

STUDY OF AUTOMATION TESTING BENEFITS AND LIMITATIONS

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ABSTRACT

Testing plays an important role in software development process, where we find defects in software or application. In Software industry we use testing to show where application or software is lacking. Testing of any software or application is done manually as well as using automated tools. This paper gives idea of manual and automation testing. Problems most of the time faced by manual and automation testing also shown in this paper.

KEYWORDS: Bug, QTP, SDLC (Software Development Life Cycle), STLC (Software Testing Life Cycle), TC (Test Cases), UI (User Interface)

I. INTRODUCTION

Software Testing becomes more and more important in software development industry. Using Testing's effective techniques most errors are get reveled. [1] Testing is very important element of software quality assurance and represents the final review of specification, design and coding. Mostly Software's are tested manually or using automated testing tools it's called as automation.

Automated testing done by using different tools to test software. Few testing tools are QTP, Loadrunner, Winrunner. [3] Manual testing is done without taking a supporting of any tool. Manual testing performed by sitting in front of computer and checks each and every page of software suspiciously. We use verity of combinations of inputs, for getting expected result and record all remarks, behavior of application.

II. TESTING:

Testing is the process of execution of application or program with the intention of finding a bug or error. Test means response

of program for given input. [1] Following figure shows approach of software testing.

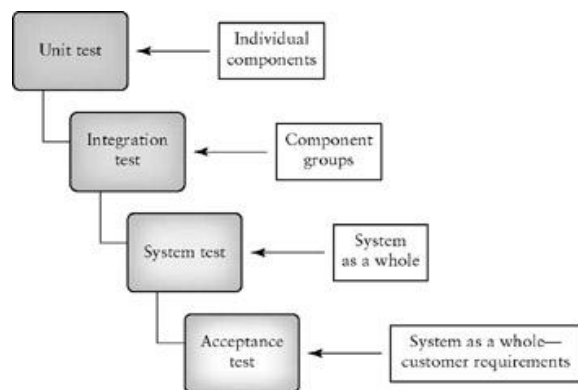


Figure 1: Software Testing Approaches

III. TYPES OF TESTING

Testing can be divided into two types.

- Manual Testing
- Automated Testing.

MANUAL TESTING

Manual testing is a testing method in which test engineer writes test cases manually and execute those to discover defect from software on which they perform testing. It is most tedious and old strategy of software

testing.[5] Manual testing is activity in which we have need of the testers with some of set of qualities – to be open-minded, exploratory, creative, observant, innovative and patient. When we do manual testing again and again it can be difficult to execute on large software applications which having huge dataset coverage.

Problems faced by manual testing

Need large amount of human resources – More testers are needed in manual testing because test cases are needed to execute manually.

Less reliable- Manual testing is not as much of reliable as tests may not be performed with accuracy each time because of human errors.

Non-programmable - No programming can be done to write down tests which get hidden information. Manual Testing can become unexciting and hence are error raised.

Time consuming - Test cases are executed by humans so it is very slow and difficult. [2]

AUTOMATION TESTING

Automated software testing involve development of test scripts by using scripting languages such as JavaScript, Python so test cases are executed by using computers with less amount of human interference and attention.[1] To save human effort and cost the test design and development done together using automated tools. The automation software which we used for testing can enter test data in system under test, which compares expected and actual results and generates detailed test reports. To get accurate result we require execution of few test sets repeatedly. Automation testing large amount of money recourses need to be invested.

Using automation tool it is possible to record this test set and re-do it as we required. Once the test set is automated, no human interference is needed. Purpose of automation is to decrease number of test cases to be run manually and not remove manual testing altogether.[5] & [1]

When Test Automation done correctly it can have lots of Benefits and it's very helpful for project and organization. There are few limitations of test automation that we need to be. [3] & [4]

IV. TEST AUTOMATION BENEFITS

Verification of the known

Automated checks are the way to verify that the application still functions correctly after changes done into it. When new element or feature is added to application or a bug is getting fixed, it impacts the functionality of the software, i.e. a regression bug is introduced. By executing a set of some automated regression checks, when the application updated, we can spot any new bugs which are introduced as a result of the changes.

Note – When we run automated it confirms that the application is upgraded. We not need execute full automated set, but quick smoke regression test is enough to pick any major issues.

Quick feedback

As soon as software or applications get updated they provide quick feedback. It's very important to the development team; as they can fix anything which broken before moving on to code or other stuff.

Note – Quick feedback is given when UI (user interface) is not involved when unit testing is done.

Fast execution of sets

When we execute automated sets they can take a while to script, they are fast and they can go through various steps faster than a human being. So, they help gives quick feedback to the development team. It's got to be done with data driven test where the few tests are executed so many times but with different data sets.

Frees up the time of the testers

Few tests are needed to execute on regular basis. With help of automated sets they can executed automatically without the help of less supervisors. It gives more time to tester to focus on other testing.

The development team can contribute

Most of the time Automated sets is written in same language as the application undergoing test. Because of this responsibility of writing, maintaining and executing tests can done with the basis of sharing responsibility with everyone in the development team, not only by testers.[4]

V. TEST AUTOMATION LIMITATION

Quality not maintained

It's important to verifying the functionality of UI or System level. Automated is only thing what is been programmed to check.

Solution: In system level or UI automation, ensure that to check only important elements as so many things can be get done as a result of an action.

Not reliable

Automated testing can fail because of many factors. Minor changes are done in UI. Few bugs occur continuously. Network issues also occur.

Solution: To overcome from the issue of connectivity or changes made in UI make use of stub. [4]

Automation is not testing

For testing tester need domain knowledge, should learn behavior of application so testing techniques are get applied on it.

People mistake "Test Automation" with Testing. If they have tools to automate the testing, they want to "automate all the tests" and get rid of so called manual testers or QAs.

Testing is not only executing a set of given test steps and comparing them actual results with expected results. But properly test an application, where we need human intelligence.

Solution: Project requires both automated and manual testing. It cannot get replaced by each other.

Maintenance Time and Effort

When we do automated testing we have to keep record of each and every test. If updates of applications are available then we need to do test on it. If those not kept up to date then relevant tests may get failed. Get benefit from the automation, they need to be keep up to date and relevant, which needs time and resource.

Solution: Use reusable modules, separate the tests from the framework and use good design principles to alleviate the maintenance effort.

Slow feedback

Script of code is complicated then in automation testing it takes more time to execute it. Manual test is sometimes faster.

When you do system level automation testing it takes more time to complete.

Solution: Try to do automation test along with development of code. So, when development is complete, we can do automated testing with new functionality.[4]

Not many bugs found

Most of the time when we do testing on application in different ways it discovers bugs. Automated regression test always follow a given path, sometimes with the same set of test data. It reduces the chance of exploring new bugs in the application.

Solution: Try different paths with different data every time can tell possible issues. [4]

VI. CONCLUSION

Manual testing takes more time, tedious and it requires huge investment of human resources. Using automation tools we can record the test cases and we can re-play it when required. If test sets are automated, then there is no need of human interference.

We need to do investment before we do automation testing, as compare with manual testing. This paper discussed about manual and automated testing. Most focused on benefits and limitations of automation testing.

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