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Black Box Testing: An In-depth Tutorial with Examples and Techniques

Posted In | Testing Methodologies, Types of Testing | Last Updated: "June 7, 2018"

In this tutorial, using my industrial experience in software testing, let's familiarize with the types and techniques of black box testing along with its process, advantages, disadvantages and some automation tools to test it other than manual testing.

We will also learn about the differences between white box testing and black box testing.

List of "Black Box Test Techniques" Tutorials:

Tutorial #1: What is Black Box Testing
Tutorial #2: What is White Box Testing
Tutorial #3: Functional Testing Simplified

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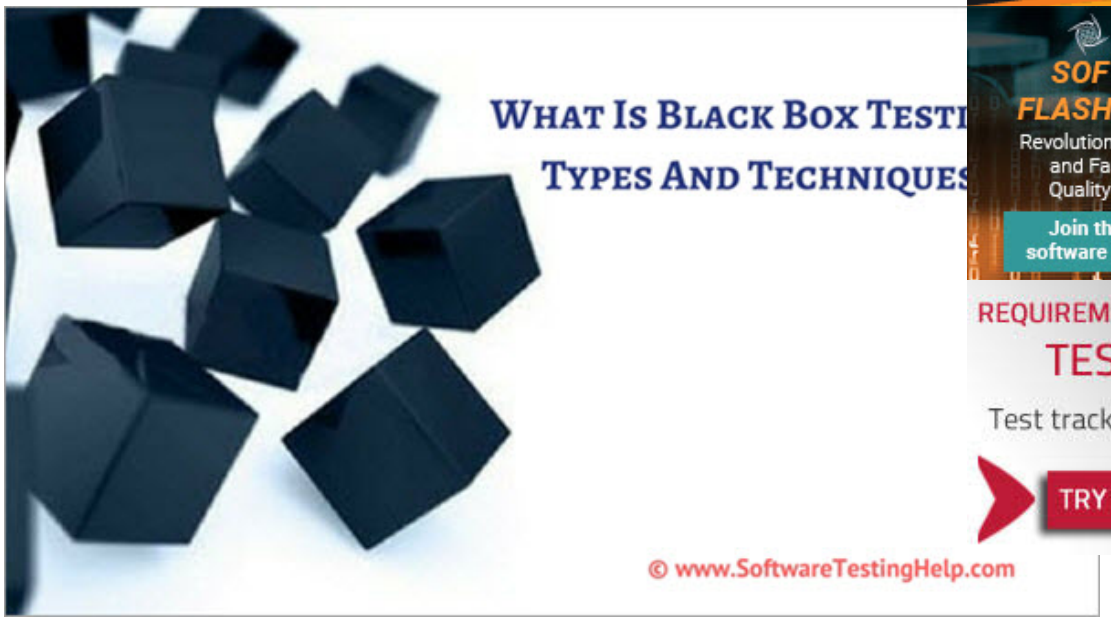
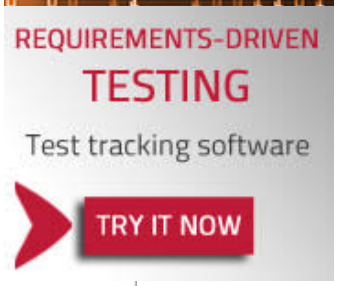
Tutorial #5: Orthogonal Array Testing Technique

Techniques
Tutorial #6: Boundary Value Analysis and Equivalence Partitioning
Tutorial #7: Decision Table Testing
Tutorial #8: State Transition Testing
Tutorial #9: Error Guessing
Tutorial #10: Graph-Based Testing Methods

Almost all of us perform black box testing every day!

Whether we have learned or not, we all have and performed black box testing many times in our day to day life!!





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Functional Testing | Manual Testing
Automation Test Tool | Software Testing Tools

From the name itself you can probably understand that it implicates interacting with the system, that you are testing as a mystery box. It

means that you are not knowledgeable enough about the internal working of the system but you know how it should behave.

If we take an **Example** to test our car or bike, we always drive it to make sure that it doesn't behave in an unusual way. See? We already have done black box testing.

What You Will Learn: [show]

What is Black Box Testing?

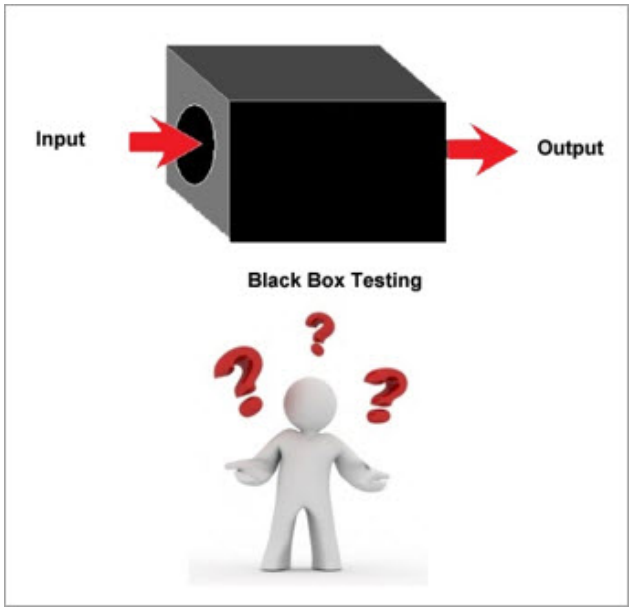
Black box testing, which is also known as behavioral, opaque-box, closed-box, specification-based or eye-to-eye testing, is a Software Testing method that analyses the functionality of a software/application without knowing much about the internal structure/design of the item that is being tested and compares the input value with the output value.

