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What is Boundary value analysis and Equivalence partitioning?

Posted In | Interview Questions, Testing Concepts | Last Updated: "June 7, 2018"

Boundary value analysis and Equivalence partitioning explained with a 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 case**s 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.

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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 a 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 the 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 the lower limit. I.e. any value below 1, as an 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 the 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 the 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 invalid 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.

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#1 **Beena**
Nice…
Thanx….

#2 **lAKSHMI**
Hi ,
Thanks for updating me.

Can u please hepl me about the certification in Testing as i planning to
write.

First i need what is the Use of this certifications

#3 **sathish**
Greate article……

Thank u….

#4 **Deepa**
hi vijay,

It's a very good article. Thanks for sharing knowledge.

Regards,
Deepa

#5 **kishore**

I would like to add one formulae here for boundary value.
n, n+1, n-1 one can use this formulae to calculate BV. It can be used
for min and max value. As in the above example. 1-1000
BV= 1,2,0 and 1000,1001,999

Regards
kishore

#6 dhinesh
Very good explanations

dhinesh
grdhinesh@gmail.com

#7 Naushad Pasha
This kind of Articles helps every one. Good Work.

#8 rakesh
hi friends can anybody explain about traceability in detail with
detail,,matrix

#9 rakesh
hi friends can anybody explain about traceability matrix in detail with
example

#10 Manoj Upadhyay
Hi Vijay,

Thanks to Sharing knowledge

Regards
Manoj Upadhyay

#11 Manoj Upadhyay
Hi Friends ,

Can anybody tell me For I.s.t.Q.B Certification and is it indispensible
condition to have atleast 2 yr. exp. in mannual My mail is is :-
Er4testing@yahoo.com

Thanks In Advance

Regards

manoj upadhyay

#12 Mohit Verma
Hi!

Nice Way to explain with simple example. Keep the good work coming.

#13 Senthil
Why we have to methods to test the same condition.. Is it intenstional
?

#14 kishore
Senthil

Using Equivalence partition:
you can divide input data into different class as valid and invalid class
eg: 1-1000
valid class-1-1000
Invalid class-less than 1
invalid class-more than 1000

Using BV: now using the above class you write your test cases on
boundaries. you can use above formulae posted in my comment to find
the boundary values for diffrenet classes.

Both the techniques are used simultaneously to design test case.
First you divide your input data into valid and invalid class using
Equivalence partioning and

Second use boundary value to decide on the boundaries of each class.

Regards
kishore

#15 Ganesh.p
Hi to every one,

This kind of articles help in Testing and

we must share the real time experience also

so i preparing that one as soon as i share to everyone

thanks

good luck to everyone

Be prepare for coming time in IT

#16 **Sabzar Ahmad**
Great!!! Simple, precise & accurate way of making others to understand the concepts… Thanks

#17 **Suhas M**
Good writing Vijay !!!
But, I have a doubt here. When you apply the equivalence class partitioning for the input in the above example you have had 3 partitions – within the limit, above upper limit and below lower limit. Now my question is – is this equivalence class partitioning limited to this, if thats the case then i dont see there is much difference in EP and BVA. If you apply BVA, EP is autometically applied.
Hope I am not very incorrect in my understanding, your views on this please.

Regards, Suhas M

#18 **Suhas M**
@Kishore,

Do we apply the BVA for all the classes i.e valid class as well as invalid class? Or is it enough to apply the BVA for valid class only. It would be great if you could explain this with an example.

Regards, Suhas M.

#19 **G.Mallikarjun**
Hello,

What a beautiful explanation.

#20 **Sreenivasa Rao**
Cld anybody pls help me in answering the following question – how many test cases will be generated for three check boxes and one

button

#21 **kishore**
Suhas
Nice thought!!
As per my knowledge we can use BVA for both the classes.
For eg: If I consider 5-50 a range then my
valid class: 5-50
invalid class: lets say =49.99 also we use the same technique.

