



A Review on Manual Software Testing and its procedure in Real Time

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ABSTRACT: Testing is one of the important phases in software development. A software tester validates the software/application to make it more reliable and bug free. Quality of the software is determined after testing it. Software testing can be achieved in two ways automation software testing and manual software testing. In this paper the review is limited to manual software testing. The objective of this paper is to highlight the procedure involved in manual software testing and to give a brief idea how it is carried out in a software company. Although it varies from company to company or from product to product, here an overview of manual testing procedure is shown.

KEYWORDS: Software testing, sanity testing, unit test case, quality engineer, automation testing, bug.

I.INTRODUCTION

Software testing is a set of procedures that are used to validate or test a software/application to make it free from any bugs. The engineer who does this job is called a Quality engineer. A quality engineer must know the technical specification of that software or application in order to test them and meet the requirements of customers. Software testing not only includes reporting new bugs or testing the existing bugs but also to make the application accurate, make it user friendly and increase the efficiency. After the analysis by a quality engineer the product owners/ project owners get the picture of how good the quality of the software/application is. [1]

The relationship between testing cost and errors are given in figure 1. It is apparently demonstrated that cost rises dramatically in a testing (functional and nonfunctional). The compelling testing goal is to do the optimal number of tests so that additional testing endeavor can be minimized. From Figure 1, we can say that Software testing is an essential factor in software quality assertion.

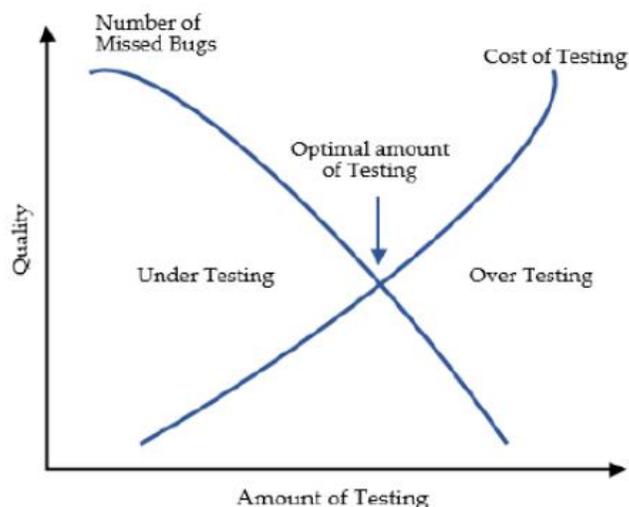


Fig 1.1 Graph showing optimal amount of testing [1]



II. TYPES OF SOFTWARE TESTING

Software testing is divided into 2 types

- Manual software testing: Testing application without any tools or program code.
- Automation software testing: Testing application using program codes and tools



Fig 2.1 types of software testing[2]

A. MANUAL SOFTWARE TESTING

Manual software testing is a process of testing where a tester tests the software/application manually. This kind of testing does not involve any coding or programs instead testing is done based on the test cases written. End-to-end testing can be achieved by this method. All the scenarios that cannot be automated have to be tested manually. Although manual testing is time consuming it is still practiced in almost every software companies for its reliability. Manual testing is the most primitive of all testing types and helps find defects in the software system. A person doing manual testing should be patient, have good observing skills, knowledge about the product/software they are testing. Each bug is tested manually in the software by a manual software tester to assure the quality of the software. The process involved in manual software testing is explained in next section.

B. AUTOMATION SOFTWARE TESTING

Automation software testing is type of testing which involves scripts and codes to run a particular test. An automation tester writes the code for a test case or scenario to reduce the amount of time taken for manually testing the same scenario again and again. Even though to run the automation script and testing a scenario takes very less time, the development of the script is time consuming. When there is an urgent requirement to test and deliver the software it is better to choose manual testing procedure. Automation testing is also used to test the application from load, performance, and stress point of view. It increases the test coverage, improves accuracy, and saves time and money in comparison to manual testing. Automation tools like selenium, eclipse, maven, git etc. are used in companies according to their needs.

