Comparison of Automation Testing Tools for Regression Testing website

Palvinder Kaur

Er.palvinderkaur@gmail.com

Introduction: The objective of this research paper is to show comparison and study the concepts, builds and features of automation and manual testing. Additionally it focuses on the importance of automated software testing associate with software testing techniques in software engineering Software test automation is the process of automating, the steps of manual test cases using an automated tool or utility to shorten the testing life cycle with respect to time. As, we know that Testing is very expensive task. Manual testing involves a lot of effort, Measured in person per month. These efforts can be reduced by using the automated testing with specific tools. Testing automation tools enables developers and testers to effortlessly computerize the complete practice of difficult in software progress.

*Key Words***:** Manual testing, automated testing, software testing, types of testing, test case, testing frameworks, JMeter

1.INTRODUCTION

Software automated testing is the process of executing a program with the intention of finding errors in the code. It is the process of exercising or evaluating a system or system component by manual automatic means to verify that it satisfies specified requirements or to identify differences between expected and actual results [3],[4] Software Testing should not be a distinct phase in System development but should be applicable throughout the design development and maintenance phases. "Software testing is often used in association with terms verification & validation" [5]. 'Software testing is the process of executing software in a controlled manner, in order to answer the question: Does the software behave as specified. One way to ensure system responsibility is to extensively test the system. Since software is a system component it requires a testing process also. The overall testing process benefits from the strengths of both manual and automated testing;

 • Support for regression testing: any automatically generated tests that uncover bugs can be saved in the same format as manual tests and stored in a regression testing database;[2]

 • The measures of coverage (code, dataflow, specification) will be computed for the manual and automated tests as a whole; • The interface is kept consistent and simple: Auto Test only requires a user to specify the classes that he wants to test.

2.1 Manual Testing Scenario

 Manual unit testing has established itself as an integral part in modern software development. It only reached a respectable state with the introduction of adequate tool support (the xUnit family

of tools, e.g. JUnit for Java, sUnit for Smalltalk, Unit for Python, and Gobo Eiffel Test for Eiffel). Such frameworks are typically small but they provide significant practical benefits.

If a defect is found, a bug report is prepared, send it to the project manager, Test manager and to the programmer. The software is modified and the same steps repeated again till the error is removed.[3]
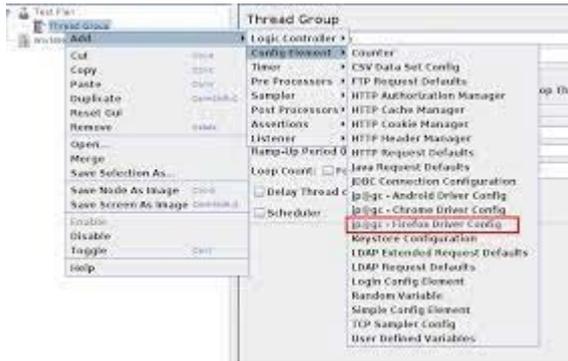
2.2 Automated Testing

Automated tests execute a sequence of actions without human intervention. It is also defined as a testing a system with different data sets again and again without intervention of human. Minimally such a process includes: Detailed test cases, including predictable "expected results", which have been developed from Business Functional Specification and Design Documentation. A standalone Test Environment including a Test Database that is restorable to a known constant, such that test cases are able to repeat each time there are modifications made to the application.[1], [4]
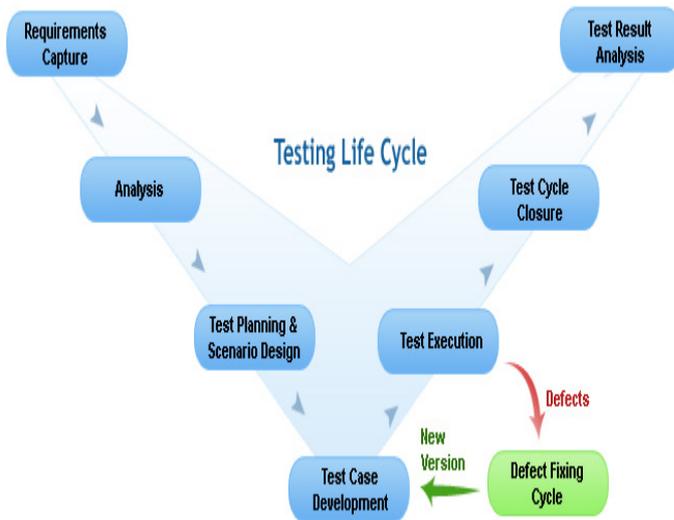