#22 **kishore**
Suhas
Nice thought!!
As per my knowledge we can use BVA for both the classes.
For eg: If I consider 5-50 a range then my
valid class: 5-50
invalid class: lets say (less than =4.99) and
other invalid class would be (greater than=49.99)
Instead of writing test cases on all the values we can use BVA to
minimise the no of test cases.

#23 **shekhar rai**
thanks
its very nice

#24 **life99joy**
Said nicely and simple. I'd like to add one more check (I was asked
that in the interview) – would probably be a good idea to check the
values somewhere in the middle. Let's say if we're testing values 1 to
100,000 we should also look into 1,000; 10,000, ect.

#25 **Suhas M**
@Kishore
I am not clear yet, :(
For a valid range of input – if you apply BVA, its simililar to EP. So why
do we need to apply EP and then BVA, because if you directly apply
BVA to the above example it goes well.

I would like to explain what I have understood by BVA and EP by
slightly modifying the above example.

Lets say a system accepts the input as number that ranges form 100-
100000 or alphabetical/alphanumeric input with 3-6 char.
Now my classes will be
1.Only numbers.
2.Only alphabets.
3.Alphanumeric.
4.Numbers with special characters.
5.Alphabets with special characters.
6.Alphanumeric with special characters.
Out of this if you apply BVA for 1,2 and 3 its good enough.

Let me know if my understanding is correct. If you think I am wrong
helpme understanding with explaining your views with my example.

Regards, Suhas M.

#26 **kishore**
Suhas
Consider below example
Suppose my valid class is 10-100
If I am asked to write test cases, I would apply BVA to this class to
minimize my number of test cases. Otherwise it would go from 10 to
100
Using BVA my test cases have reduced to SIX. Three for min value and
three for max value.

9,10,11 and 99,100,101

Regards
kishore

#27 **Suhas M**
@Kishor,
I completly agree with what you say about BVA, now for the input set
10-100 how would you apply EP ?
PS: My question is more to do with EP in the above example given by
Vijay.

Hey Vijay, could you throw some light on this as well? Some how am
getting a feel that the EP what you have explained is either incomplete
or you have not have not explained it with a very good example.

Regards, Suhas M

#28 kishore
Excellent brainstorming session Suhas
Well put it simple
Use ECP to divide input domain into equivalent class as you pointed
out in your example and then use BVA to decide test cases on extreme
edges.

#29 sharan
very nice article about BVA and EP

regards,
Sharan

#30 Qastation
Hi Vijay

Candid to the comments does it really works. Since if you take a text
box of 1 -1000 characters, then will it possible to execute without
entering 1000 characters at an instant to verify whether it allow or
not. If system allows then what's the necessity to go for in between
values (Equivalence Partitioning) since it allows all the 1000.

Is am byte confused here……? Can you please clear my doubt?

Also does really a Test Engineer use this strategy to prepare test cases
for Black Box Testing?

#31 Munna bhai
Thanx

#32 rao
TQ

#33 Deepak
Hi, Vijay this is a great site. Good job. Can u mail me the software
testing by ron patton ebook to rockys283@yahoo.co.in

Thanks and Regards

#34 anusha
hai

can any body tell me the QTP life cycle all phases to me
more examples on manual test cases
give me some requirements to write test cases

sujani_2008@yahoo.com

#35 Sreenivasa Rao
Could anybody pls help me in answering the following question – how many test cases will be generated for three check boxes and one button which was questioned me in an interview.

#36 Sreedhar
Srinivasa Rao,

for 3 check boxes and one button – 8 test cases can be written. BTW, button was only to confuse but all 8 test cases are the possible selection of 3 check boxes.

Hope this helps. But I don't understand why you were asking that question here in the comment section of BVA article.

#37 Vijay
@Suhas, Qastation
You can say that boundary value analysis test cases are the subset of Equivalence partitioning. As always you can select EP test cases similar to boundary value test cases. But BVA help to identify the upper and lower limit which may or may not be the part of EP tests.