The main focus in black box testing is on the functionality of the system as a whole. The term **'behavioral testing'** is also used for black box testing. Behavioral test design is slightly different from black-box test design because the use of internal knowledge isn't strictly forbidden, but it's still discouraged.

Each testing method has its own advantages and disadvantages. There are some bugs that cannot be found using the only black box or only white box technique. Majority of the applications are tested by black box method. We need to cover the majority of test cases so that most of the bugs will get discovered by a black-box method.

This testing occurs throughout the software development and Testing life cycle i.e in Unit, Integration, System, Acceptance, and regression testing stages.

This can be both functional or non-functional.



Types of Black Box Testing

Practically, there are several types of black box testing that are possible but if we consider the major variant of it then below mentioned are the two fundamental ones.

#1) Functional Testing

This type deals with the functional requirements or specifications of an application. Here, different actions or functions of the system are being tested by providing the input and comparing the actual output with the expected output.

For Example, when we test a Dropdown list, we click on it and verify that it expands and all the expected values are showing in the list.

Few major types of Functional Testing are:

- Smoke Testing
- Sanity Testing
- Integration Testing
- System Testing
- Regression Testing
- User Acceptance Testing

=> Read More on Functional Testing.

#2) Non-Functional Testing

Apart from the functionalities of the requirements, there are several non-functional aspects as well that are required to be tested to improve the quality and performance of the application.

Few major types of Non-functional testing include:

- Usability Testing
- Load Testing
- Performance Testing
- Compatibility Testing
- Stress Testing
- Scalability Testing

=> Read More on Non-Functional Testing.

Black Box Testing Techniques

In order to systematically test a set of functions, it is necessary to design test cases. Testers can create test cases from the requirement specification document using the following black box testing techniques.

- Equivalence Partitioning
- Boundary Value Analysis
- Decision Table Testing
- State Transition Testing
- Error Guessing
- Graph-Based Testing Methods
- Comparison Testing

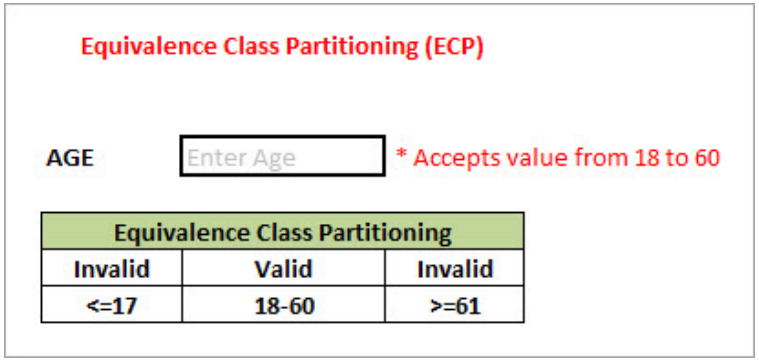
Let us understand each technique in detail.

#1) Equivalence Partitioning:

This technique is also known as Equivalence Class Partitioning (ECP). In this technique, input values to the system or application are divided into different classes or groups based on its similarity in the outcome.

Hence, instead of using each and every input value we can now use any one value from the group/class to test the outcome. In this way, we can maintain the test coverage while we can reduce a lot of rework and most importantly the time spent.

For Example:



As present in the above image, an "AGE" text field accepts only the numbers from 18 to 60. There will be three set of classes or groups.

Two invalid classes will be:

a) Less than or equal to 17.

b) Greater than or equal to 61.

One valid class will be anything between 18 to 60.

We have thus reduced the test cases to only 3 test cases based on the formed classes thereby covering all the possibilities. So, testing with any one value from each set of the class is sufficient to test the above scenario.

=> Recommended Read – What is Equivalence Partitioning?

#2) Boundary Value Analysis:

From the name itself, we can understand that in this technique we focus on the values at boundaries as it is found that many applications have a high amount of issues on the boundaries.

Boundary means the values near the limit where the behavior of the system changes. In boundary value analysis both the valid inputs and invalid inputs are being tested to verify the issues.

For Example:

If we want to test a field where values from 1 to 100 should be accepted then we choose the boundary values: 1-1, 1, 1+1, 100-1, 100, and 100+1. Instead of using all the values from 1 to 100, we just use 0, 1, 2, 99, 100, and 101.

#3) Decision Table Testing:

As the name itself suggests that, wherever there are logical relationships like:

```
If
{
(Condition = True)
then action1 ;
}
else action2; /*(condition = False)*/
```

Then a tester will identify two outputs (action1 and action2) for two conditions (True and False). So based on the probable scenarios a Decision table is carved to prepare a set of test cases.