2.3 Comparison of Testing Tools

The Software testing tools can be compared on many parameters such as licensing (paid or commercial, open-source), technology usage, type of testing, and so on.

S No	Testing Tool	Testing supported	Browser Supported	Languages Supported	License Type
1	JMeter	Performance, Load	Any Browser	Webservice, Jscript,XML	Open Source
2	Load Runner	Load Testing	IE, Chrome, Safari, Firefox	Java, JScript	License-HP
3	Silk	Functional Testing	IE, Firefox	.NET, JAVA, SWING, SWT	License (Micro Focus)
4	Selenium	Functional	IE, Chrome, Safari, Firefox	JAVA, Ruby, PHP	Open Source

3. Proposed Automated Testing

Automated testing with Quick Test addresses these problems by dramatically speeding up the testing process. You can create tests that check all aspects of your application or Web site, and then run these tests every time your site or application changes. [3]

4. Auto Test architecture

Auto Test is a framework for fully automated software testing. It allows for arbitrary testing strategies to be plugged in and is not hard coded to a certain testing strategy. The pluggable testing strategy is only concerned with determining exactly how and with what inputs the system under test should be invoked. The actual execution is a task of the framework.[6],[7]

I. ## 5. PROPOSED METHODOLOGY

JMeter:

JMeter is most widely used open source tool. It is set of different software tools each with different approaches to supporting test automation. It support for multiple platforms for executing the test cases [8].

JMeter Tool Suit JMeter is composed of multiple software tools. Each has specific role.

JMeter RC

JMeter Remote Control (RC) was the flagship testing framework that allowed more than simple browser actions and linear execution. It makes use of various programming languages such as Java, C#, PHP, Python, Ruby and PERL to create more complex tests.

JMeter Web Driver

JMeter Web Driver is the successor to JMeter RC which sends commands directly to the browser and retrieves results.

JMeter Grid

It is a tool used to run parallel tests across different machines and different browsers concurrently which results in minimized execution time. JMeter grid allows running test in parallel that is different tests can run at the same time on different remote machines.
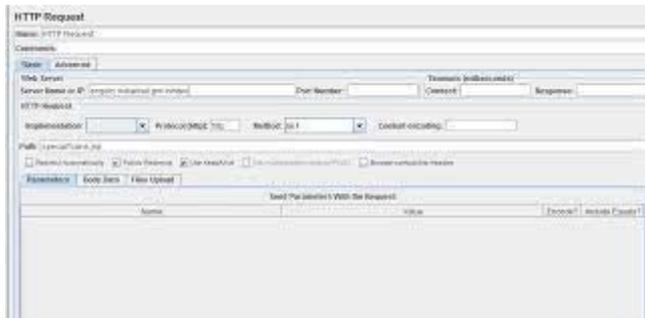
JMeter IDE

JMeter Integrated Development Environment (IDE) is a Firefox plug-in that lets testers to record their actions as they follow the workflow that they need to test. Firefox which is used to learn and use JMeter, but it can only support with Firefox browser as other browsers are not supported.
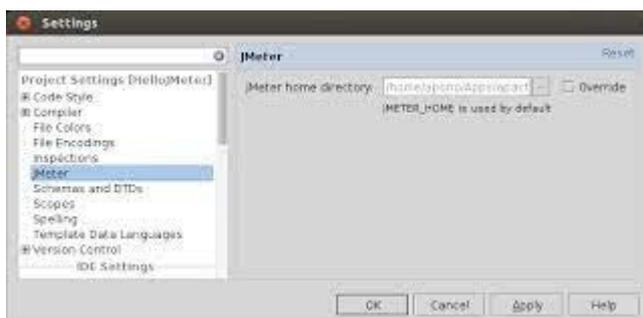
Features of JMeter JMeter Ide is implemented as a Firefox extension. It allows recording, editing and debugging tests.

