPT.(POC)[9]

The phases are :

- Identification the application under test.
- Define POC steps.
- Define comparison criteria
- Select tool for comparisons
- Execute test for comparisons
- Compare result
- Draw conclusion

Comparison Process

Phase 1 : The automation tool will exercise the application under test to simulate a set of functional testing scenarios.A portion of FTA contracts:

- Web Based Testing & Manual Testing

Phase 2 ∴ POC steps : these are the steps that tools being evaluated must exercise.^{[7][8][9]}

- Web based scenario, Desktop support, Recording efficiency, Playback of the scripts, Capability of generation of scripts, Data driven testing, Test result report, Easy to learn, Execution speed, cost, reusability.

Phase 3: Comparison Criteria : The next phase of POC was to determine the criteria that would be used to compare the tools :

- The automation process itself:- how much effort was involved in getting the tool installed configured & ready to develop test automation ,was the tool able to successfully execute the poc steps.
- Versatility:- does the tool support relevant emerging technologies ?does the tool support integration with other tools that might lead to greater efficiencies & increased visibility.
- Hard/soft cost.

Phase 4 : Select Tools For Comparison:-

Why SELENIUM:

- Support Web Testing,Record & Play Back,Allow User To Create Custom Code If Necessary ,Selenium Is Released Under Apache 2.0 S/W License & Is Considered By Both The Apache Foundation & The Free S/W Foundation To Be Compatible With The Gnu General Public License Version 3.0 & Can Safely Be Considered Free Open-Source & Free Of Charge.

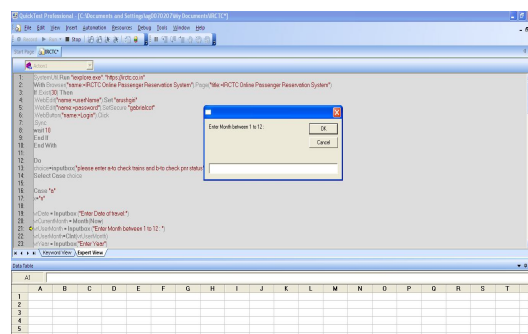
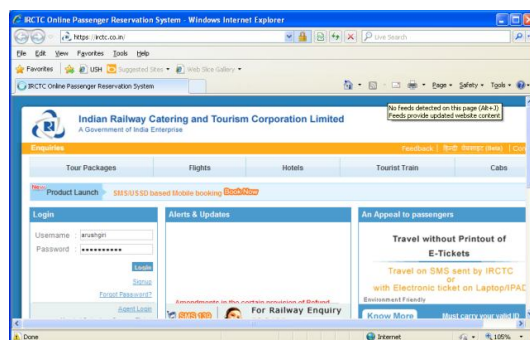
Why QTP:

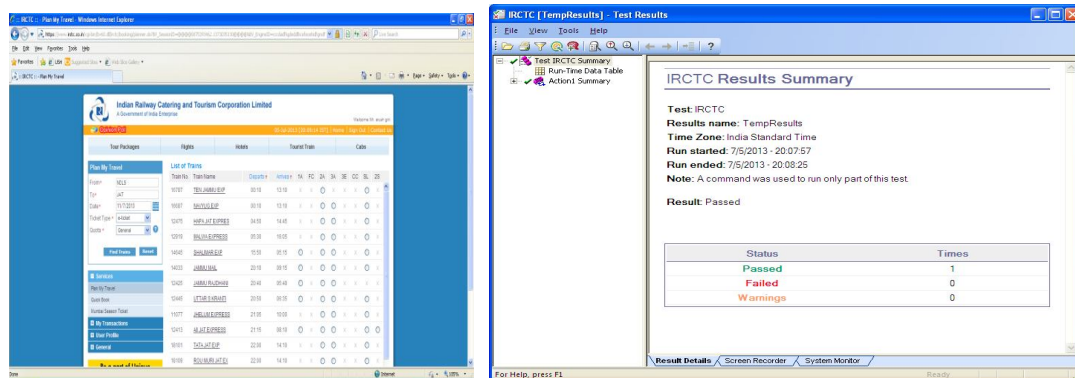
- Support largest range of technologies in the industry including web (html/dhtml), windows presentation foundation (wpf), .net, java, j2ee, firefox, client/ server & mainframe terminal emulators,.Hp QTP is the core tool in suite of tools for automation functional testing. Qtp scripts are recorded in vbscript & can be enhanced using the tool itself since qtp is fully functional vbscript ide.since qtp is complete solution for fta.only the core tool requires installation & therefore a first time user can be up & running quickly after downloading& installing qtp core tool & launching the installation wizard.