III. MANUAL TESTING PROCEDURES – A BRIEF METHODOLOGY

Figure 3.1 shows the flow diagram involving the steps in manual testing of a software/application. Manual testing works on the principle of software testing life cycle (STLC). Any software testing procedure follows STLC. This procedure is further braked downed into 5 steps for better understanding.

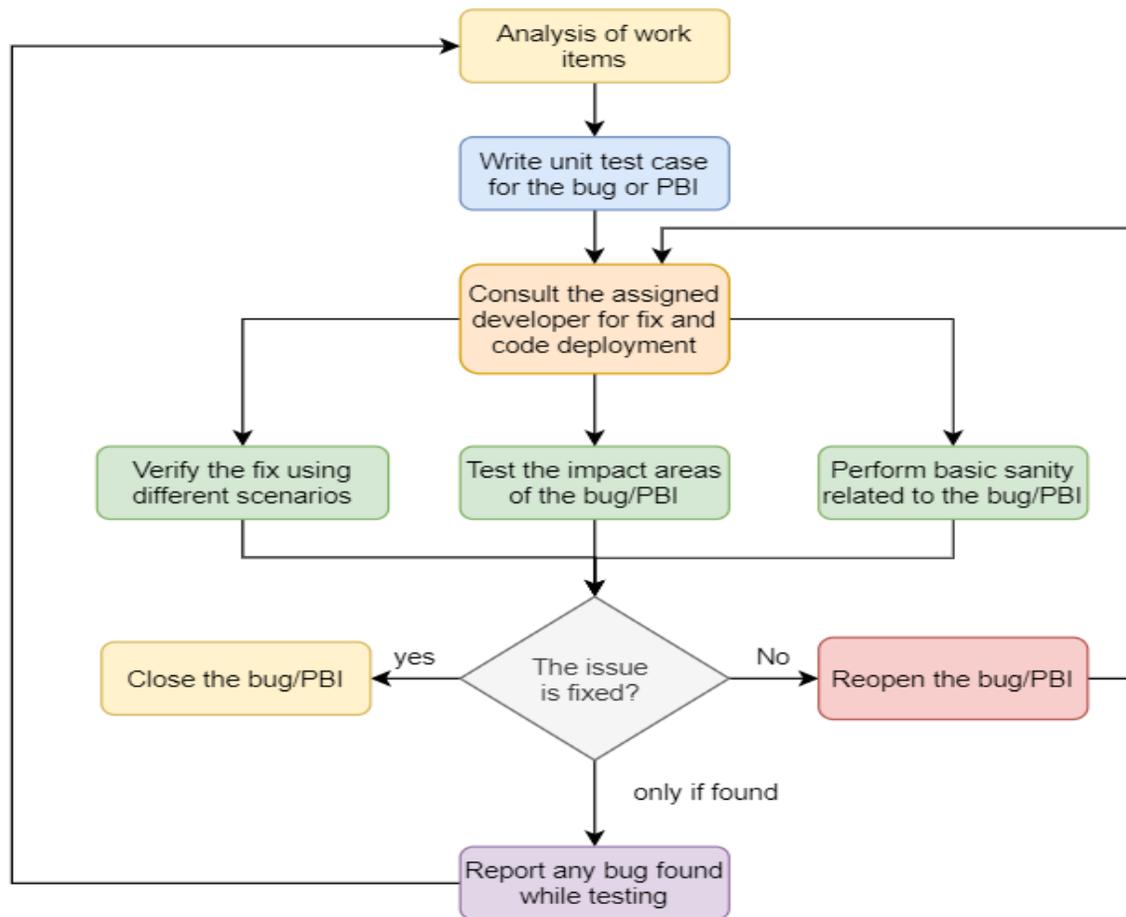


Fig 3.1 manual testing methodology/process [courtesy: made it using flowchart maker]

As figure 3.1 shows manual testing is cycle repeating itself accordingly. The procedure begins with finding a new defect in the software or analyzing reported defect and ends with making sure that the defect is not occurring anywhere in the software. Below is the detailed explanation of the procedure.