For Example:

Take an example of XYZ bank that provides interest rate for the Male senior citizen as 10% and for rest of the people 9%.

In this example condition, C1 has two values as true and false, condition C2 also has two values as true and false. The number of total possible combinations would then be four. This way we can derive test cases using decision table.

#4) State Transition Testing:

State Transition Testing is a technique that is used to test the different states of the system under test. The state of the system changes

depending upon the conditions or events. The events trigger states which become scenarios and a tester needs to test them.

A systematic state transition diagram gives a clear view of the state changes but it is effective for simpler applications. More complex projects may lead to more complex transition diagrams thus making it less effective.

For Example:

#5) Error Guessing:

This is a classic example of experience based testing.

In this technique, the tester can use his/her experience about the application behavior and functionalities to guess the error-prone areas. Many defects can be found using error guessing where most of the developers usually make mistakes.

Few common mistakes that developers usually forget to handle:

- Divide by zero.
- Handling null values in text fields.
- Accepting Submit button without any value.
- File upload without attachment.
- File upload with less than or more than the limit size.

#6) Graph-Based Testing Methods:

Each and every application is build up of some objects. All such objects are identified and the graph is prepared. From this object graph, each object relationship is identified and test cases are written accordingly to discover the errors.

#7) Comparison Testing:

Different independent versions of same software are used to compare to each other for testing in this method.

How to do Step-wise?

In general, when a systematic process is followed to test a project/application then a quality is maintained and is useful in the long run for further rounds of testing.

- The foremost step is to understand the Requirement specification of an application. A proper documented SRS(Software Requirement Specification) should be in place.
- Using the above mentioned black box testing techniques such as Boundary value analysis, Equivalence partitioning etc sets of valid and invalid inputs are identified with their desired outputs and test cases are designed based on that.
- The designed test cases are executed to check if they Pass or Fail by verifying the actual results with the expected results.
- The Failed test cases are raised as Defects/Bugs and addressed to the development team to get it Fixed.
- Further based on the defects being fixed, the tester Retests the defects to verify if it is recurring or not.

Advantages and Disadvantages

Advantages:

- The tester need not have a technical background. It is important to test by being in the user's shoes and think from the user's point of view.
- Testing can be started once the development of the project/application is done. Both the testers and developers work independently without interfering in each other's space.
- It is more effective for large and complex applications.
- Defects and inconsistencies can be identified at the early stage of testing.

Disadvantages:

- Without any technical or programming knowledge, there are chances of ignoring possible conditions of the scenario to be tested.
- In a stipulated time there are possibilities of testing less and skipping all possible inputs and their output testing.
- A Complete Test Coverage is not possible for large and complex projects.

Difference between White Box Testing and Black Box Testing

Given below are few differences between the both:

Black Box Testing	White Box Testing
It is a testing method without having knowledge about the actual code or internal structure of the application	It is a testing method having knowledge about the actual code and internal structure of the application
It is a testing method having knowledge about the actual code and internal structure of the application	This type of testing is performed at a lower level of testing such as Unit Testing, Integration Testing
It concentrates on the functionality of the system under test	It concentrates on the actual code – program and its syntax's

Black Box Testing	White Box Testing
Black box testing requires Requirement specification to test	White Box testing requires Design documents with data flow diagrams, flowcharts etc.
Black box testing is done by the testers	White box testing is done by Developers or testers with programming knowledge.

Tools

Black box testing tools are mainly record and playback tools. These tools are used for regression testing that to check whether new build has created any bug in previous working application functionality.

These record and playback tools record test cases in the form of some scripts like TSL, VB script, Javascript, Perl etc.

Check Functional Testing tools tutorial.

Conclusion

These are some of the basic points regarding Black box testing and the overview of its techniques and methods.

As it is not possible to test everything with human involvement with 100 percent accuracy, if the above-mentioned techniques and methods are used effectively it will definitely improve the quality of the system.

To conclude, this is a very helpful method to verify the functionality of the system and identify most of the defects.

Hope you would have gained an in-depth knowledge of Black Box Testing technique.

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#1 **namita**

it was good and valuable information about the basics of BBT.

#2 **Vijay**

Thanks Namita

Actually you could have observed that most of the testers in India are Black box testers. There is need to give more emphasis on this topic. So I will keep writing some more topics on Black box testing and practical methods.

#3 **Priya**

Need to know about the check list cases

#4 **Zalak**
Really ! You have very good skill of representing this !
I want to read more and more about testing through this blog….

Thanks

#5 **saranya**
its really good to know the basics in blackbox testing..thanks.please do emphasize on templates.

#6 **Shridhar**
Comments are Excellent . I love to see such many and More Comments.

Thanks
Shridhar

#7 **shaji**
can u provide me with blackbox testing interview questions?

#8 **P Rajkumar**
dear all,

can u tell me what is a build? when it is started ?

bye
raj

#9 **P Rajkumar**
can we test the application without having any system this question was asked in interview.And also how to generate the reports.pls suggests me

regards
raj

#10 **Kharananda**
Priya, i will send u notes about the check list cases if u leave ur mail id and Phone no

#11 **Rajani**
what is prototype testing?

