BLACK BOX TESTING

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ABSTRACT

Software testing is the process of analyzing software to find the difference between required and existing condition. Software testing is performed throughout the development cycle of software and it is also performed to build quality software, for this purpose two basic testing approaches are used, they are white box testing and black box testing. One of the software testing technique which / have explain in my paper is Black Box Testing, it is a method of generating test cases that are independent of software internal structure, I have also briefly explore various different approaches to black box testing technique for finding errors. Since black box testing is always based either directly or indirectly on the software specification so it is also called specification based testing.

INTRODUCTION

The basic approaches to software testing are black box testing and white box testing. White box testing based on an analysis of internal working and structure of a piece of software. It only checks how the system processes the input to generate required output. On the other hand black box testing focuses on the functional requirement of the software. Black box testing is an integral part of correctness testing but its ideas are not limited to correctness testing only. Black box testing is complementary to white box testing technique and likely to uncover a different class of errors then white box method. The tester, in black box testing only knows about the input (process by a system) and required output, or in the other word tester need not know the internal working of the system. Black box testing occur throughout the software development life cycle and software testing life cycle i.e. in regression testing, acceptance testing, unit testing, integration testing and system testing stage. The types of testing under this technique are totally focused on the testing for functionality of the software applications. The other synonyms of BBT are "opaque testing", "functional testing", "behavioral testing" and closed-box testing". An ideal example of BBT system would be a search engine, in which we enter text that we want to search for and got the result, we do not know or see the specific process that is being employed to obtain our result.

E.g. Input —» search —> Output

Black box testing tools are mainly record and playback tools which record test cases in the form of some scripts like Perl. TSL, VB script, JAVA script.

METHODOLOGY

The generic steps of any type of Black Box Testing:

- Initially, the requirements and specifications of the system are examined.
- Tester chooses valid inputs (positive test scenario) to check whether SUT processes them correctly.
- Also, some invalid inputs (negative test scenario) are chosen to verify that the SUT is able to detect them.
- Tester determines expected outputs for all those inputs.
- Software tester constructs test cases with the selected inputs.
- The test cases are executed.
- Software tester compares the actual outputs with the expected outputs.
- Defects if any are fixed and re-tested.

TYPES, TECHNIQUES & TOOLS

Following are the prominent types of Black Box Testing ones –

- ❑ **Functional testing** - This black box testing type is related to the functional requirements of a system; it is done by software testers.
- ❑ **Non-functional testing** - This type of black box testing is not related to testing of specific functionality, but non-functional requirements such as performance, scalability, usability.
- ❑ **Regression testing** - Regression testing is done after code fixes, upgrades or any other system maintenance to check the new code has not affected the existing code.
- ❑ **Unit testing:** is a code based testing which is performed by developers, this testing is mainly done to test each and individual units separately. This unit testing can be done for small units of code or generally no larger than a class.
- ❑ **Alpha Testing:** Usually in the existence of the developer at the developer's site will be done.
- ❑ **Beta Testing:** Done at the customer's site with no developer in

TECHNIQUES

- •Decision table testing
- •Compatibility Technique
- •All-pairs testing
- •State transition Analysis
- •Equivalence partitioning
- •Boundary value analysis
- •Cause–effect graph
- •Error guessing
- •Requirements-based Technique

TOOLS

•Black box testing tools are mainly record and playback tools. These tools are used for regression testing to check whether new build has created any bug in previous working application functionality.

•These record and playback tools record test cases in the form of some scripts like TSL, VB script, Java-script, Perl, etc.

DIAGRAMS

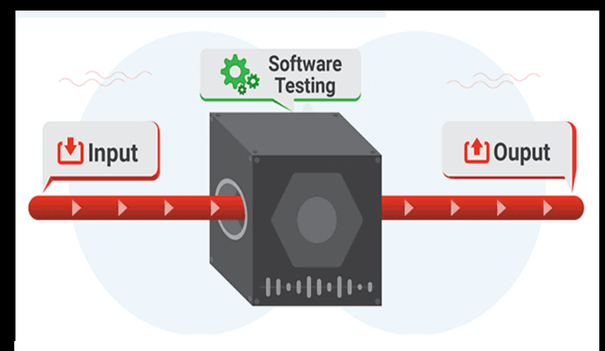

Figure 1. Black box testing

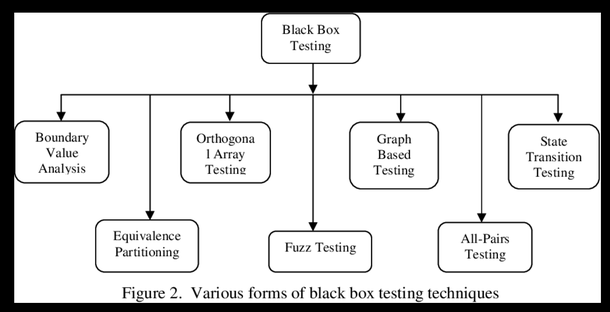

Figure 2. Various forms of black box testing techniques

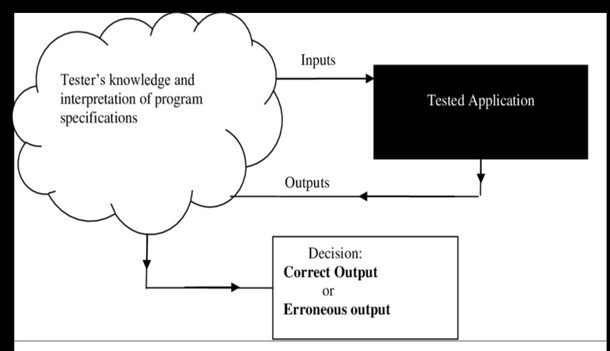

Figure 3. Black box testing paradigm

REFERENCES

I. https://www.semanticscholar.org/paper/Different-Approaches-To-Black-box-Testing-Technique-Khan/3bc594b401407a7bc5add29b6e5df7b703e81081
II. https://www.researchgate.net/publication/268419508_Different_Approaches_To_Black_box_Testing_Technique_For_Finding_Errors
III. http://www.professionalqa.com/black-box-testing