

# GLASS BOX TESTING

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## What is Glass Box Testing?

Glass 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.

## Glass 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:

$\text{Statement Testing} = (\text{Number of Statements Exercised} / \text{Total Number of Statements}) \times 100 \%$

$\text{Branch Testing} = (\text{Number of decisions outcomes tested} / \text{Total Number of decision Outcomes}) \times 100 \%$

$\text{Path Coverage} = (\text{Number paths exercised} / \text{Total Number of paths in the program}) \times 100 \%$

## Advantages of Glass 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 Glass Box Testing:

- Expensive as one has to spend both time and money to perform white box testing.
- Every possibility that few lines of code is missed accidentally.
- In-depth knowledge about the programming language is necessary to perform white box testing.