DIFFERENT ACTIVITIES INVOLVED IN SOFTWARE TESTING LIFE CYCLE

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ABSTRACT

Software Test life cycle nothing but the activities done by test engineer during project life cycle.Software Testing Life Cycle defines the steps by steps activities in testing.SoftwareTesting improves the quality of the product. It also increase productivity ofsoftware and reduce the cost of the software.Testing is not to execute the test cases but also by reading the documentof the product thetest engineer can identify the defects.Testing is an important phase of Software development life cycle. Testing is used to find the defects for increasing the quality of product when those defects are fixed properly.

Keywords: Defect, Defect tracking tool, Priority, Performance testing, Severity, Stress testing.

I. INTRODUCTION

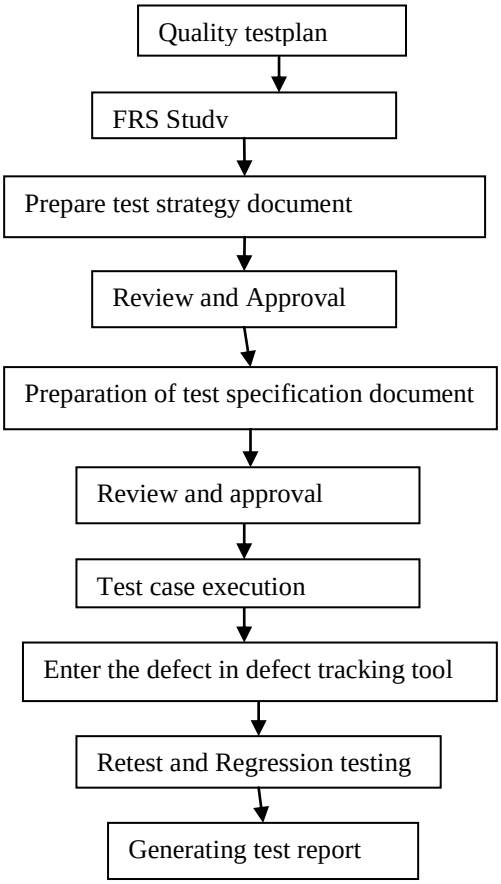

Fig. Different Activities in Testing Process

These are the following steps for above given fig-

Step1: Test engineer should prepare the quality test plan and test plan is a planning document which contains following information-

1. Release milestones/dates.
2. Resource allocation.
3. Risk
4. Test deliverables
5. Stop criteria.

Step2: Study the FRS document of the project.

Step3:Prepare the test strategy document, after completing the document you should need to send this document to all technically sound people for review and this document contains the following information: -

1. Overview of feature.
2. Test environment set up.
3. Not in scope of testing.
4. Test case techniques
5. Which test methodology we are using?

Step4: Prepare test specification document on the basis of FRS document. This document is in tabular format provide for testing purpose and after completing the document you should need to send this document to all technically sound people for review.

Step5:Once your product build is given to test team then test engineer should execute the test cases.

Step6: During the execution if test engineer find any defect then we have to enter that defect in to defect tracking tool.

Step7:Test engineer should involve in retest and regression testing.

Step8:Test engineer have to prepare the test report.

1.1 When to Start Testing

Software testing is involved in early part of the project development. Once the FRS document is ready the functional test team involved in following activities:-

1. Reviewing the document and giving the defects.
2. Prepare test strategy document.
3. Prepare test cases.

1.2 When to Stop Testing

Testing of featured stopped if the following criteria meets.

A. More than (>) 95% test cases are in “Passed “state.

B. There should not be any high sever defects available in defect tracking tool in “open” state.

II. TESTING TYPES

Testing of software product can be done in both ways of Automation and Manual testing method.

2.1 Manual Testing- Testing of the Software product manually this means that we are not using any automated tool or any script. In this type tester take over the role of an end user and test the software identify any unexpected behavior or bug [2].

2.2 Automation Testing-In this method weuse the automation tools to run test scriptthat repeat the predefined steps. Automation Testing is used to re-run the test scenarios/script that were performed manually and repeatedly [2].

III. LEVELS OF TESTING

Following are the main levels of Software Testing:

Functional Testing.

Non- functional Testing.

3.1. Functional Testing- Testing is done byan analysis of the specification of the functionality of a software or product. All the module of all feature are integrated and given as a product to functionality team to test the functionality of product as per FRS.

3.1.1 Unit testing- Testing is done by developer by testing his own developed code.A unit is the smallest testable part of software. It usually has one or a few inputs and usually a single output. In procedural programming a unit may be an individual program, function, procedure, etc [3].

3.1.2 Integration Testing- Integrating the modules of one feature this testing is done [3].

Two approaches are there

3.1.2.1 Top to Down- *Top Down* is an approach to Integration Testing where top level units are tested first and lower level units are tested step by step after that. This approach is taken when top down development approach is followed.

3.2.2 Bottom to UP- *Bottom Up* is an approach to Integration Testing where bottom level units are tested first and upper level units step by step after that.

3.1.3. Re Testing- If a defect which is previously raised and solved properly is called re-testing.

3.1.4Regression Testing-The main aim of regression testing is to find the side effect (in the passed test case) introduced because of code change.

Code change in the scene.

1. Either due to bug fixing.
2. Due to addition of any new feature.

3.1 5Acceptance Testing-If the testing done by client/customer before accepting the product. This testing can be done by own testing team of client which is called alpha testing.

If acceptance is done by 3rd party organization then it is called beta testing.

3.2. Non Functional Testing-Non-functionality testing is done to check the Stability and Robustness of the product. Here we look for hang or crash kind of issues and tryout different test method likes: -

3.2.1 Stress testing

3.2.2 Load testing

3.2.3 Performance testing

IV. TESTING METHODOLOGIES AND TYPES

I have considered the two testing methodology and types that is mention above:

4.1. Black box testing

4.2. White box testing

4.1 Black Box Testing

In this technique user is not aware of internal knowledge of application. The tester is oblivious to the system architecture and does not have access to source the code.

Black box testing technique - [5]

1. Equivalence partitioning- A The equivalence partitioning technique in which test cases are designed to executed representative from equivalence partitioning . We need to test only one condition from each partition.
2. Boundary value analysis-This technique is used for range given in a requirement
3. Decision table testing- A technique in which test cases are used to execute the combination of input and stimuli (causes) has shown in decision table.
4. State transition testing-Here our aim is to find more defects by involving different states. In which test cases are designed to execute valid and invalid state transition.
5. Use case testing- A techniques in which test cases are designed to execute user scenario.

4.2 White Box Testing

In this technique user is not aware of internal knowledge of application.

White box testing is the detailed investigation of internal logic and structure of the code.

White Box Techniques [5]

1. Statement Coverage – Execute all statements at least once

Example: - Read A

Read B

If A>B then C=0

ENDIF

2. Decision Coverage-100 % decision coverage implies 100 % statement coverage.

V. CONCLUSION

Testing can ensure that defects are present, but cannot ensure that there is no defect or bug. Testing reduces the probability of unidentified defects remaining in the product but, if there is no defect that does not mean our software is correct. Testing is identified the defect and eliminating that defect in software product

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