A.ANALYSIS OF BUG/DEFECT

Whenever a bug/defect is reported in the software or bug, a software tester analysis the bug and tries to reproduce it in the software/application. Based on the analysis a manual software tester gives the approximate effort need to test that particular bug in terms of hours required. In analysis a quality engineer reproduces the bug in different scenarios through which it can be reproduced and makes a note of it

B.WRITING UNIT TEST CASES FOR A BUG/DEFECT

Based on the scenarios in which a quality engineer could reproduce bug, they write unit test cases for all the scenarios so that a developer gets an idea where all this bug can be reproduced and give a proper fix for it. A developer tests the fix given by the testing the software on basis of the unit test cases given by a quality engineer. Unit test cases are the test cases that are written specifically for that bug/defect.

C.CONSULTING THE DEVELOPER AND CODE DEPLOYMENT

Regular communication between quality engineer and developer is always necessary. This helps each other to plan their tasks according. A quality engineer helps the developer in performing unit testing before dumping the code into the



software/application in this phase. Once unit testing is performed by the developer the code is deployed (dumped) inside the software/application/build and is available for the quality engineer to test.

D.TESTING THE BUG/DEFECT USING DIFFERENT SCENARIOS

This stage involves testing all the different scenarios through which the bug can be reproduced and verify if the fix given by the developer is working fine for all the scenarios. Basic sanity around the impact area is tested. Sanity means testing basic functionality of the page or area where the fix was given so that no basic functionality is broken in the software/application. Test the forms/modules/ areas mentioned as regression impact areas by the developer for that bug.

E.CLOSE/REOPEN THE BUG/DEFECT

After testing if a tester finds no issues or nothing else is broken due to the fix given then they close the bug with report saying everything is working fine and the issue is resolved. On the other hand, if the fix is not working for few scenarios or something is broken due to the fix then the bug is reopened by tester with a report mentioning where all its broken and assigns it back to the developer to fix it. While testing one bug if a tester finds another bug which is not related to this bug then they report it as a new bug and the same procedures follow for that new reported bug.

IV.REPORTING A BUG

Whenever a tester comes across any defects or finds out there is any malfunctional page or page crash in the software then they report it to the management where they carry out further procedure to fix the issue and when to fix it.

Procedure:

- When you come across any bug report the bug in the tool or software your company uses
- Enter the steps to reproduce so that others understand the bug
- Attach a screenshot/video/required documents
- Assign it to product management team or developer lead (if it's a blocker for release)
- Provide any help needed for reproducing the bug
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V.SANITY TESTING

After the code cut off (after deployment of all codes for the release), the quality engineers start sanity testing. Sanity test is the kind testing done to ensure all the new codes merged in the software do not affect the existing functionality of the software. If software/product is quite big a lot of effort is needed for sanity.

Procedure:

- Each quality engineer is assigned with a set of test cases to test. Test cases are selected based on the modules to which code changes have been made.
- Quality engineer is supposed to test the given test case manually and mark the outcomes accordingly
- If any test case fails, then it should be reported as a release blocker to developers as it will block the release of new version of software/application/bug
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VI.CONCLUSION

In this paper we have reviewed the process involved in manual testing of a software/application. From all the above details we can say that software testing is a very important part of software development life cycle. You can never find end in software testing and it's a continuous process for improvement of software/application/product. The final delivery of the software/application/product depends on testing. It is very important to adopt new tools and technologies which help testing efficiently and consume relatively less time. A regular communication between the writers who write the software specification after a chat with customer and a tester is necessary which helps in better understanding of the software and early review of software. Through this way many problems that can occur later can be fixed and money can be saved. The future scope for software testing includes adopting technologies in which testing can be achieved through simulation and making automation testing more effective. This will reduce the manual work required and the human errors can be avoided.[1]



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