As I said, rather than just picking some random values as your EP test cases won't do. Carerful partitioning and analysis of equivalence classes to pick the best test cases that will exercise maximum test coverage is what expected from equivalence partitiong.

The example given is just to understand both concepts with a single example.

#38 Sreenivasa Rao
Sorry, Sreedhar for posting the question in the comment section of BVA. Thanks for the answer.

#39 Inder P Singh
It is believed that EP is a good technique to reduce the number of test cases to a bare minimum. Though EP is related to efficiency of test

case design, I think that we should be aware that using EP could prevent the discovery of defects related to particular data value(s) in a range. Consider a date input text box (with a calendar control) that accepts dates between 1 Jan 1970 and today. We have three classes (also called partitions) here
1) = 7 Nov 2008.
By just selecting one test data value from each class might not be able to exercise the application with other interesting values e.g. 29 Feb 2008 or any particular value not handled correctly by the application.

#40 **Inder P Singh**
Part of my comment has gone missing when posted. Therefore, I am posting my comment again:

It is believed that EP is a good technique to reduce the number of test cases to a bare minimum. Though EP is related to efficiency of test case design, I think that we should be aware that using EP could prevent the discovery of defects related to particular data value(s) in a range. Consider a date input text box (with a calendar control) that accepts dates between 1 Jan 1970 and today. We have three classes (also called partitions) here:
Less than or equal to 31 Dec 1969, 1 Jan 1970 to 6 Nov 2008, greater than or equal to 7 Nov 2008.

By just selecting one test data value from each class might not be able to exercise the application with other interesting values e.g. 29 Feb 2008 or any particular value not handled correctly by the application.

Inder P Singh

#41 **Tanvi**
Hi Vijay

I din't know where to put this question because there is no category for that.

Can you help me with ways of testing an artificial intelligence software/product

thanks Tanvi

#42 Hariprasad.MS
Good topic. It is very user full…..why cont you explain about
estimation concept in testing

Thanks

HP

#43 mrunalini
this is a great article.

can anybody mail me the software testing ebook.
my mail id: oasisuser4@gmail.com

#44 Sirisha
Respected seniors, Vijay plz. answer me.

How to answer – "what METRICS do you use? How many types of
metrics are there?" It's a most imp question in interviews. As far as i
know, different metrics are–Defect Density, Defect Leakage,
Traceability Matrix, Bug Trend Analysis(means comparing no of bugs in
different versions). Types of Metrics are Process, Product, Project. "Do
CMM, ISO 9000 come under Metrics?". I am not concluding the above
information. My attempt is to make clear that on what topic seniors
have to give their kind and valuable suggestions.

Plz. respond with full details.

Yours faithfully………Sirisha

#45 swapna
hello sir/madam,

actually, how many types of "Test Reports" are there?

i came through different terminology like—

Test summary reports
Test execution reports
Test status reports
Test log reports
Test daily, weekly reports

These all mean same??? if not please explain me and also explain me if there are any other reports that come under above list. in the least case please provide me exact link. Thanks in advance.

#46 **Qastation**
@Sirisha

Types of Metrics:
Process & Product/Project (depends upon application)

Under process metrics: Evaluates the efficiency of the process you use for your production (Project)

Effort, Schedule, Quality (DRE)

Product/Project:

Can have DRE also here, Phasewise defect removal, defect density and etc.

….mm Tracability Matrix is used for trace the requirements. It's an verification techniques, not metric.

#47 **Qastation**
@Swapna

All the above mentioned reports are of same.
It depends upon the organisation requirements they will name it as they are.

#48 **Asawari**
Hi,

very useful article written in simple way so that any one can understand it easily.

Thanks…..

But I think very less topics are covered….Plz write more topics on testing….It will be very helpfull to us…..

#49 **BAO**

GUYS and GALS,
from what i see in the article BVA and EP just different method of
testing. Use either one.

