AUTOMATION TESTING IN PROJECT DEVELOPMENT

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Abstract: Designed software has to undergo a test before implementation which is to rectify the bugs in the software in order to achieve the target performance of the designer. Tests can be done in various methods but one of the best and effective ways of testing is automated testing when compared to manual testing. Hardware engineers can seek automated testing as it shows various benefits comparatively. Automated testing is a trending tool preferred by most of the software developers as it identifies all the possible errors. Automated testing tools are capable of executing tests reporting outcomes and comparing results with earlier test runs. These tools can be run repeatedly at any time. It also assures the quality of applications considering various factors. To ensure the functioning of automated testing it is necessary that one initiate with simple tests like unit test. The highlights of this method are its advantages which is helpful for all the software developers.

Keywords: Software Testing, Software Development Tools, Automation Testing

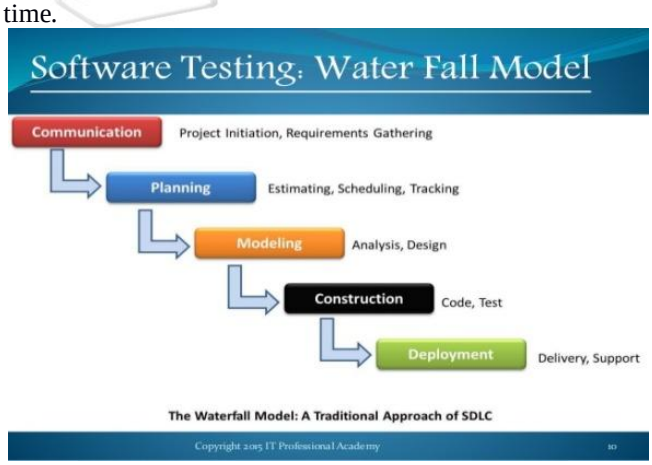
I.INTRODUCTION

Software development just simply isn't about writing code, it requires a wide range of test procedures to ensure the quality and that it is error free. Major ways of testing is done in two ranges, by manually and systematically. Systematic testing is the easiest way that deals with automated testing which is been activated in the system. It might put into pain if it does not work on its own but gives an excellent result when it is functioned successfully. This is preferred when compared to manual test procedures as the later takes lot of company's resource and also consumes more time because of their sequential nature. Whereas automation testing enhances in detecting deviations in earlier stage in order to keep the project on track. As it is essential because the quicker the error is rectified, the sooner the software is delivered. It also demands considerable investments of money and resources.

Coordinated tools such as: Requirement's management, test management, test automation, performance test, defect tracking, embedded system test, test design, web test tool helps in the development process. While developing software it is essential to ensure the seamless integration of the tools in the process. Nevertheless the test procedure, test concept and test specification, it is must to choose the correct test environment. Automated tests help the team work at a sustainable phase with the manageable level of technical debt. Automation regression test is done in order to shorten the feedback loop between check-ins of new code and discovery of regression failure. One must not mistake that the testers to do the test automation just by seeing the name "test automation." The scripts are hard to maintain in test automation as the testers who create the scripts aren't familiar with code design pattern, so the test code is full of duplication. The more the test is done the better the software is.

II.AUTOMATION TESTING

Automation testing is the use of automation tool to execute the test case suite. The successive development cycles will need execution of same test suite repeatedly. One can record and replay the test suite any time. Once the test is automated, manual power is not required. Automation testing will not totally abandon manual testing. Automated software testing is important because it is not as effective as manual testing. Manual testing can become boring and hence error prone. Automation testing helps in increase of test coverage. Automation testing is quicker as it gives productivity before the expected time. It is easy to test for multi lingual sites, some of the tests must be paid more attention, and these must be done using the help of such automation testing tools. Some of the test cases are, business critical test cases which involve high risk, test cases that are executed repeatedly, test cases which is difficult to perform manually, test cases that requires more time.



Some of the test cases are not suitable for Automation testing, they are the cases that are newly designed and are not executed before manually at least once. When the requirements of the test change frequently, it is not suitable for automation. Automation testing is a process which involves selection of test tools, defining the scope of automation, planning, designing and development, execution of the test and maintenance. The selection of test

tools largely depends on the technology the application under test is built on.

In test execution automation scripts are executed which must be initially set with the needed input data in order to run which will give detail test reports. Execution is performed with the tools directly or through the test management tools that invoke the automation tool. One must be cautious of maintaining it in order to have an effective automation scripts.

A framework in automation is about maintaining consistency of testing, improving test structure, minimal use of code, less maintenance of code, improves re-usability, the non technical testers can be involved in code, the training period of using the tool can be reduced, it also involves data wherever *appropriate. In automation testing there are four major framework used in software testing, they are data driven automation framework, keyword driven automation framework, modular automation framework and hybrid automation framework.

III.CHOOSING OF AN AUTOMATION TOOL

One must take enough time in selecting the right tool as this will make the work much easier. To select a best tool one must see that the environment supports. In order to perform well it must be easy to use. It must also support testing of data base, satisfy the identification of object, ensure that it tests the given image, and minimize training cost of selected tools. It must have extensive test reports and results. It must have the ability to recognise the objects in any environment. It must be easy to debug the automation software scripts. It must be enabling the mapping of an object. It must ensure the error recovery testing.