#12 **JaiPrakash**

What is white box testing ?

#13 **Sowmya**
White box testing is based on knowledge of the internal logic of an application’s code. Also known as Glass box Testing. Internal software and code working should be known for this type of testing. Tests are based on coverage of code statements, branches, paths, conditions.

#14 **Tulsi Akula**
what do u mean by framework?

#15 **sweta**
wat do u mean by checklists in testing?

#16 **Varsha**
Hi Vijay

Recently I came across the foll. terms:

Grey Box testing
Red Box testing
Yellow Box testing &
Green Box testing

Could u pls explain the above types of testing in detail. Thanks.

#17 **nidhi**
hi vijay

plz tell something more about black box testing

thanks

#18 **Sivaguru**
1.What is the Difference Between Test Cases and Test Scenarios????????

2. Canu plz tell me the exacr definition of Test Scenario??

#19 **Kittu**
hi Rajani,

a prototype testing is a sample application without Functionality.

#20 **Kittu**
hi sivaguru,

test Scenario specifies required test conditions to apply on a build.
where as test case specifies detailed procedure to apply the test conditions on a build.

This is the best answer that i can give…….

#21 **prasanna**
Hi all,

Any sample testcases for implementing the "Graphs based testing Methods???

#22 **selvam**
Articles and comments brings me often to this site.

great.

#23 **abhas**
plz send me links of technical papers on black box testing if anybody know before sunday my email address is
abhasgoyal@gmail.com

#24 **Pavitra**
I want to learn about test cases and how to write testcases for database testing and system testing

#25 **vishal chinchane**
what is Posittive test case & negetive test case?

#26 **srikanth**
hello to everyone, i want to know the basic concepts of testing tools in brief individually, can u people let me know from where can i get this information

thank u

#27 **pratap**
whaT IS SMOKE TESTING , SANITY TESTING

#28 **mahamaya**

How we can plot a graph between test conditions and test cases in black-box testing?

#29 **Vijay**
@ varsha, bala
"”Red Box testing
Yellow Box testing &
Green Box testing””,
there is no terminology like this in testing industry, some can say it is protocol testing-redbox, or error message testing-red box, warning message testing-yellow box and green box- environmental testing, of cource white, black, grey box testing is there. Or else why it is called by red, green, yellow box testing, anyway it is not due to the icon\symbol present in the warning or error messages.

Vijay

#30 **bubu**
hey guys, trull i learn a lot from u. …thanks

Can anyone explain to be more in details. wat is error guessing?

thankx

#31 **Saurav**
It is a nice presentation as well as very simple to understand.
please, keep on upgrading.

#32 **rashmi**
Hi,
I want to know what exactly do the term exhaustive testing ? IS it possible to carry it out ?

Thanks,
Rashmi

#33 **suresh**
hey guys, trully i learnt a lot from u. …thanks

Can anyone explain more in details. ….. Tools in Black Box Testing

#34 **suresh bandiwaddar**

can any body explain testing tools in black box testing

#35 **Rishi**
wat abt comparison of different testing technique??

#36 **Kranthi**
Iam a fresher in testing field. Now I'm testing a web based application. I want to know what all procedures(in WBT & BBT) I hav to do for a successful test.

Mail ID: Tammukchowdary@gmail.com

#37 **vivek**
Diffrence between black box and white box testing?

#38 **sreesree**
wat r d levels of black box testing?

#39 **nodeen**
Hi Vijay,

Currently, I'm working on a functional test cases document. But I'm having difficulty in determine which of my user requirement is consider to be a functional requirement and which are non-functional. For example, one of the requirements said that the system should be able to send the request to dedicated travel agent and the other requirements said that the system should be able to convert monthly report into a .csv format. Do you think those 2 requirements consider as functional requirement? Anyone can help?.

#40 **deji**
Hi Nodeen,

It seems we have similar projects at hand and I am wondering if you would be happy to share your experience on the forum. My task is to review lines of code for inherent vulnerabilities using black-box testing. kindly holler asap

#41 **Anagha**
This was helpfull.. Thanx.

#42 **Abhirup**
Would manual testing can enhance my career?

#43 **Priya**
Hi
what is system integration testing??

#44 **Pankaj**
@Abhirup
Manual Testing is as good as any other testing skills. Its just the level of specilization that matters. I've seen many manual functional testers went on to become Business Analysts and further more. So if you are interested in testing (be it manual), just put great efforts and you will achive great results.

#45 **Abhi**
Hi,

Really nice to read the article.

Generally we develop the Test Plan in a xl sheet with diff. info. in different Tabs.

Can u provide me a Standard Test Plan including all diff. types of info. !! It will be vey helpful for me….

Thanks

A. Adhikary

#46 **k.pradeepika**
this black box testings can b read from s.e pressman edition software engg, try it;

its also really good;

#47 **gurpreet kaur**
hello
I m doing thesis on black box testing.what r problems occured in black box testing. plz send me some important links that can help me in my thesis

#48 **Brendon Buthello**
Hi,
What a comprehensive article on Black Box Testing! It was thoroughly

enlightening too! Fantastic work, sir!

