**SOFTWARE TESTING**

## Testing

* + - Software testing is the process of executing a program with intension of finding errors in the code. It is a process of evolution of system or its parts by manual or automatic means to verify that it is satisfying specified or requirements or not.
    - Generally, no system is perfect due to communication problems between user and developer, time constraints, or conceptual mistakes by developer.
    - To purpose of system testing is to check and find out these errors or faults as early as possible so losses due to it can be saved.
    - Testing is the fundamental process of software success.
    - Testing is not a distinct phase in system development life cycle but should be applicable throughout all phases i.e. design development and maintenance phase.
    - Testing is used to show incorrectness and considered to success when an error is detected.

## Objectives of Software Testing

* + - **Software Quality Improvement:** The computer and the software are mainly used for complex and critical applications and a bug or fault in software causes severe losses. So a great consideration is required for checking for quality of software.

#### Verification And Validation:

* + - * Verification means to test that we are building the product in right way .i.e. are we using the correct procedure for the development of software so that it can meet the user requirements.
      * Validation means to check whether we are building the right product or not.
    - **Software Reliability Estimation:** The objective is to discover the residual designing errors before delivery to the customer. The failure data during process are taken down in order to estimate the software reliability

## Principles of Software Testing

* + - All tests should be traceable to end user requirements.
    - Tests should be planned long before testing begins
    - Testing should begin on a small scale and progress towards testing in large
    - To be most effective testing should be conducted by an independent third party

The primary objective for test case design is to derive a set of tests that has the highest livelihood for uncovering defects in software. To accomplish this objective two different categories of test case design techniques are used. They are

* + - White box testing.
    - Black box testing.

#### White-box testing:

White box testing focus on the program control structure. Test cases are derived to ensure that all statements in the program have been executed at least once during testing and that all logical conditions have been executed.

#### Block-box testing:

Black box testing is designed to validate functional requirements without regard to the internal workings of a program. Black box testing mainly focuses on the information domain of the software, deriving test cases by partitioning input and output in a manner that provides through test coverage. Incorrect and missing functions, interface errors, errors in data structures, error in functional logic are the errors falling in this category.

## Testing fundamentals

Testing is a process of executing program with the intent of finding error. A good test case is one that has high probability of finding an undiscovered error. If testing is conducted successfully it uncovers the errors in the software. Testing cannot show the absence of defects, it can only show that software defects present.

## Testing Information flow:

Information flow for testing flows pattern. Two class of input provided to test the process. The software configuration includes a software requirements specification, a design specification and source code.

Test configuration includes test plan and test cases and test tools. Tests are conducted and all the results are evaluated. That is test results are compared with expected results. When erroneous data are uncovered, an error is implied and debugging commences.

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