



# Software Automation Testing using Selenium

Keerthi S, Shaliny A, Anju I

Department of Computer Science and Engineering, Sri Manakula Vinayagar Engineering College .  
Puducherry, India

**ABSTRACT:** Software testing is considered to be the most important step in Software Development Life Cycle. The main objective of the testing process is to compare the obtained results with expected result. Test Automation simplifies the work of tester by automating the execution of test scripts with the use of a special software. There are various focal points of test automation. They are exceptionally exact and have more prominent preparing pace when contrasted with manual automation. Selenium is one of the broadly utilized open source device for test computerization. Test automation enhances the effectiveness of programming testing procedures. Test automation gives quick criticism to engineers. It additionally discovers the imperfections when one may miss in the manual testing. This paper focuses on the use of Selenium Web driver to test a web application and to demonstrate the use of this tool in combination with other tools like TestNG. Selenium web driver was developed for better support dynamic web pages were the element of the page may change without the page itself being reloaded. In this paper we studied and implemented one extension of the selenium web driver tool to execute testes in web application that involves checking data in log4j. We configure our testing framework by using the type Page Object Model (POM). Test data to be provided through TestNG xml file. Execution sequence based on test priority. Log the execution status in the text file by using LOG4j

**KEYWORDS:** automation, software testing, testng, log4j, xml file

## I. INTRODUCTION

### SOFTWARE TESTING:

Software Testing is a set of processes which aimed at researching, evaluating and as certaining the complete source and quality of computer software. Software Testing ensures the compliance of a software product which relates with regulatory, business, technical , functional and user requirements.

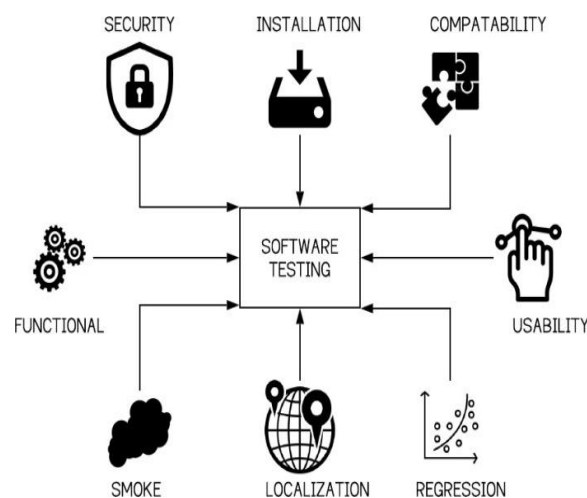


Fig. 1.1. Software Testing Representation

The above figure 1.1 shows the Software Testing Represents. The application is defined as an activity to check whether the actual results matches with the expected results and ensures with that of the software system is defecting free. It involves execution of a software component or system component to evaluate one or more properties .Software testing



also helps to identify errors, gaps or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools. Some prefer saying Software testing as a White box and Black box Testing. Software Testing means Verification of Application Under Test (AUT).

**VERIFICATION AND VALIDATION:**

Verification is defined as a static analysis technique. Testing is done without executing the actual code. Examples includes – reviews, inspection, and walks through this process. Validation is a process of dynamic analysis where we perform testing by executing the code. Examples includes both functional and non-functional testing techniques .In this V model, the development analysis takes place and QNA activities are done simultaneously. Here, testing starts right from the requirement phase. The verification and validation activities occur simultaneously. Let’s look at the figure 1.2 below to understand V model.

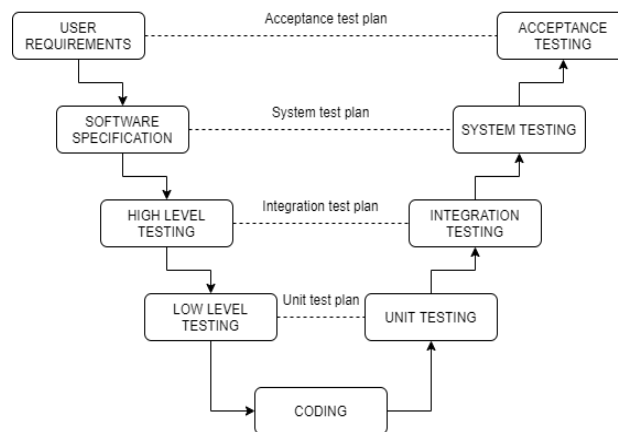


Fig.1.2.Verification and Validation model

**SOFTWARE DEVELOPMENT LIFECYCLE:**

Software Development Life Cycle (SDLC) is a process for designing, developing and for testing the high quality in software industry. Its main goal is to satisfy the customers need and expectations by high quality software within the particular time expected by the customer.