I have known only Indusa Infotech to be doing these services in Ahmedabad. Can you name some more companies in Ahmedabad which offer black box testing services..

Thanks again for the insight

#49 **kalpana**
Hi
where do you derive the inputs for Black Box testing?
please answer this question(asked in interview)

Thanks

#50 **sundar**
i am testing java application by using jmeter testing tool.
i had prepared functional test test case summary report.now i want to prepare load test report. please any one give some idea how to prepare load test report.
mail: sunaruna84@gmail.com
with regards
sundar

#51 **cooldude**
Can smbdy explain in detail what is red box testing?

Wiki Ans:red box testing is used to test products on hardware devices, networking components like protocolss

Vijay says(Host):it is protocol testing-redbox, or error message testing-red box.

Can some one clarifies these ans..?

#52 **Prasad**
@ cool dude,

vijay is correct. in red-box testing u have to test the protocol & Error messages.

#53 **Prasad**

@ kalpana #49,

inputs will be given as per the Business requirement.
so the inputs are not standard depends on the business requirment.

#54 **shivakumar kolkar**
Hi vijay,
Its a nice documnet.

It would be good if you divide the testing types in functional and non-functional.

As a testing beginner …..people want to know the basics ….

Thanks
Shiva

#55 **evi**
what are different QA methodologies

#56 **STORM**
Hi Pal

In this module u use the UNIT testing as the part of BLACK BOX TESTING.
Is this correct?

#57 **Vimal Bhatnagar**
Hi Praveen,

Please suggest me which book i purchase and how to start this cource initially.

#58 **Vimal Bhatnagar**
Please giv me Our contact no.I need a suggestion.
My Mob.No.Is 9953178623

#59 **Anitha**
Can anybody explain about '0' Functionality testing

#60 **vignesh**
the website is very useful for me thak u

#61 **D Raja Sekhar**
i love u so much who had written this……..its really goooooooooood

#62 **Akbar Hussain**
Types of FRAME WORK IN TESTING

The Test Script Modularity Framework

The test script modularity framework requires the creation of small, independent scripts that represent modules, sections, and functions of the application-under-test. These small scripts are then used in a hierarchical fashion to construct larger tests, realizing a particular test case.

Of all the frameworks I'll review, this one should be the simplest to grasp and master. It's a well-known programming strategy to build an abstraction layer in front of a component to hide the component from the rest of the application. This insulates the application from modifications in the component and provides modularity in the application design. The test script modularity framework applies this principle of abstraction or encapsulation in order to improve the maintainability and scalability of automated test suites.

To demonstrate the use of this framework, I'll automate a simple test case for the Windows Calculator program (see Figure 1) to test the basic functions (add, subtract, divide, and multiply).

The Test Script Modularity Framework

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The Keyword-Driven or Table-Driven Testing Framework

Keyword-driven testing and table-driven testing are interchangeable terms that refer to an application-independent automation framework. This framework requires the development of data tables and keywords, independent of the test automation tool used to execute them and the test script code that "drives" the application-under-test and the data. Keyword-driven tests look very similar to manual test cases. In a keyword-driven test, the functionality of the application-under-test is documented in a table as well as in step-by-step instructions for each test.

If we were to map out the actions we perform with the mouse when we test our Windows Calculator functions by hand, we could create the following table. The "Window" column contains the name of the application window where we're performing the mouse action (in this case, they all happen to be in the Calculator window). The "Control" column names the type of control the mouse is clicking. The "Action" column lists the action taken with the mouse (or by the tester). And the "Arguments" column names a specific control (1, 2, 3, 5, +, -, and so on).

For Further details Contact akbar.shaik@yahoo.com
Hyderabad

#63 **Gavaskar**
Hi vijay,

excellant job yours… thanks

i need a exact answere for two question..

1.Define Defect Density?
2.What are the techniques used to write a test case?

#64 **Alam khan**
i am a grasduate and i am really confused to step into testing field coz many graduates told me that it has no scope..Since black box testing does not involve internal functionality of a s/w,so a non-tech guy can also do it,than whats the use of studying engineering or graduating from Information technology..please clear my doubts.Thankyou

#65 **mangai**
am very new to testing and these information are really excellent……..
Regards
mangai

#66 **Gavaskar**
Hi,

can any one ans this question plz?

1.Tell me the difference between test matrix & test metrix
2.Explain Schedule variance, effort variance, size variance, requirement stablility index

#67 **Jayaprakash**
Article on BBT is very good… Want to know Examples for 4 points mentioned in ” How is this partitioning performing while testing, this will be more helpful to get much more idea on Equivalence partitioning technique.

Thanks
jayaprakash

#68 **geet**
something is still missing….
for proper explaination of bbt… plx explain bbt types with proper examples

#69 **gowtham**
it is not nessesary to write exam but it is used to know whatis it

#70 **Praveenkumar**

Thanks its very useful to understand the extract concept,,,

#71 **jyoti singh**
What is REGRATION testing?

#72 **ramesh**
no comments

#73 **Priyanka**
Thanks for the valuable information about BVA..