Now can anyone help me in this scenario

i have 2 textboxes or fields, and
One can be entered with only alphabet
another can be entered with only number

so how can i use BVA on this scenario

won't there be too many scenario?
such
– leading space i.e. " hello"
– blank
– symbol

Can someone post all the scenario?

Greatly appreciated..

#50 Venkata Srikanth
@LAKSHMI

Hi Lakshmi,

If u do the certification in Testing that will give good weightage to ur
Resume.

Suppose if any organization is following RUP model those organizations
will give more importance to Certified Test Engineers.

If u r intrested to do certification in S/w Testing u can mail me at
srikanthvelivela@gmail.com for further details.

#51 Daiju
In BVA, we are taking the values from the edges of the classes and
write the test cases. But in EP, We are taking the value from each
classes and write the test cases.

#52 **Ashish Singh**
Dear BAO,

U can try out by permutation for both fields.
Am I right all there?

#53 **Rashmi**
hi,

In order to test for a text box that excepts amount in the range 1 to
100 we need to test for the following condition:

1. First see if the text box accepts alphabets
2. second whether it accepts special characters
3. Then enter "2e4" in some cases it allows this and converts to
exponent which should not be allowed
4. then go for BVA
i.e enter 0,1,2 and 99,100,101

Dont u think this is the approach that needs to be followed.

#54 **GIRISH**
dear lakshmi,

your approach is correct,use some more combinations like
alphanumeric+specialcharacters and
alphabets+small letters+numericals+special characters.

#55 **GIRISH**
hey sorry,rashmi.

#56 **raj**
can you tell me Installation Testing….!

#57 **GIRISH**
hi raj,

Installation testing should be done in the collabartion with the
configuration engineer.
installation is the process which first time client/user is going to
interacted with our product/appl.
installation testing is done to ensure that the client/user do not feel

trouble while installing the software.
thank you

#58 **diya**
hi,
what is statement coverage and branch coverage? could you explain
with examples.
thanks

#59 **Sureshkumar**
Guys,
Please answer for it:

In a system designed to work out the tax to be paid: An employee has
£4000 of salary tax free. The next £1500 is taxed at 10% The next
£28000 is taxed at 22% Any further amount is taxed at 40% To the
nearest whole pound, which of these is a valid Boundary Value
Analysis test case? a) £1500 b) £32001 c) £33501 d) £28000

#60 **Sreedhar**
Option C is correct. Valid values for the above scenario will be
-1,0,1,3999,4000, 4001, 5499,5500, 5501, 33499,33500,33501.

#61 **Sureshkumar**
Exactly u r correct Sreedhar…Thanks for reply

1500+28000+4000 = 33500 +1 is 33501(last boundry)

#62 **Kruti**
hi…very nice article with good explanation with simple examples in
simple language, so that every one can understand it easily.

#63 **rajesh**
it very nice article to get the knowledge of boundary value analysis
and equal partitioning….great work

#64 **Karuna**
its very good n useful…
thanks very much..

#65 **Suresh Rathod**
It's a very nice article. Thanks for sharing knowledge.

#66 **Bithika**

Hi,

I have 4 yrs of experience in manual testing. Which certification will help me to shape up my career graph.

regards
Bithika

#67 **shivanand**
thanks for ur valuable reply…

#68 **G.suresh**
Hi

It's good sharing your knowledge with others about equivalence and boundary value analysis, but I am having one doubt, you have taken the example for only single instance what will happen if there are multiple instances? Its take time and somewhat difficult to do that. Recently I have seen a tool called "TestersDesk.com" Which is useful for both TestDesign and TestData Generation Toolkit in that Boundary value analysis tool is there with the help of tool we can reduce our work and can do for multiple instances at the same time

#69 **ch.girishchander raju**
hi bithika,

you can go for ISTQB(foundation level) first.After
that you can go for Advanced level.Tthen u can be called as ISTQB
certified functional tester/technical tester.
Thank u

cheers,

CH.GIRISH CHANDER RAJU
CERTIFIED TEST ENGINEER

#70 **varma**
Hi
Can anyone explain me the process of Business Testing

#71 **SAchin**

Thanks man
its really good.I can suggest to give some more examples so that
people can understand in a better way! :)

#72 **Yays:D**
Nice concise explanations and examples of EP and BV – makes my
revision a lot easier! Cheers! :D

#73 **Veni**
Its very nice article which is explained in simple words so that every
one can understand. Nice work Ajay!! Thanks for sharing this gr8
article..Keep it up!!