Phase 5 : Execute Test for Comparison on Time Complexity & Execution speed:

- For evaluation of time complexity & efficiency we have automated a module of IRCTC. in which we have registered a user, made user login , planned travel, travel date selection, start & end station , checking book history, checking PNR status using same browser.

For QTP:





Time Complexity :

Start Time:20.07.57

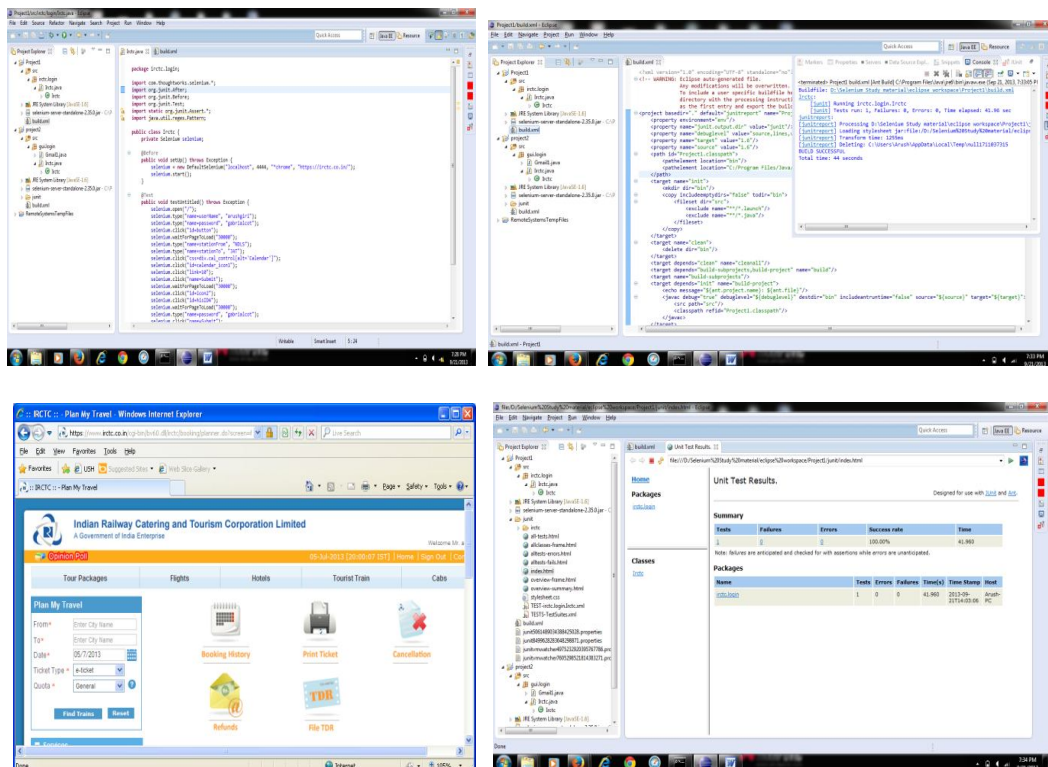
End Time: 20.08.25

Total time taken:E.T-S.T =58 Sec

Execution speed: where t is the total time taken & n is number of user screens.

