Error, Defect, Bug, Failure, Problem

What is Error ?

An **error** is a mistake, misconception, or misunderstanding on the part of a software developer. In the category of developer we include software engineers, programmers, analysts, and testers.

What is Defect ?

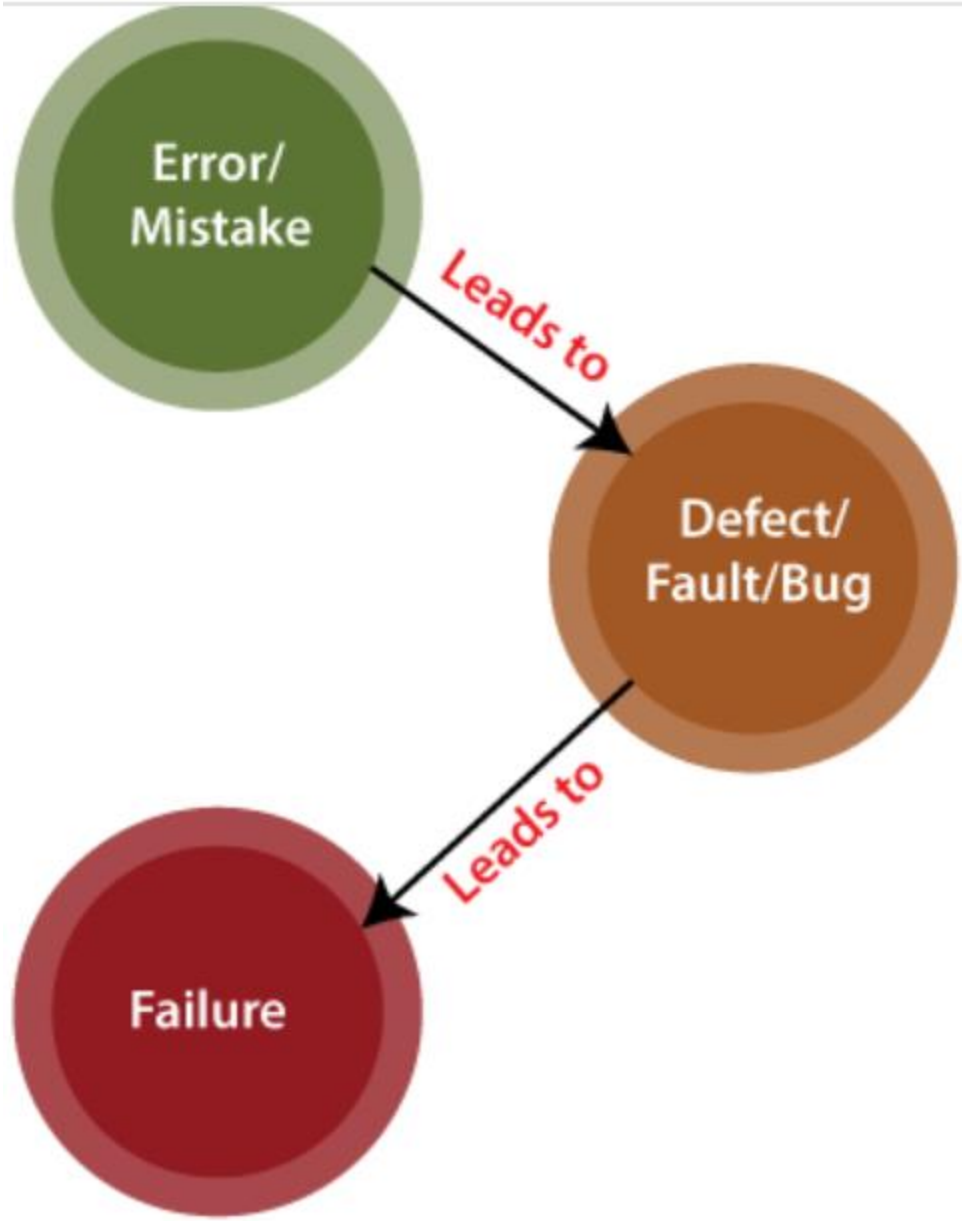
Error found by tester is called defect.

What is BUG ?

Defect accepted by development team is called **BUG.**

What is Failure ?

It is a condition that causes the software to fail to perform its required function.


Error/
Mistake
Leads to
Defect/
Fault/Bug
Leads to
Failure

Black Box vs. White Box Testing

Black box testing is a software testing methodology in which the tester analyzes the functionality of an application without a thorough knowledge of its internal design. Conversely, in white box testing, the tester is knowledgeable of the internal design of the application and analyzes it during testing.