#74 **Anurag Srivastava**
Great work VIJAY!!

I really appreciate ur work and all those who have posted their
comments

#75 **XXX**
Its very nice article

#76 **SUHASINI**
Hi All,

Could anyone please give me a justifying answer for wat suhas has
askd on the efficiency of Equivalence partitioning over BVA? Because
as he said, BVA is going to cover all of the scenarios including what we
are trying to cover in EP. Please let me know with a clear example.

#77 **Srikumaran**
BVA is something it covers the valid and invalid class of EP.

For ex: 60 – 120
for equivalance partitioning we go by the value
59 60 61 119 120 121
59.9 60 60.1 70 119.9 120 120.1
In case of value 59 is a invalid class, similarly 121 is an invalid class.

Could anyone clear me if i am wrong?

#78 **david**

I think this misses the heart of equivalence class partitioning. A number range does not offer a good opportunity to describe equivalence classes because 1-1000 everything is equivalent. One can only understand the technique when some are not equivalent.

Let's say one is testing an eCommerce application and there's a drop-down for selecting the state. Some states have no tax, others have tax, and some the company cannot ship to. Equicalence class partitioning might lead you to choose at least one state each from:
0 tax + can ship
0 tax + cannot ship
>0tax + can ship
>0tax + cannot ship

0 tax and >0 tax are different because they have different semantics to the app. 5% tax and 6% tax yield different results but you expect the behavior to be similar (tax amt. should be tax % * taxable total) and testing every possible combo 5%, 5.5%, 6%, etc. might not be practical.

As always, go back to the classics. Glenford Myers "the art of software testing" is a good resource.

#79 **oracleeye**
hi every1,
thnaks to all because of you guys I come to know the new terms which i never heard.. thank you very much

#80 **oracleeye**
especially to susma

#81 **andrew hudson**
this is a nice explaination with a neat example.

#82 **inder**
thanks for giving an important info about boundary value analysis.

#83 **Sumesh**
Nice example

#84 **amol**

very good…..
thanks!

#85 **kushal**
How can we made equivalence partioning for a field where date is the
input like 1 Jan 1976 to 5 Nvoember 2009?
What would be the Equivalence classes…consder the leap years also

#86 **Balaji**
Good article and comments with nice examples. Thanx.

#87 **Sonali**
Thnx…its a nice example

#88 **prashanth**
Can anyone explain me the process of Avinoncs software Testing

#89 **Mohan**
Good stuff!!!!!! Please keep doing :-)

#90 **SWTester**
Check the link. You can have a detailed idea about how and why this
practice has been adopted!

#91 **Madhukar.M**
BVA Formula :

n-1, n, n+1

Ex: 1 – 1000 find BVA for this

0,1,2, 999,1000,1001 (is valid BVA for)

#92 **prashanth**
hi friend

#93 **Bhaskar**
Sombody asked about Tracebility Matrix in this question answer
thread.

Anser to Tracebility matrix : Tacebility matrix a document which track
the completeness. e.g. Requirement Tracebility Matrics(RTM). In RTM
we note down all the requirements id which are there in SRS. As and

when we start writing test cases againist requirements, we keep
updating those test cases id in RTM against respective requirements.

Hope this short description will help you to understand about
Tracebility matrics. gook luck , happy testing.

