**White Box Testing**

White box testing strategy deals with the internal logic and structure of the code. White box testing is also called as glass, structural, open box or clear box testing. The tests written based on the white box testing strategy incorporate coverage of the code written, branches, paths, statements and internal logic of the code etc.

In order to implement white box testing, the tester has to deal with the code and hence is needed to possess knowledge of coding and logic i.e. internal working of the code. White box test also needs the tester to look into the code and find out which unit/statement/chunk of the code is malfunctioning.

**Types of White Box testing**

**Unit Testing:**  
The developer carries out unit testing in order to check if the particular module or unit of code is working fine. The Unit Testing comes at the very basic level as it is carried out as and when the unit of the code is developed or a particular functionality is built.

**Static and dynamic Analysis:**  
Static analysis involves going through the code in order to find out any possible defect in the code. Dynamic analysis involves executing the code and analyzing the output.

**Statement Coverage:**  
In this type of testing the code is executed in such a manner that every statement of the application is executed at least once. It helps in assuring that all the statements execute without any side effect.

**Branch Coverage:**  
No software application can be written in a continuous mode of coding, at some point we need to branch out the code in order to perform a particular functionality. Branch coverage testing helps in validating of all the branches in the code and making sure that no branching leads to abnormal behavior of the application.

**Security Testing:**  
Security Testing is carried out in order to find out how well the system can protect itself from unauthorized access, hacking – cracking, any code damage etc. which deals with the code of application. This type of testing needs sophisticated testing techniques.

**Mutation Testing:**  
A kind of testing in which, the application is tested for the code that was modified after fixing a particular bug/defect. It also helps in finding out which code and which strategy of coding can help in developing the functionality effectively.

Besides all the testing types given above, there are some more types which fall under both Black box and White box testing strategies such as: Functional testing (which deals with the code in order to check its functional performance), Incremental integration testing (which deals with the testing of newly added code in the application), Performance and Load testing (which helps in finding out how the particular code manages resources and give performance etc.) etc.

**Advantages of White box testing are:**

* As the knowledge of internal coding structure is prerequisite, it becomes very easy to find out which type of input/data can help in testing the application effectively.
* The other advantage of white box testing is that it helps in optimizing the code
* It helps in removing the extra lines of code, which can bring in hidden defects.

**Disadvantages of white box testing are:**

* As knowledge of code and internal structure is a prerequisite, a skilled tester is needed to carry out this type of testing, which increases the cost.
* And it is nearly impossible to look into every bit of code to find out hidden errors, which may create problems, resulting in failure of the application.