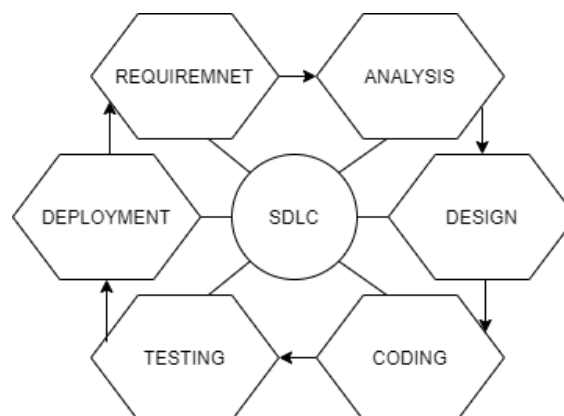


Fig.1.3.process of SDLC



The first most important phase in SDLC is Requirement gathering which is followed by Analysis in the lifecycle. The workflow of the business analyst is that it will gather the requirements as per the client expectations and their specifications from the client. When the above step is finalized, the next stage is to define the requirements of the product and to get approval of those products from the customer. These all the above process will be registered by SRS document and those document processes is to design and develop the product requirements in the lifecycle of the project. The next phase is Developer phase which it is used for building the code for the software and where all the levels of developers like fresher's, juniors and seniors are all involved in this phase. The next phase is a testing phase which is used for finding out the errors and causes in the software which is created already. Final phase in lifecycle is Deployment and Maintenance phase where the software is developed only after the completion of approval.

### SOFTWARE TESTING LIFECYCLE:

Software Testing Life Cycle (STLC) consists of four different phases of the model and it is a sequence of actions which is to be performed by Software Testing. It is a series of activities which is methodologically carried out to help the software product.

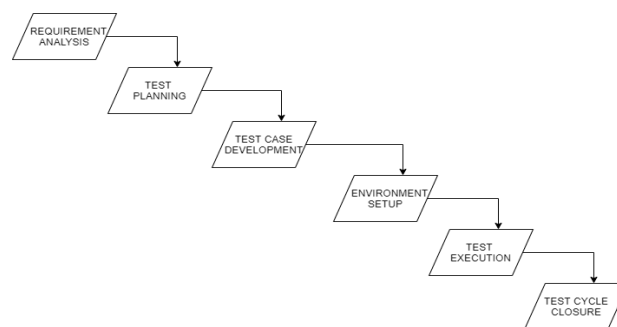


Fig.1.4.Different Phases of the STLC Model

At the time of the requirement point, the test workers consider the requirements from a testing opinion to analyse the testable requirements. The Quality Assurance team be allowed to collabrates with different lenders to acknowledge the requirements in show. Requirements put up into Functional or Non-Functional. Automation expediency for the given testing design is also fixed in this phase. In test planning phase, the head of quality assurance officials will take up a decision of intention and worth valuvate for the project and would develop and conclude the test plan. The test approach is also resolved. The test case development stage associates the establishment , authentication and modification of test cases and test scripts. Test data is modified and is reexamined as well. Test circumstances determine the software and hardware surroundings held down in which the work product is tested. Test circumstances set-up is one of the demanding facets of testing development. When the customer or the development team establish the test environment in such aspects , the testing team is needed to do a readiness check of that specific environment. There is no collabration between the test team and customer or development team. At the time of execution stage, the preparation of testing of the project based on test plans and test cases is completed by testers. Errors or other abnormal failures will be noted and it undergoes correction taken by development team and the performance of retesting will be handled. Finally, the testing team will meet each other undergoes discussion about the project and take to next level with testing strategies for future implementation and maintenance from the current test development cycle.

## II. LITERATURE SURVEY

JAGANNATHA S, NIRANJANMOORTHY M, MANUSHREE SP, CHITRA GS

### A SURVEY ON COMPARISON STUDY ON AUTOMATION TESTING USING SELENIUM TESING FRAMEWORK AND QTP

In this given paper it is about the selenium tool compare with QTP .It is an web application and it is an open source freeware . This automation testing framework has given a wide acceptance as a popular and successful mode of website



automated testing in a very short time. It is widely used for testing graphical user interface and functionality of web based application. It is developed for all type of industry such as e-commerce ,travel , biotech pharamaceuticals and other mechanization. This testing freeware renders a cost effective way which is an open source testing framework for performance and other parameters to ascertain compatability , accuracy, aspect and consumption of web application .This paper will study about various component of selenium compare with QTP. The below figure shows the flow of selenium web driver.