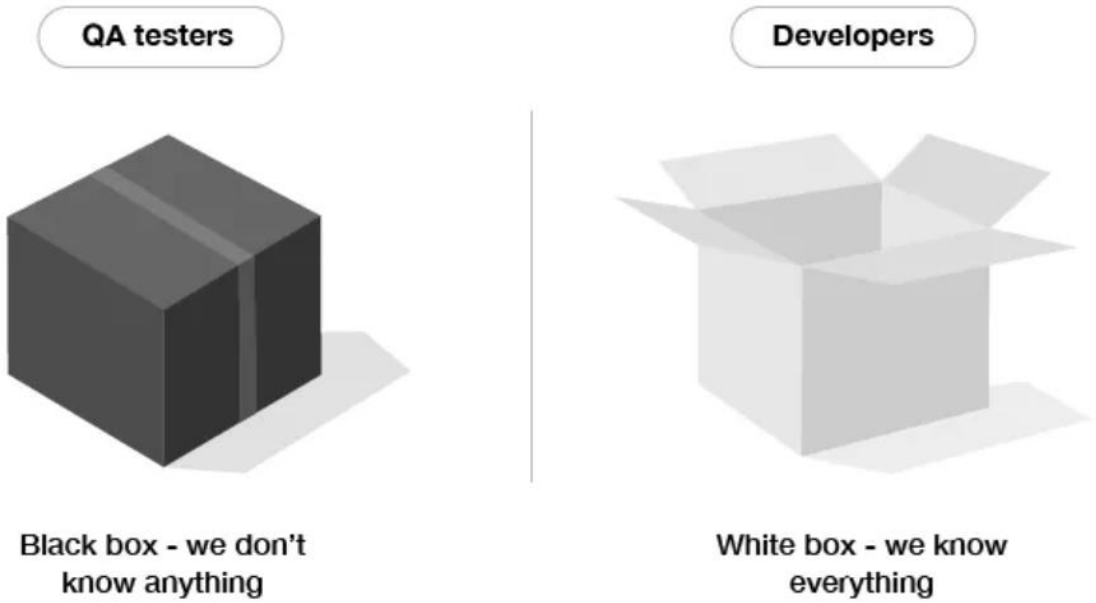
1. **Black Box Testing** is a software testing method in which the internal structure/design/implementation of the item being tested is not known to the tester. Only the external design and structure are tested.
2. **White Box Testing** is a software testing method in which the internal structure/design/implementation of the item being tested is known to the tester. Implementation and impact of the code are tested.

Black Box Testing	White Box Testing
It is a way of software testing in which the internal structure or the program or the code is hidden and nothing is known about it.	It is a way of testing the software in which the tester has knowledge about the internal structure or the code or the program of the software.
Implementation of code is not needed for black box testing.	Code implementation is necessary for white box testing.
It is mostly done by software testers.	It is mostly done by software developers.
No knowledge of implementation is needed.	Knowledge of implementation is required.

Black Box Testing	White Box Testing
It can be referred to as outer or external software testing.	It is the inner or the internal software testing.
It is a functional test of the software.	It is a structural test of the software.
This testing can be initiated based on the requirement specifications document.	This type of testing of software is started after a detail design document.
No knowledge of programming is required.	It is mandatory to have knowledge of programming.
It is the behavior testing of the software.	It is the logic testing of the software.
It is applicable to the higher levels of testing of software.	It is generally applicable to the lower levels of software testing.
It is also called closed testing.	It is also called as clear box testing.
It is least time consuming.	It is most time consuming.
It is not suitable or preferred for algorithm testing.	It is suitable for algorithm testing.
Can be done by trial and error ways and methods.	Data domains along with inner or internal boundaries can be better tested.
Example: Search something on google by using keywords	**Example:** By input to check and verify loops
Black-box test design techniques- • Decision table testing • All-pairs testing • Equivalence partitioning	**White-box test design techniques-** • Control flow testing • Data flow testing • Branch testing

Black Box Testing	White Box Testing
• Error guessing	
Types of Black Box Testing: • Functional Testing • Non-functional testing • Regression Testing	**Types of White Box Testing:** • Path Testing • Loop Testing • Condition testing
It is less exhaustive as compared to white box testing.	It is comparatively more exhaustive than black box testing.

It is performed by Developers, and then the software will be sent to the testing team, where they perform black-box testing. The main objective of white-box testing is to test the application's infrastructure.



Types of Black Box Testing

Black box testing mainly comprises three types of testing:

Functional testing**:** It involves testing specific functions or features of software under test. Functional testing includes unit testing, smoke testing, sanity testing, integration testing, and user acceptance testing.

Non-functional testing: It involves testing additional aspects of the software that are beyond features and functionalities. It helps check how well a system performs under high load and different environments. Non-functional testing includes performance testing, load testing, stress testing, volume testing, and security testing.

Regression testing**:** It involves testing the new version of software for any regression or degradation in capabilities. It can be applied to both functional and non-functional aspects of the software.

Conclusion

So, both white box testing and black box testing are required for the successful delivery of software. But 100% testing is not possible with both cases. Tester is majorly responsible for finding the maximum defects to improve the application's efficiency. Both black box testing and white box testing are done to certify that an application is working as expected.

Retesting vs Regression Testing

The two terms retesting and regression testing can be confusing for test automation novices. They might sound similar but are in fact entirely different from each other.

Retesting literally means “test again” for a specific reason. Retesting takes place when a defect in the source code is fixed or when a particular test case fails in the final execution and needs to be re-run. It is done to confirm that the defect has actually been fixed and no new bug surfaces from it.

Regression testing is performed to find out whether the updates or changes had caused new defects in the existing functions. This step would ensure the unification of the software.

In a typical software development pipeline, retesting is performed before regression testing practices. Retesting solely focuses on the failed test cases while

In a typical software development pipeline, retesting is performed before regression testing practices. Retesting solely focuses on the failed test cases while regression testing is applied to those that have passed, in order to check for unexpected new bugs. Another important note is that retesting includes error verifications, in contrast to regression testing, which includes error localization.