IV.TESTING TOOLS

Tools change according to the trend but ensure the objectives such as improving productivity, quality and consumers satisfaction in short span of time and to deliver successful production services. Testing is a verification and validation process which is to detect the difference between given input and expected output. It is to make sure that the product satisfies the condition imposed at the start of development phase. The basic of software testing is black box testing and white box testing. The former is a testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and the execution of the system. It is also called functional testing. The later is a testing technique that takes into account the internal mechanism of a system. It is also called structural testing and glass box testing. Black box testing is often used for validation and white testing is often used for verification

One must be cautious of which tool to use for what and to use when. To help it, one must be aware of some of the basic testing tools such as:

- **Unit testing**: This type of testing is used for testing small pieces of code, typically individual functions which are alone or isolated. This must be done without the use of external resource such as network or a database. It is simply to test whether the output is right or wrong for the given input. This might sometimes mislead if the code is poorly designed.
- **Integration testing**: It is about to test how parts of the system work together. This is also similar to unit test except that unit test is isolated from other components whereas integration tests are not. This helps to verify two separate systems such as database and an app, work together correctly.
- **Functional testing**: It is also sometimes called E2E testing or browser testing. Functional testing is defined as the testing of complete functionality of some application. In practice with web apps, this means using some tool to automate a browser, which is then used to click around on the pages to test the application .Some of the other testing tools are system testing, performance testing, smoke testing, keyword testing, data driven testing and regression testing.

V.SOFTWARE DEVELOPMENT TOOLS

In the department of development there are many choices for one to select which software to use for daily tasks at work. One feels nervous to adapt new software in use hence some of the best suited software development tools are: Terminal which helps to know what you are looking forward. Tmux, a tool helps in working with various open terminals in different processes. It helps in dividing the window into panes or tabs within the terminal which makes to move through easily, docker tool provides a software containerization platform that enables one to package the applications or software in a file system. That could be moved and executed anywhere. Intellij is a tool used in integrated development environment. The tool slack is an app that is used for team communication. Which makes our work easier chrome is obviously the web browser which is popular in use. Some of the other popular tools are YouTube and Skype.

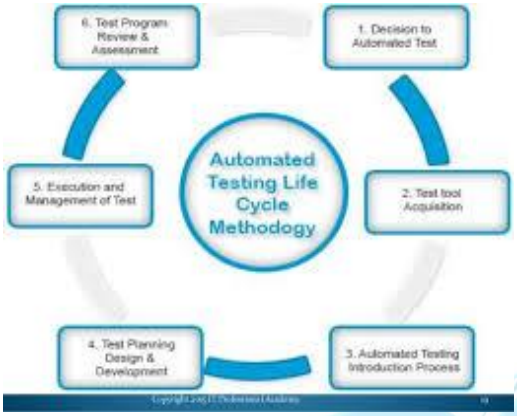
VI.AUTOMATED SOFTWARE TESTING TOOLS

Selenium: selenium supports largest browser vendors. It is an essential tool as most of the people use it. It allows inserting comments in the middle of the script for better understanding and debugging. It provides an option to assert the title for every page.

Testingwhiz: tools enterprise edition offers a complete package of various automated testing solutions like web testing, software testing, database testing, API testing,

mobile app testing, regression test suite maintenance, optimisation, automation and cross browser testing. Some of the important features of testing whiz are: object eye internal recorder, risk based testing, record and playback test automation framework, keyword driven, data driven testing and distributed testing. Test complete which helps in GUI testing, scripting language supports such as: Java scripts, c++ scripts, c# scripts, test visualizer and scripted testing. Some of the other tools are Ranorex, Sahi, Watir, Tosca, Testsuite.

AUTOMATED TESTING LIFE CYCLE



In a software development one must be aware of selecting tests in such a way as to maximise tests coverage within the limits of testing resources. One must also plan a systematic approach in order to select the best test methodology for effective results within few testing tools without the reputations of similar such tools, as it consumes more time as well as it is of no use. But this type of structured test methodology involves a multi stage process supporting the detailed and interrelated activities that are required to introduce and utilise an automated test tool such as develop test design, develop and execute test cases, develop and manage test data and the test environment, document, track and obtain closer on issue or trouble reports.

VII.SOFTWARE TESTING PRINCIPLES

- While testing software, it is essential that every tester should know the basic principles of software testing.
- Exhaustive testing is not possible
- Defect clustering
- Pesticide paradox
- Testing shows presence of defects
- Absence of error
- Early testing
- Testing is context dependence

Some take principles for granted which is unfair as it will help in effective test strategy. Hence using these principles in the project will help one to give best results.

VIII.BENEFITS

It must ensure that it is set early to the market. More cycle of execution must be achieved through the test. The test scripts must be reusable. The execution of the test must have better speed and also it must increase efficiency. Human intervention must not be involved in execution. It must improve high level accuracy and also it must save time and cost. It must have high level of safety. The test must allow frequency and to check thoroughly. It must have less error as it is not done manually. The proportion of the test must give higher rate in comparison with that of the manual test. It must have wider test coverage of application features. All these qualities must be present in an effective tool, as automation testing fits in all these objectives; it is rated on top of all the other applications.

IX.DISADVANTAGES

In automation testing the investment made initially is larger. By increasing the amount of automation, there are less employees required causing high unemployment rates. There can be several unpredictable costs that may exceed the actual cost saved by the automation itself. This can cause increases in population in the work place, it is less versatility.

X.CONCLUSION

In this fast growing technology world, there is much software tools that help mankind to make their work much faster and easier as that is what one look forward for. Automation testing tool is essential and is preferred by all software developers because it makes work much easier and faster. It gives the best quality. It is the safest of all tools; hence it gives the best result.

XI.REFERENCE

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