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INVESTIGATION ON MIGRATION FROM MANUAL TESTING TO AUTOMATION TESTING

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Abstract – Software Testing is the most important part of SDLC process. Manual software testing involves human interference, cost of labor, and it is time consuming. It is not suitable for critical and complex software. Automated software testing involves decreasing the number of test cases that is done manually rather than eliminating manual testing completely. This study is aimed to understand the benefits of automated testing as a whole. Nowadays software developed are very complex in nature so we need to deploy automated testing tools such as Selenium IDE, which eventually saves time, human effort and helps to find the accurate and specific results. It has everything to automate the test, it can be run in any browser and in any language and also it is open source.

***Key Words*:** software testing, automated software testing, Selenium IDE, manual software testing

1.INTRODUCTION

Software Testing means finding bugs and errors in a developed software. [1] We need to check whether the developed software meets the requirement of the user. Software now a days are bulky and complex, so it is really difficult for human to test each and every test cases manually. While performing manually, most of the time different inputs have to be tested on the same test case making it time consuming and boring. To overcome such issues, automated software will be convenient for tester.

There are two ways of testing a software: Manual testing and Automation testing. A software testing can be complete with the help of both manual and automated testing. A single testing method is not sufficient to find all types of bugs and errors in the developed software. Manual testing is handled by the person testing the software. They have a catalog of test cases to be tested on a software. These test cases are developed in accordance with the requirement of the software. It is therefore very important to check that all the requirement is satisfied by the software or not.

Automated testing is time saving, effective and efficient way to test a software. [1] It eventually increases the Precision and saves resources of the company.

2.Related Work

Software testing helps to meet the requirement of a software according to the need specified by the organization. We compare the expected and real results to find the anomalies in the product developed.

Fig -1: Kinds of Software Testing

2.1 Manual Testing:

The process of testing in which all the test cases are performed by a tester is known as manual testing. A tester performs test with different sets of inputs, evaluates the outcome and documents it.

Earlier the software was the way simpler but nowadays it is becoming more and more complex and bulky. Eventually finding each and every bugs and errors becomes a hectic, time consuming and also a lot of resources is wasted.

Manual testing can be split into three categories:

- **Black Box Testing** – The method of testing the functionality of software without knowing the internal structure. It is usually performed by Test Engineer.[3]

Fig -2: Black Box Testing

- **White Box Testing –** As the name suggests, "white box" means which is clear and transparent. In software, it basically involves testing each line of code being aware of the internal structure and functionality.[2]

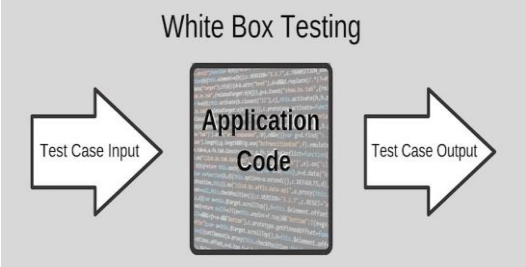


Fig -3: White Box Testing

- **Gray Box Testing –** This method of testing is the combination of both type of testing white box and black box.[2]
  We can say that if white and black box testing is done by a single person then it can be called as Gray Box Testing.

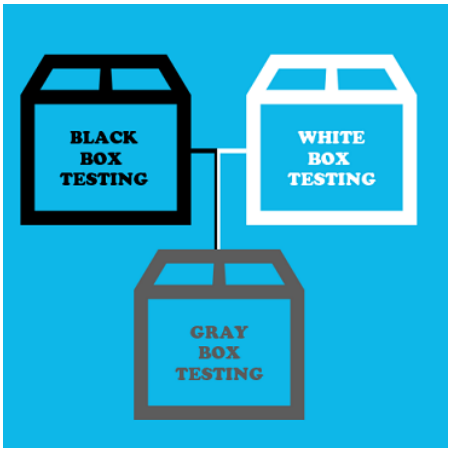


Fig -4: Gray Box Testing

Drawbacks of Manual Testing

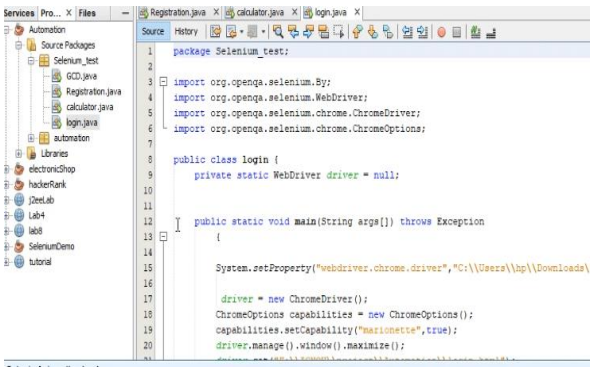
- Sometimes, testing involves same operations to be done repeatedly. This is time consuming.
- Whenever the test cases are repeated, it becomes tiresome.
- It requires more people as a resource.
- Wherever there is more indulgence of human, it is more likely procumbent to errors. [6]