$$\sum t/n = 58/3 = 19.33 \text{ sec}$$

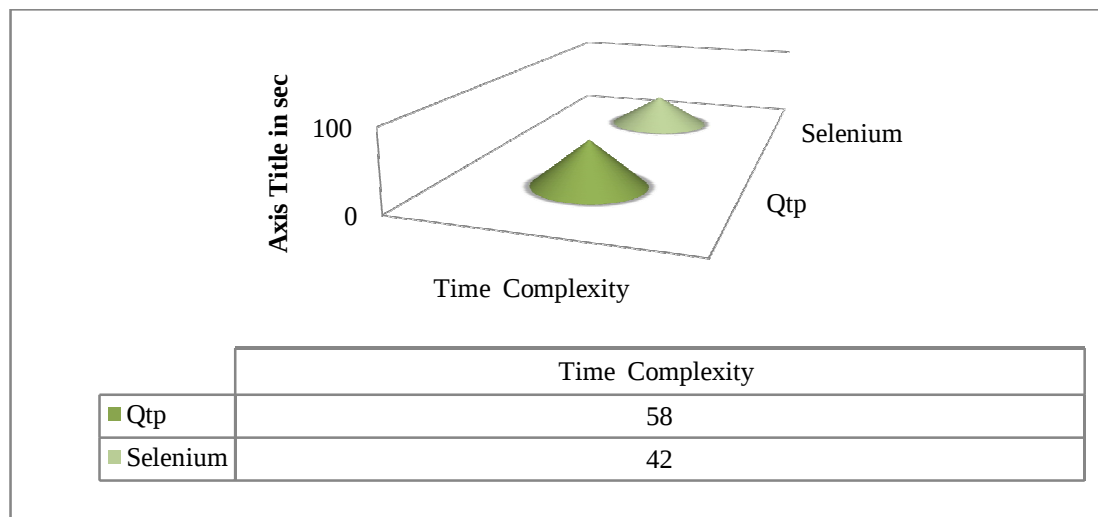
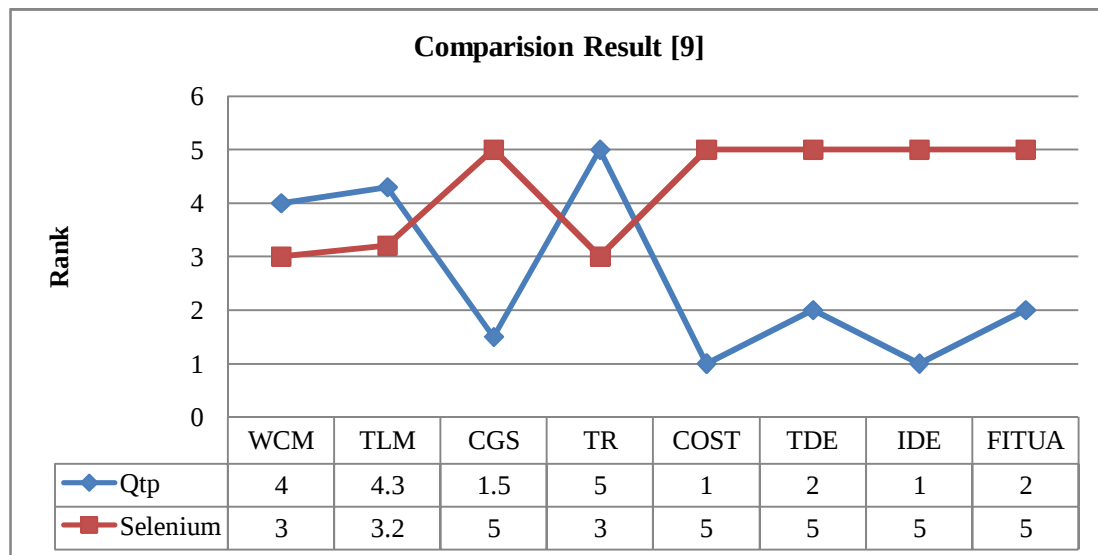
For Selenium:



Time Complexity : Total time taken:E.T-S.T =42 Sec

Execution speed: where t is the total time taken & n is number of user screens.

$$\sum t/n = 42/3 = 14 \text{ sec}$$



5. Conclusion

The complete Selenium test automation is designed specifically for web testing. It will not allow you to automate other technologies. The Selenium solution is highly complex, involving the integration of many components. The process for Selenium test

automation necessitates a developer test skills set .when making a tool selection in this area, it is important to take into consideration much more than the cost. I conclude that selenium may be right for certain specific situation, but QTP can be the better choice in many more situations.

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