Black Box Testing

The technique of testing without having any knowledge of the interior workings of the application is Black Box testing.

The tester is oblivious to the system architecture and does not have access to the source code. Typically, when performing a black box test, a tester will interact with the system's user interface by providing inputs and examining outputs without knowing how and where the inputs are worked upon.

White Box Testing

White box testing is the detailed investigation of internal logic and structure of the code. White box testing is also called glass testing or open box testing. In order to perform white box testing on an application, the tester needs to possess knowledge of the internal working of the code.

The tester needs to have a look inside the source code and find out which unit/chunk of the code is behaving inappropriately.

Grey Box Testing

Grey Box testing is a technique to test the application with limited knowledge of the internal workings of an application. In software testing, the term the more you know the better carries a lot of weight when testing an application.

Mastering the domain of a system always gives the tester an edge over someone with limited domain knowledge. Unlike black box testing, where the tester only tests the application's user interface, in grey box testing, the tester has access to design documents and the database. Having this knowledge, the tester is able to better prepare test data and test scenarios when making the test plan.

What's the difference between white and black box testing?

Black-box testing is a way of testing software without having much knowledge of the internal workings of the software itself. Black box testing is often referred to as behavioral testing, in the sense that you want to test how the software behaves as a whole. It is usually done with the actual users of the software in mind, who usually have no knowledge of the actual code itself.

White box, on the other hand, is testing of the structural internals of the code – it gets down to the for loops, if statements, etc. It allows one to peek inside the 'box'. Tasks that are typical of white box testing include boundary tests, use of assertions, and logging.

Black box testing: This approach tests all possible combinations of end-user actions. Black box testing assumes no knowledge of code and is intended to simulate the end-user experience. You can use sample applications to integrate and test the application block for black box testing. You can begin planning for black box testing immediately after the requirements and the functional specifications are available.

White box testing: (This is also known as glass box, clear box, and open box testing.) In white box testing, you create test cases by looking at the code to detect any potential failure scenarios. You determine the suitable input data for testing various APIs and the special code paths that need to be tested by analyzing the source code for the application block. Therefore, the test plans need to be updated before starting white box testing and only after a stable build of the code is available. A failure of a white box test may result in a change that requires all black box testing to be repeated and white box testing paths to be reviewed and possibly changed.

Difference between white box testing and black box testing:

White box testing:

- White box testing is done by the Developers. This requires knowledge of the internal coding of the software.
- White box testing is concerned with testing the implementation of the program. The intent of this testing is not to exercise all the different input or output conditions, but to exercise different programming structures and data structures used in the program. It is commonly called structural testing.
- White box testing mainly applicable to lower levels of testing: Unit testing and Integration Testing.
- Implementation knowledge is required for white box testing.

Black box testing:

- Black box testing is done by the professional testing team. This does not require knowledge of internal coding of the application. Testing the application against the functionality of the application without the knowledge of internal coding of the software.
- In Black box testing the structure of the program is not considered. Test cases are decided solely on the basis of the requirements or specification of the program or module.
- Black box testing mainly applicable to higher levels of testing: Acceptance Testing and System Testing.
- Implementation knowledge is not required for black box testing.

Black Box Testing vs Grey Box Testing vs White Box Testing

S.N.	Black Box Testing	Grey Box Testing	White Box Testing
1	The Internal Workings of an application are not required to be known	Somewhat knowledge of the internal workings are known	Tester has full knowledge of the Internal workings of the application
2	Also known as closed box testing, data driven testing and functional testing	Another term for grey box testing is translucent testing as the tester has limited knowledge of the insides of the application	Also known as clear box testing, structural testing or code based testing
3	Performed by end users and also by testers and developers	Performed by end users and also by testers and developers	Normally done by testers and developers
4	Testing is based on external expectations - Internal behavior of the application is unknown	Testing is done on the basis of high level database diagrams and data flow diagrams	Internal workings are fully known and the tester can design test data accordingly
5	This is the least time consuming and exhaustive	Partly time consuming and exhaustive	The most exhaustive and time consuming type of testing
6	Not suited to algorithm testing	Not suited to algorithm testing	Suited for algorithm testing
7	This can only be done by trial and error method	Data domains and Internal boundaries can be tested, if known	Data domains and Internal boundaries can be better tested

The Differences between Black Box Testing and White Box Testing are listed below.

Criteria	Black Box Testing	White Box Testing
Definition	Black Box Testing is a software testing method in which the internal structure/ design/ implementation of the item being tested is NOT known to the tester	White Box Testing is a software testing method in which the internal structure/ design/ implementation of the item being tested is known to the tester.
Levels Applicable To	Mainly applicable to higher levels of testing:Acceptance Testing System Testing	Mainly applicable to lower levels of testing:Unit Testing Integration Testing
Responsibility	Generally, independent Software Testers	Generally, Software Developers