#94 **ankush**
for the above example its very simple n easy to get the ecp n bva..
fr ecp we use the grouping its no possible to take every test case so..
Ecp=1-3000-1000 i take min value and then aby midle value and then
max value

and Bva is for -negative approach is
min-1=1-1=0
max=1=1000+1=1001
for +ve approach its same min=1 and max=1000

#95 **Shaun**
One point to add to this article is the concept that granularity matters
in boundary testing. In the example provided their is an assumption
that only whole numbers are permitted, but what if decimals were
allowed? If we could input 1.0 to 1000.0 then the granularity of the
boundary condition changes. It is no longer valid to simply say the
boundaries are min-1, min, min+1, max-1, max, max+1. In this
example we have to go down to the 1/10ths to adequately test the
boundary condition (0 isn't sufficient for min-1, but .9 is).

Granularity becomes even more important when we consider boundary
conditions related to dates and times. If I need to test for a condition
where AGE > 65 years is my max+1 boundary condition 66 years, 65
years and 1 day, 65 years and 1 hour, 65 years and 1 minute, etc?

When we test for boundary conditions we must ALWAYS consider and
understand the granularity of the boundary condition in order to
provide a valid boundary test.

#96 **AG**
Here is another nice example on
equivalence partitioning

#97 **Madhukar.M**

BVA Formula: min, min+1, min-1,
max, max+1, max-1

ECP: Valid and Invalid will be there in ECP

#98 **Shiva**
Good one!

#99 **Shiva kumar**
God bless you, thanks for the information, i got 6 years of exp, still i
could learn some thing from you ….

#100 **sheetal**
great article .thank u.

#101 **Jyothsna**
Very good article..I have understood the topic after many
days!!!Thanks a lot.

#102 **Priyanka**
Very well written.

#103 **Jaya**
All r telling about how to write test cases for numerics,alphabets and
for spl char.s or mixed of 3.
I have a doubt, that is, bva on pages can be done by manually?

#104 **Murali**
Jaya, the concept of BVA is to design the test cases to test extremes of
input domain i.e. min, max values so this cannot be used to page
testing

#105 **Manjunath**
Good concept and keep posting

#106 **Bhakti**
Hey..

Very nice one.. Thanks..

Bhakti

#107 **brahma**
hi,

i want some information about ISTQB, can u tell me some examples.

#108 sharath sistla
hi,

nice article

#109 Pawan J
Nice Article….. Thanks

#110 anitha
Thanks for explaining in simple way

#111 Hanumant Sharma
In practical , while we test for a particular requirement, one have to test 1st from the middle , its the last step of completeion of testing when we use BVA.,

#112 ealshabaan
really good

#113 Amol Gangurde Pune
Thanks…..

#114 rajndraprasad
what is BVA for the 0-10 range

#115 Umar
Excellent post. Easy to understand the two concepts. Thanks for sharing.

#116 kuttty
what is boundary analaysis ?

#117 Hafiz Rizwan Iqbal
Really !!!! nice one..

Impressive writing

#118 JAJA
Thanks a lot for the explanation and the simple example.

#119 Ramkumar
Thanz its v useful to update ……

#120 **Ramkumar**
if u have any test case samples…. send me

#121 **Girijesh**
Hi,

its a nice article helped a lot in my understanding.

#122 **mani**
i am fresher in testing supposose how can i start the testing?
which domain will be best?
send me my mail

#123 **lalu**
Please let me know EP and BVA for below
A-Z, a-z

#124 **muralimohanreddy**
Hi friends

good stuff

#125 **Vetri R**
Thanks for making me to understand the concepts…. very cool
explanation

#126 **Rajaguru**
Good Explanation. Cheers, Guru

#127 **Rajaguru**
Hello Friends,

Could you explain, How to apply BVT for Date and Time fields?

Cheers,
Guru

#128 **Priya**
really useful… thanks

#129 **Sandeep**
Good subject details on EP(Equivalence Partitioning) & BVA(Boundary
Value Analysis)

#130 **prabhu**
This is really useful... Thanks... thanks a lot

#131 **Indrajit**
thnx & very hlpful

#132 **Alpha**
thanks alot, its help me to understand the difference between
equivalence and boundary value analysis

#133 **saravanan**
hi guys this forum is really helpful thanks for sharing u r knowledge in
this forum :)

#134 **Arokya Samy**
Hi friends... I have one plus experience in Testing field...
pls mail me if u know any openings....