#74 **Mayasen**
Hi Vijay,

Clear road; you made a nice way to walk through Testing Types and Techniques.

Wishes…!!! :)

#75 **Sudheer**
Hi,

The article on BBT is really so nice.This gives an Idea for the beginners.

#76 **Dipak dash**
can u people provide me the FAQ OF BLACK BOX TESTING

#77 **chandraketu prasad**
the data provided are valuable and helped me in making my presentataion.can u people provide me a complete ppt of software testing????

#78 **Ahmad A**
Dear All,

I am a masters student and my thesis about black box testing, the problem that I could not make a list by all the tests techniques under black box testing, different books different name, basically the same test but different name, and as well different companies different names, I need to make a list about them, so maybe anyone can help me here…

thanks,
Ahmad A

#79 **neha**
this answer is very helpful to create my assignment..
thanks dear

#80 **kalaranjani**
plz,give me more details about blockbox testing

#81 **Pawan Rai**
hi, everybody
could anyone explain, how can we measure the height of kutubminar without using any measuring instrument.

#82 **anu**
hiiiiiii can u tell me hw to map white box n black testing plz
…….

#83 **jitendra singh**
@ varsha, bala
“”Red Box testing
Yellow Box testing &
Green Box testing””,
there is no terminology like this in testing industry, some can say it is protocol testing-redbox, or error message testing-red box, warning message testing-yellow box and green box- environmental testing, of cource white, black, grey box testing is there. Or else why it is called by red, green, yellow box testing, anyway it is not due to the icon\symbol present in the warning or error messages.

#84 **harshad**
Actually you could have observed that most of the testers in India are Black box testers. There is need to give more emphasis on this topic. So I will keep writing some more topics on Black box testing and practical methods.

#85 **sravan chowdary**
it was good and valuable information about the basics of BBT.

#86 **muzk**
pls clear my concept on static and dynamic testing

#87 **sajan**

hey cn u jst provide me a proper example of black box testin
…

#88 **sajan**
hey cn u jst provide me a proper example of black box testin
… ????????

#89 **Nandhakumar**
ya, not bad, but i need to get exact particulars for what i'm searching?

#90 **isha**
Thanks its very useful ….but i need more details with examples

#91 **shailaja**
Informative article…would like to know are the above testing techniques are effective for product based companies

#92 **amaresh**
will you confirm on RED BOX TESTING, YELLOW BOX TESTING and GREEN BOX TESTING

#93 **Aditya Pant**
hi frnds…i just want to know that right now i am just a beginner in testing field…but i want to persue my carrer in testing and i wanna know frm where to start and study material…..i am in level 1 i.e justa a beginner….Plz help

#94 **Raul**
hi,

there are many jobs testing field . also big package ….

#95 **Prajakta**
Hi,
what is prototype Testing ? Difference Between Black Box Testing & White Box Testing?

#96 **bharathi**
hi
i want about standard methodology in testing i knw something but i have more about that one.plz give me reply

#97 **akshit**

wao gr8 …..awsm keep it up dude..passed my internal exams with notes of ur's on bbt ..keep it up keep on going lyk this

#98 **eswaran k**
Block box testing:
~ no knowledge logic of an internal logic code or code required
~test are based on only requirement and function

#99 **eswaran k**
block box:
~no knowledge of an programing lanuage only requirement and function

#100 **eswaran k**
*no knowledge of an internal design code.
*only functions and requirement

#101 **vaneet**
awesome yrr……. ite really helped me out….

vaneetbhasin@gmail.com

#102 **subbu**
nice to understand the black box testing technics

#103 **SUJITH**
NICE Example 4 Black Box Testing.

#104 **Sharjeel**
nice sharing …….

#105 **ashif ali**
Desertation Topic: Designing and boundary value analysis (using Black Box Testing).
Abstract:
Black box testing treats the system as a "black-box", so it doesn't explicitly use Knowledge of the internal structure or code. Or in other words the Test engineer need not know the internal working of the "Black box" or application.
Main focus in black box testing is on functionality of the system as a whole. The term 'behavioral testing' is also used for black box testing and white box testing is also sometimes called 'structural testing'.
Behavioral test design is slightly different from black-box test design

because the use of internal knowledge isn't strictly forbidden, but it's still discouraged.
Each testing method has its own advantages and disadvantages. There are some bugs that cannot be found using only black box or only white box. Majority of the applicationa are tested by black box testing method. We need to cover majority of test cases so that most of the bugs will get discovered by blackbox testing.
Black box testing occurs throughout the software development and Testing life cycle i.e in Unit, Integration, System, Acceptance and regression testing stages.
Tools used for Black Box testing:

Black box testing tools are mainly record and playback tools. These tools are used for regression testing that to check whether new build has created any bug in previous working application functionality. These record and playback tools records test cases in the form of some scripts like TSL, VB script, Java script, Perl.