Fig 2.1.selenium web driver

**ARCHANA REDDY M, RAJASEKHAR REDDY K**

**A SURVEY ON SELENIUM WEB DRIVER TOOL TO PERFORM AUTOMATION TESTING IN WEB APPLICATION**

Selenium is a portable software testing framework for web applications. Selenium is an open source automated testing suite for web applications across different browsers and platforms which supports multiple programming language. Selenium is a type of functional web testing tool. Selenium is not only a single tool which has four components: Selenium Grid, Selenium Remote control, Selenium IDE and Selenium Web Driver. Selenium is a tool designed to generate automated tests and enhance the testing performance. Automated testing is used by software developer to save assets and time. Selenium is known an open source automation testing tool for web based application. web drive is faster as it Interacts directly with browserand uses the browsers engine to control it.

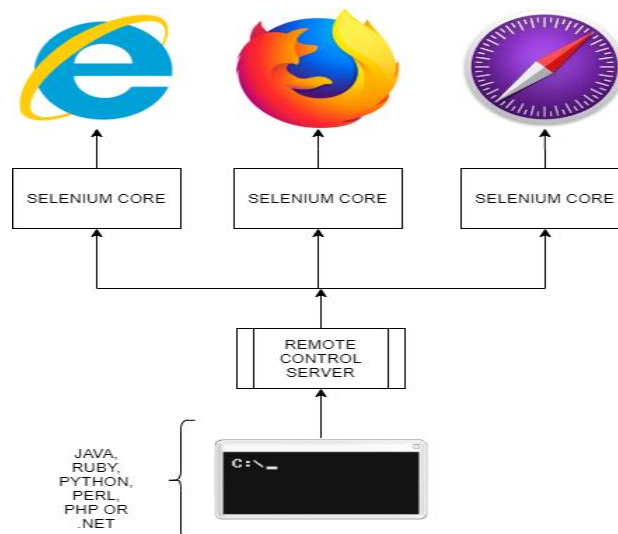


Fig 2.2 selenium RC



### IMPLEMENTATION OF PAGE OBJECT MODEL IN SELENIUM AUTOMATION

The Page Factory Class is an extension to the Page Object design pattern. Page Factory is an inbuilt page object model concept for Selenium Web Driver, but it is much optimized. In Test Class, we will write an actual selenium test script. Here, we call Page Action and mentioned actions to be performed on Web Pages. In Page Action Class, we can write all web pages action as per the pages and functionality.

Under Page Action component, for each page in the application, we have corresponding Page class. Page Factory class is nothing but Object Repository in other term. For each web page, it has its own Page Object definitions. Each web element should uniquely get identified and should be defined at class level. We will use Find By annotation and will define web element so that we will be able to perform actions on them. Easy readability of scripts - since the test scripts, functions and locators are in different classes it is easy to walk through the code. Eliminate redundancy - no duplicity of functions or locators .Re- usability of code - a locator or function can be reused in the tests.

This type includes the testing of the Software manually without using any automated tool or any script. In this type the tester takes over the role of an end user and test the Software to identify any un-expected behaviour or bug.

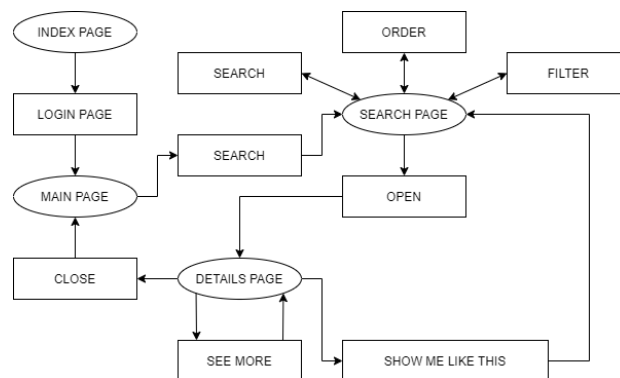


Fig 2.3 page object model

The above figure shows the flow of page object model with functionality.

### III. CONCLUSION

The above proposed system allows the user to test all web browser using selenium webdriver. This paper is used to testing the unauthorized websites. The report which consist of general details of end users that can be generator through LOG4J files. It helps us to overcome difficulties of manual testing and reduce time consuming. In a very short span of time, Selenium automation testing framework is gaining wide acceptance as a popular and successful mode of website automated testing.

### REFERENCES

- 1) [http://docs.seleniumhq.org/docs/01\\_introducing\\_selenium.jsp](http://docs.seleniumhq.org/docs/01_introducing_selenium.jsp)
- 2) <http://automationinotp.blogspot.in/2013/01/otp-vs-selenium.html>
- 3) [http://www.tutorialspoint.com/selenium/selenium\\_quick\\_guide.htm](http://www.tutorialspoint.com/selenium/selenium_quick_guide.htm)
- 4) <http://docs.seleniumhq.org/>.
- 5) <http://toolsqa.com/selenium-webdriver/page-object-pattern-model-page-factory>