WHITE BOX TESTING

What is White Box Testing?

White box testing is a testing technique, that examines the program structure and derives test data from the program logic/code. The other names of glass box testing are clear box testing, open box testing, logic driven testing or path driven testing or structural testing.

White Box Testing Techniques:

- **Statement Coverage -** This technique is aimed at exercising all programming statements with minimal tests.

- **Branch Coverage -** This technique is running a series of tests to ensure that all branches are tested at least once.

- **Path Coverage -** This technique corresponds to testing all possible paths which means that each statement and branch is covered.

Calculating Structural Testing Effectiveness:

```
Statement Testing = (Number of Statements Exercised / Total Number of Statements) x 100
%

Branch Testing = (Number of decisions outcomes tested / Total Number of decision
Outcomes) x 100 %

Path Coverage = (Number paths exercised / Total Number of paths in the program) x 100 %
```

Advantages of White Box Testing:

- Forces test developer to reason carefully about implementation.

- Reveals errors in "hidden" code.

- Spots the Dead Code or other issues with respect to best programming practices.

Disadvantages of White Box Testing:

- Expensive as one has to spend both time and money to perform white box testing.

- Every possibility that few lines of code are missed accidentally.

- In-depth knowledge about the programming language is necessary to perform white box testing.