

ch2 Software Testing Strategies and Techniques.

★ Testing strategy defines template for software testing - step by step process where we can place specific test case design and testing methods.

★ Testability → the degree to which a system facilitates the establishment of test criteria and the performance of the test to determine where those criteria have been met.

★ Testability characteristics

- ① Operability
- ② Controllability
- ③ Observability
- ④ Simplicity
- ⑤ Stability

★ Test Characteristics

- (i) Test should neither be too simple nor too complex.
- (ii) A good test has high probability of finding an error.
- (iii) A good test should be "best of breed".
- (iv) A good test is not redundant.

★ Test case is set of conditions under which a tester will determine whether a functionality of software is ~~not~~ working correctly or not.

★ Test Case Design

Test case ID	Test Case Name	Prequisites	Objective	Description	Steps
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Input	Expected Result	Actual Result	Status
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* While box Testing

→ also known as clear box, glass box, transparent box testing.

• is a method of software testing that tests internal structures and workings of an application.

• WBT tools:- CppUnit

Nunit

RUNIT etc.

• Techniques [WBT]

(i) Statement Coverage

→ try to test/execute every single statement present in the code atleast once.

(ii) Branch Coverage.

→ trying to cover every possible branch path that could be existing in the code and test them.

(iii) Dataflow testing

→ selects the paths of a program according to the locations of definitions and uses of variable in the program.

(iv) Loop testing

→ focuses on validity of loops.

4 classes of loop test:-

(a) Simple

(b) Concatenated

(c) Nested

(d) Unstructured

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 Date
- Advantages. Helps in optimizing the code.
 - (i) ~~Opt~~ Hidden errors can be identified.
 - (ii) Test cases can be easily identified.
 - (iii) This testing is thorough than other testing approach as it covers all test code paths.
 - (iv) Can be started at an earlier stage i.e. no need of GUI.

- Disadvantages

- (i) Time consuming when comes to large scale programming application.
- (ii) WBT is much expensive and complex.
- (iii) Need professional programmers who have detailed knowledge and about the programming language.

- ★ Black Box Testing outer, external
- • also known as behavioral testing
- examines the functionality of an application without looking into its internal structures etc.
 - BBT tools:
 - Selenium
 - Appitools
 - Appium

• Techniques:

① Cause-effect graph → As the name says we make here graph that shows relationship between causes and effects.

② Boundary level value → System has some values which have range. These values are tested to check whether they are in range.

2 types

internal → 1-99 checks between them

external → 1-99 checks 0 or 100, 101, ...

• Advantages

- ① efficient when used on large systems
- ② No need of programming language knowledge.
- ③ Test cases are easily reproducible.
- ④ Tester can be non-Technical.

• Disadvantages

- ① Test case can be difficult to design without functional specification.
- ② Possibility of repeating the tests while already performed.
- ③ Does not reveal errors in control structure.
- ④ Some programs in application are not tested.