White Box Testing

Definition:
White Box Testing is a software testing method where the tester has knowledge of the internal code, structure, and logic of the software. It focuses on testing the internal workings to ensure each part of the code functions correctly.

Key Points:

1. **Purpose**: To verify that the code, logic, and paths work correctly without errors.
2. **Approach**:
    - The tester examines and tests the code directly.
    - Tests are designed to cover different code paths, conditions, and loops.

Types of White Box Testing:

1. **Unit Testing**: Tests individual units or pieces of code, such as functions or methods.
2. **Code Coverage Testing**: Ensures every line and branch of code is tested.
3. **Path Testing**: Verifies that each possible path in the code is functioning as expected.

Advantages:

- **Improves Code Quality**: Helps identify and fix issues within the code logic.
- **Detailed Testing**: Covers more internal details, reducing the risk of hidden bugs.
- **Optimizes Performance**: Can help improve code efficiency and performance.

Disadvantages:

- **Requires Coding Knowledge**: Only testers or developers with coding skills can perform it.
- **Time-Consuming**: Reviewing and testing code paths takes time, especially for large systems.
- **Limited User Perspective**: Focuses more on code correctness than user experience.

Summary: White Box Testing provides a detailed check of the code's logic and structure, helping improve the quality and reliability of the software from the inside out. This method complements Black Box Testing by catching internal issues that may not affect visible functionality but impact overall performance and security.