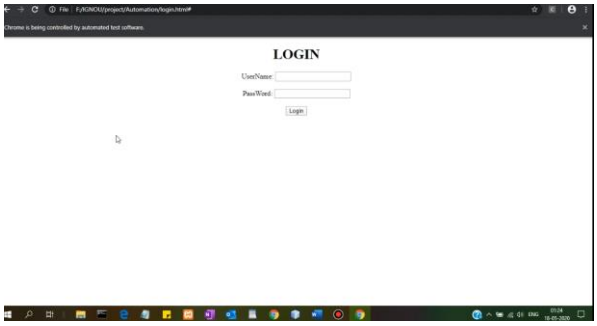
2.2 Automation Testing:

The process of testing a software with the help of automation tools is known as Automation Testing.
With the help of automation tools, one can easily find out defects or bugs without human intervention. These types of tools save time and resources and it is much helpful for complex software. [4] Due to less intervention of users, it cuts down the cost of testing. Much accuracy is achieved through this technique as it is fully automated. These are very less prone to errors as compared to manual testing. Considering the time consumption, Automation testing is much faster than a manual process. Eventually we can rely more on automated tasks than on human.

Selenium as an Automation testing tool

Selenium is an automating tool/framework.
It can be used across various platforms, various languages such as java, python and with different browsers like Mozilla, Chrome.
For using Selenium, no programming experience is required. However, basics of HTML and DOM are required. Selenium also has more built-in help and test results reporting module.
Below is the attached image which conveys the usage of selenium testing tool.





Benefits of Automation Testing

- It is time savior method because it is done by machines rather than human.
- It cuts down the resources used for the testing part.
- The results are accurate and high precision.
- It takes less time for the testing phase and thereby speeding the time to market the product.
- It requires very less maintenance.
- The catalog used to test are reusable.
- The chain of execution test cases can be increased according to need.
- It is more reliable as compared to manual testing.[3]

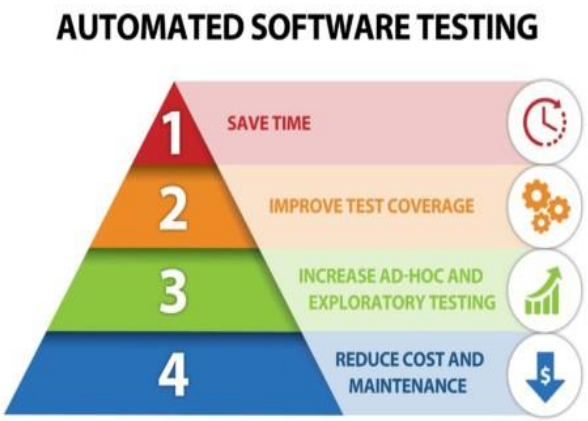


Fig -5: Automated software Testing

Inclination towards Automation Testing

As we have discussed till now, testing software are mostly monotonous in nature. Same set of test cases are tested, it takes much time for human to conduct those tests and it becomes hectic and boring. Running test cases by hand are more likely prone to errors, time consuming, less efficient, and expensive.[3]
To overcome these drawbacks, we can easily install software to run automated tests. Bugs and defects are detected at an earlier stage, saving resources and effort. With the help of automated testing, the product takes less time to go in production stage. [5]

3.CONCLUSIONS

The goal of this paper is to convince people to use automated software testing tool such as Selenium etc. As compared to manual testing, Automated testing is accurate, cost effective, less time taking and less effort is required to test a software. Automation testing is not labor intensive.
From the above observation, it is clear that Automation testing is a better way to test software as compared to Manual testing. But we should not eliminate manual testing as a whole.

Future Enhancement of this paper is to find the most accurate and best tool for software testing. There are a number of automation software testing tool available in the market but we need to pick the one which is the most effective and reliable software. The comparisons can be done on the parameters such as speed, cost, availability, reliability.[7]

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