Advantages of Black Box Testing

– Tester can be non-technical.
– Used to verify contradictions in actual system and the specifications.
– Test cases can be designed as soon as the functional specifications are complete

Disadvantages of Black Box Testing

– The test inputs needs to be from large sample space.
– It is difficult to identify all possible inputs in limited testing time. So writing test cases is slow and difficult
– Chances of having unidentified paths during this testing

Methods of Black box Testing:
Graph Based Testing Methods:

Each and every application is build up of some objects. All such objects are identified and graph is prepared. From this object graph each object relationship is identified and test cases written accordingly to discover the errors.
Error Guessing:

This is purely based on previous experience and judgment of tester. Error Guessing is the art of guessing where errors can be hidden. For this technique there are no specific tools, writing the test cases that cover all the application paths.

Boundary Value Analysis:

Many systems have tendency to fail on boundary. So testing boundry values of application is important. Boundary Value Analysis (BVA) is a test Functional Testing technique where the extreme boundary values are chosen. Boundary values include maximum, minimum, just inside/outside boundaries, typical values, and error values.
Extends equivalence partitioning
Test both sides of each boundary
Look at output boundaries for test cases too
Test min, min-1, max, max+1, typical values

BVA techniques:
1. Number of variables
For n variables: BVA yields 4n + 1 test cases.

2. Kinds of ranges
Generalizing ranges depends on the nature or type of variables
Advantages of Boundary Value Analysis
1. Robustness Testing – Boundary Value Analysis plus values that go beyond the limits
2. Min – 1, Min, Min +1, Nom, Max -1, Max, Max +1
3. Forces attention to exception handling

Limitations of Boundary Value Analysis
Boundary value testing is efficient only for variables of fixed values i.e boundary.

Equivalence Partitioning:
Equivalence partitioning is a black box testing method that divides the input domain of a program into classes of data from which test cases can be derived.

How is this partitioning performed while testing:
1. If an input condition specifies a range, one valid and one two invalid

classes are defined.
2. If an input condition requires a specific value, one valid and two invalid equivalence classes are defined.
3. If an input condition specifies a member of a set, one valid and one invalid equivalence class is defined.
4. If an input condition is Boolean, one valid and one invalid class is defined.

Comparison Testing:
Different independent versions of same software are used to compare to each other for testing in this method.

Boundary value analysis and Equivalence partitioning, explained with simple example:
Boundary value analysis and equivalence partitioning both are test case design strategies in black box testing.
Equivalence Partitioning:

In this method the input domain data is divided into different equivalence data classes. This method is typically used to reduce the total number of test cases to a finite set of testable test cases, still covering maximum requirements.
In short it is the process of taking all possible test cases and placing them into classes. One test value is picked from each class while testing.

E.g.: If you are testing for an input box accepting numbers from 1 to 1000 then there is no use in writing thousand test cases for all 1000 valid input numbers plus other test cases for invalid data.
Using equivalence partitioning method above test cases can be divided into three sets of input data called as classes. Each test case is a representative of respective class.
So in above example we can divide our test cases into three equivalence classes of some valid and invalid inputs.

Test cases for input box accepting numbers between 1 and 1000 using Equivalence Partitioning:

1) One input data class with all valid inputs. Pick a single value from range 1 to 1000 as a valid test case. If you select other values

between 1 and 1000 then result is going to be same. So one test case for valid input data should be sufficient.

2) Input data class with all values below lower limit. I.e. any value below 1, as a invalid input data test case.

3) Input data with any value greater than 1000 to represent third invalid input class.
So using equivalence partitioning you have categorized all possible test cases into three classes.

Test cases with other values from any class should give you the same result.
We have selected one representative from every input class to design our test cases. Test case values are selected in such a way that largest number of attributes of equivalence class can be exercised.
Equivalence partitioning uses fewest test cases to cover maximum requirements.
Boundary value analysis:

It’s widely recognized that input values at the extreme ends of input domain cause more errors in system. More application errors occur at the boundaries of input domain. ‘Boundary value analysis’ testing technique is used to identify errors at boundaries rather than finding those exist in center of input domain.
Boundary value analysis is a next part of Equivalence partitioning for designing test cases where test cases are selected at the edges of the equivalence classes.
Test cases for input box accepting numbers between 1 and 1000 using Boundary value analysis:

1) Test cases with test data exactly as the input boundaries of input domain i.e. values 1 and 1000 in our case.
2) Test data with values just below the extreme edges of input domains i.e. values 0 and 999.
3) Test data with values just above the extreme edges of input domain i.e. values 2 and 1001.
Boundary value analysis is often called as a part of stress and negative testing.
Note: There is no hard-and-fast rule to test only one value from each

equivalence class you created for input domains. You can select multiple valid and invalid values from each equivalence class according to your needs and previous judgments.

E.g. if you divided 1 to 1000 input values in valid data equivalence class, then you can select test case values like: 1, 11, 100, 950 etc. Same case for other test cases having invalid data classes.
This should be a very basic and simple example to understand the Boundary value analysis and Equivalence partitioning concept.
` `

#106 **chanchreek ameta**
good information

#107 **Chinna**
Where is the techinques explained here?

#108 **jothi**
wat is functional testing types

#109 **jothi**
wat is functional testing types and wat do u mean by smoke testing

#110 **jazz dhaliwal**
it was quite useful information..worked well for me..

#111 **sindhu**
its very valuable.And very usefull for my seminar…..