• JMeter Recorder:-On start-up of the Firefox plug-in, the record feature is automatically turned on, allowing the user to record any action done inside the web page.

• In JMeter IDE scripts may be automatically recorded and edited manually providing auto completion support and ability to move commands around quickly

• Walk through tests

• Debug and set breakpoints

• Easy customization through plug-in.

JMeter Commands

JMeter commands are the set of commands that run your tests. A sequence of these commands is a test script.

• Actions: - These are generally used to manipulate the state of application. They do things like "click this link" and "select that option". If an action fails or has an error, the execution of the current test is stopped.

• Assessors: - These commands are used to examine the state of application and store the results in variables. For example "Store Title". They are also used to automatically generate assertions.

• Assertions: - These are like accessors, but they verify that the state of application conforms to what is expected. For example "make sure the page title is "X". Using base URL field at the top of JMeter IDE window is very helpful for allowing test cases to run across different domains.

• JMeter Buttons

• Playback Speed. This controls the speed of your Test Script Execution

• Record. This starts/ends your recording session. Each browser action is entered as a command in the Editor.

• Play entire test suite. This will sequentially play all the test cases listed the test case pane.

• Play current test case. This will play only the currently selected test case in the Test Case Pane.

• Pause/Resume. This will pause or resume your playback. • Step. This button will allow you to step into each command in your test script

• Apply rollup rules. This is an advanced functionality. It allows you to group Selenese commands together and execute them as a single action.

III. LITERATURE Review   Adnan causevic and Daniel sundmark presents a survey on "An industrial survey on contemporary aspects of software testing [9]. This paper focuses on current practices and describes the aspects of software testing in an industrial scenario. The survey contains five categories of respondents such as agility of development process, domain of product, safety criticality of product, distribution performed by respondents. In this survey the author shows an industrial perspective seems to be test driven development.

Shivkumar Hasmukhari trivedi presents a survey paper "Software testing techniques"[12]. In this paper various theoretical aspects of software testing techniques is elaborated. They described various testing tools and methodologies used at the time of testing a software. It also describe how the test plan template is created and defined. P.K kapur, A.K shrivastav presents a survey "Release and testing stop time of software: A new Insight" [10].They concern about the optimal duration of testing. Here in this paper testing is divided into two phases Pre release and post

release (before and after testing stop time). A generalized approach for optimal scheduling policy to minimizing overall testing ease. Numerical analysis included in the paper shows that if firm is providing software before its scheduled released time (without patching) and can provide option for post release testing which leads to reduce software testing cost. In future to increase reliability, the model extend to find optimal released and stop testing time within budget of software. Lashand dukes and Xiaohong yuan proposes a paper "A case study on web application security testing with tools and manual testing"[11]. It describes case study on manual testing and presents comparative studies between manual and automation testing. According to testers observation and it is important to utilize a variety of tools as well as conduct manual testing in web application. Based on case study, manual testing is most important for improving the web security

6. CONCLUSION

In this paper, we have discussed testing tool JMeter and on the basis of that we have tried to describe them at the appropriate level. We have discussed the software testing life cycles and the difference between the manual and automation testing. We can say that automation testing is more useful and time saving then the manual testing. *During test process more than 50 test cases were run repetitively to find faults and also intentionally faults were induced to verify the detection.* For future work we will try to focus on a enhanced testing for better experience.

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