

Introduction To A New Verification Technique

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Abstract- Software testing is the process to check the correctness, completeness and accuracy of the software product. It is the combination of verification and validation. Verification ensures that the product is built according to the sequence and design specification. Verifying process includes checking documents, design, code and program. Hence the ultimate goal of this paper is to propose a brand new verification technique i.e pair testing. Motivation of this search is to find better way to organize the tester's work to quality of software in a productive way. This pair testing can be performed in the early phase of software development lifecycle, so the goal is not only to reduce the cost but also to improve tester's life quality.

Hence, widespread use of pair testing involves a culture shift in values of the organization away from individual and towards team recognition and goals.

Therefore, this paper aims to provide a vivid account of an agile pair testing technique that promotes knowledge sharing and quality. After all, when pair programming is possible, then pair testing can also be possible.

Keywords- Pair testing, Verification technique, Static testing

I. INTRODUCTION

Pair testing is a static testing technique, in which two testers work together at one place. One person serves as a tester that is provided with the necessary documentation i.e Software requirement specification, design document, test plan, source code document etc. and his task is just to test these documents. Requisite information about the software product is provided to him by the test manager. This tester has to check accurateness, completeness, verifiability, traceability, ambiguity and completeness in the above mentioned documents. Moreover, any spelling mistake or human error are also checked during this process. Proof reading is done by the tester to detect any errors. After this whole process of analysis and investigation report, the tester has to generate a summary report. The format of the summary report includes the following:

- 1) Tester name
- 2) Pair combination:

- Expert-Expert
- Expert-Learner
- Learner-Learner
- 3) Documents verified
- 4) Errors and discrepancy found
- 5) Summary report passed or failed
- 6) Reviewer details
- 7) Reporting date
- 8) Duration

So, tester has to maintain this summary report that includes the verification details of the software product i.e What and Where the errors are found in the analysis process.

Now, the second member is the navigator that reviews whatever errors or discrepancies are included in the summary report, they are up to the mark or not i.e simply the navigator or reviewer has to check the work performed by the tester and he can start this review process once the tester starts writing the summary report. So, it is a combined effort of both the members involved in the process. Both have the equal importance. The navigator can just pass or fail the summary report. Once these both the people are done with their tasks, the summary report is further handed to the test manager. The overall duration of this complete process from testing by the tester & reviewing by the navigator is mentioned in the summary report. As it is a team involvement, hence this technique is agile. This pair testing is just the verification of all the documents that play a very crucial role from the first phase of software development lifecycle. It is a human-based checking & it must be done prior to the validation testing. Moreover, it does not involve executing the code. This technique catches the errors that validation cannot catch.

Rules of Pair Testing:

1. Both the members involved in the process must contribute to the solution.
2. Change pairs frequently.
3. Switch roles frequently.
4. End pairing when tired.

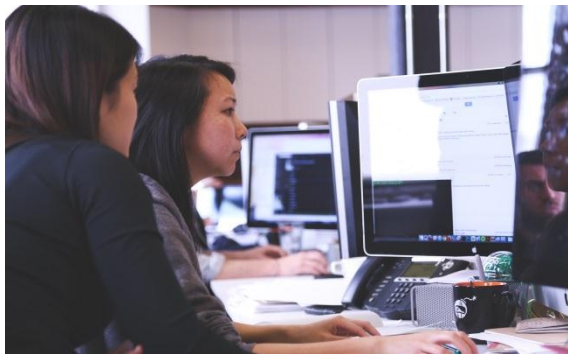


II. TYPICAL PAIR COMBINATIONS IN PAIR TESTING

1. **Expert-expert:-** Since both members of the team are experienced, they can produce the best quality for sure. If both the members will be senior testers or experts, then desired testing result can be obtained.
2. **Expert-learner:-** This will be a great opportunity for the learner or junior tester to learn more from the expert. When the learner raises questions, the expert have to think over and explain. These questions and answers process can lead to the best new solution. But, the learner must be active.
3. **Learner-learner:-** Obviously, two learners can give better result then, they working independently.

The first two pair combinations are much more effective than the third combination, the expert will provide a means to achieve the better quality in software while providing many secondary benefits that improve the ability of a team to continue deliver useful features to customers.

III. STRONG POINTS OF PAIR TESTING



1. **SATISFACTION:-** Pair testing is quite engaging than testing alone. It provides immense satisfaction to the two testers that are involved in the pair testing. Moreover, it

promotes mutual understanding, team spirit, togetherness and healthy relationship between the two testers.

2. **FLEXIBILITY:-** This type of static testing is more flexible from interruptions as it is a collective approach of the two testers. In case if one tester leaves to carry out any other short term task then, the other tester continues to work.
3. **TWO HEADS ARE BETTER THAN ONE:-** There is no exaggeration to the fact that two heads are better than one. Team-spirit, coordination, togetherness, understanding all collectively makes pair testing pretty much less time consuming. When documents are checked & analysed, they are reviewed with utmost care so that good test reports can be generated within stipulated time.
4. **SHARING OF KNOWLEDGE:-** Knowledge is power. Knowledge increases by sharing. Pair testing includes team - communication where the two workers engage in the same process & can share their knowledge & in this way one can learn from the mistakes of other.
5. **HARDER TO PROCRASTINATE:-** Working as a team means one should be dedicated & focused to the task. One cannot stop for any desired distraction. So, this approach doubles up the quality & productivity as the tester can give each other tips as they go along to improve their approach & increase speed.
6. **BUG FINDABILITY IMPROVES:-** With ultimate team communication & cohesiveness, it becomes easier to find bugs. Most of the bugs are identified & fixed using combined efforts of the two testers in less time. There can be great reduction in bugs count.
7. **MONITORING & LEARNING:-** Pair testing provides a good scenario for junior tester to receive mentoring from senior tester & for senior tester to develop mentoring skills. Tester feels confident in solutions & it also provides an easy way to get to know coworker better.

IV. OBJECTIVES OF PAIR TESTING

1. **CREATIVITY AND BRAINSTROMING:**

The objective of pair testing is to indicate creativity. It is somewhat a brainstorming session in which generation of ideas or solution takes place just to improve the efficiency and quality of sessions. Same is with the pair testing, it aims to provide an opportunity for testers of similar skill levels to trade ideas drawing from their differing experiences.

2. BETTER TESTING AND UNDERSTANDING OF THE SYSTEM:

Pair Testing helps to verify the important documents of the software project that play a vital role. It leads to better testing results & the two members involved in the process also understand the system in a better & productive way.

3. BETTER PRODUCT QUALITY:

When better testing results are met, the quality of the system improves to a greater extent. This Pair testing is able to find large number of errors. Hence, it can improve the product quality.

4. RELIABLE DOCUMENTATION:

Reliable documentation is also achieved in pair testing through the generation of summary report.

V. CONCLUSION

Static Testing is the testing of the software work products manually, or with a set of tools, but they are not executed. It starts early in the lifecycle & so it is done during the verification phase. It does not need computer as the testing is done without executing the program. Hence, this paper has provided a detailed description of a new verification technique i.e. Pair testing. Pair Testing requires trust, equality, accountability, management & control. This Pair testing can be of great importance as it involves a cultural shift in values of the organization away from individual & toward team recognition & goals.

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