#112 **waqas haider**
asalam…..:)
nice awsm…its really good to know the basics in blackbox testing and so many other terminologies
thanx 2 all……viki

#113 **Deepti Sharma**
nice coverage on BBT…especially for a fresher in testing…simple and understandable.

#114 **ravi**
what is sdlc and stlc

#115 **ravi**
can u explan phases of sdlc and their use

#116 **aditi**
Hi Vijay,
Thanks alot for sharing such a good explaination.

can u please send me some ebooks related to testing on my id:
saxena.aditi7887@gmail.com

Thanks in advance!!!

#117 **Los Angeles web hosting**
Nice Explantion..Thanks a lot..

#118 **karthika**
what is object testing ?

#119 **Manthan**
If any company is hiwring me for the job of black box testing then can i change it to WBT???

#120 **shashmitha**
Hi Varsha,(#16)

I jus want to share my knowledge abt yellow and green box testing.
YELLOW BOX : Yellow box is a testing technique for acceptance testing. Alpha and Beta tests together is called as Yellow box testing technique.
Product based acceptance testing is called as Alpha test and Project based acceptance testing is called as Beta test.

GREEN BOX TESTING TECHNIQUE: This is related to the s/w release or delivery. “Delivery team” will go the customer site, install the s/w, and observe various factors as below mentioned:
1. Complete installation of s/w
2. Overall functionality
3. Input devices handling
4. Output devices handling
5. Secondary storage devices handling
6. OS support
7. Co-existence with other s/w
The above observations at the customer site are called as Green Box Testing Technique.

#121 **radhika**
can u tell me which type of questions ,i have to face in blockbox testers interview? plz help me.. i am a beginner

#122 **Somesh Pathare**
These Articles are very good.
But i want to
1.Test Case Template for Web Application.
2.How to write test cases for Black box and White Box Testing.

#123 **Abhishek**
good explanation

you can find another interesting article on

http://blogs.tutorialshouse.com/black-box-testing/

#124 **setefano funaki**
what is a benefit of blackbox tester. help me please im just a fool

#125 **setefano funaki**
what is a shortcomings of black box testing. please help me

#126 **Senthilnathan**
Hi –
Pl share me more details on Graph based tests.
If possible, share me with examples. Thanks.

#127 **Aparna**
I am looking for some live project with the test cases.If anybody can be nice enough to send them.my email is akulk2000@yahoo.com

#128 **Mohit goel**
Hi All ,

how to write smoke , sanity and regression test cases ?
Note: not defination , i know defination.?

Thanks & Regards

Mohit goel

mgmohitgoel@yahoo.com ; mohitgoel08@gmail.com

#129 **sudheer**
hii All,

can anybody tell me how to write basic testcases for login application and the format of testcases

vsudheer55@gmail.com

#130 **John**
Thanks a lot Dude..! Could you please share the Testcase Template.

#131 **karunakar**
in smoke testing we are veifying whether the build is ready for testing by entering with valid data and with out valid data.

#132 **pritam**
hii vijay,
tell me the diff betwn static n dynamic testing,wbt and bbt,types of static,dynamic,wbt and bbt.if we draw a diagram and relate them then how are they realted??

#133 **Dhvani**
Hello,

What are Software Testing Methods ? and Software Testing Techniques and Software Testing Types?
Plz..

#134 **sudharsan**
white box tester can do black box testing?

#135 **Kiran**
Hi,Vijay

you are doing a great job..Really improving the knowledge about the BBT and WBT..

#136 **felix**
you practically did my term paper

#137 **Veera**
Hi All,

Good day for you,

Use case testing comes under Black box Testing or White box testing?

#138 **Abhishek**
this information is help for me and save the time also.

#139 **maria**
This article was not so informative.full of crap

#140 **paul chanou**
begin
x ? x * 2;
if x > 0 then
y ? y + 200;
else
y ? 5 * y;
endif;
while x > y do
x ? x – 10;
endwhile;
z ? y – x;
end;

How you would apply Functional (Black Box) Testing to this subroutine?

How you would apply Structural (White Box) Testing to this subroutine?

#141 **Satish**
Hi All,

I am new in this field kindly share me about the black box testing now a days it is more valuable than WBox testing.
Request you kindly share the knowledge which is helpful to me.

My email ID is rsatish2010@gmail.com

#142 **Tamilarasan**
unit and component testing is black box testing or white box testing?

#143 **Tamilarasan**
my mail ID strtamilarasan@gmail.com

#144 **Tejas**
Hi,
What are the techniques of black box testing can you explain it in detail please ..

Thanks,
Tejas

#145 **Tejas**
Leave a replay on my mail as follows
tsarosiya@gmail.com

#146 **puneet**
Test to mobile app

#147 **trupti**
hi,

I m fresher ,I started studying manual testing ,can i get easy notes to understand more regarding software testing.

My email :-trupti90d@gmail.com

Regards,
Trupti

#148 **Sagar Binod Adhikari**
There is one mistake in the differences between black box testing and white box testing technique. Please review it.

#149 **Urvi Churi**
Point number 2 in difference between white box and black box has been swapped

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