#135 **Jitendra Bhande**
for istqb preparation BVA AND EP must fix Your some marks...nice
article....

#136 **Rupal**
Order numbers on a stock control system can range between 10000
and 99999 inclusive. Which of the following inputs might be a result of
designing tests for only valid equivalence classes and valid boundaries:
1000, 5000, 99999
9999, 50000, 100000
10000, 50000, 9999
10000, 99999
which is correct?

#137 **Rupal**
given the following specification.
which of the following value for age are in the same EP
if uor age less than 18 then too young for insurance
if 18 to 30 then 20% discount
more then 30 ,not eligible for discount

17,18,19
29,30,31
18,29,30
17,29,31

I wrote the answers for the questions which i got.I dont know the
correct answers.As per my knowledge I gave answers.Plz correct me
with good explanation for wrong answers.

1) Order numbers on a stock control system can range between 10000
and 99999 inclusive. Which of the following inputs might

be a result of designing tests for only valid equivalence classes and
valid boundaries:
a) 1000, 5000, 99999
b) 9999, 50000, 100000
c) 10000, 50000, 99999
d) 10000, 99999
e) 9999, 10000, 50000, 99999, 10000 ANS-C

2) Which of the following is NOT a black box technique:
a) Equivalence partitioning
b) State transition testing
c) Syntax testing
d) Boundary value analysis ANS-C

3) Error guessing is best used
a) As the first approach to deriving test cases
b) After more formal techniques have been applied
c) By inexperienced testers
d) After the system has gone live
e) Only by end users ANS-B

4) Which is not true-The black box tester
a. should be able to understand a functional specification or
requirements document
b. should be able to understand the source code.
c. is highly motivated to find faults
d. is creative to find the system's weaknesses. ans-B

5) A test design technique is
a. a process for selecting test cases
b. a process for determining expected outputs
c. a way to measure the quality of software
d. a way to measure in a test plan what has to be ans-Cdone

6) Which of the following is true?

a. Component testing should be black box, system testing should be white box.

b. if u find a lot of bugs in testing, you should not be very confident about the quality of software

c. the fewer bugs you find, the better your testing was

d. the more tests you run, the more bugs you will find. ANS-D

7) What is the important criterion in deciding what testing technique to use?

a. how well you know a particular technique

b. the objective of the test

c. how appropriate the technique is for testing the application

d. whether there is a tool to support the technique ANS-C

8) Which of the following is a black box design technique?

a. statement testing

b. equivalence partitioning

c. error- guessing

d. usability testing ANS-B

9) A program validates a numeric field as follows:

values less than 10 are rejected, values between 10 and 21 are accepted, values greater than or equal to 22 are rejected

Which of the following input values cover all of the equivalence partitions?

a. 10, 11, 21

b. 3, 20, 21

c. 3, 10, 22

d. 10, 21, 22 ANS-B

10) Using the same specifications as question 9, which of the following covers the MOST boundary values?

a. 9,10,11,22

b. 9,10,21,22

c. 10,11,21,22

d. 10,11,20,21 ANS-B

11) Error guessing:

a) supplements formal test design techniques.

b) can only be used in component, integration and system testing.

c) is only performed in user acceptance testing.

d) is not repeatable and should not be used. ANS-A

12) Which of the following is NOT a white box technique?

a) Statement testing

b) Path testing

c) Data flow testing

d) State transition testing ANS-D

13) Data flow analysis studies:

a) possible communications bottlenecks in a program.

b) the rate of change of data values as a program executes.

c) the use of data on paths through the code.

d) the intrinsic complexity of the code. ANS-C

14) In a system designed to work out the tax to be paid:

An employee has £4000 of salary tax free. The next £1500 is taxed at

10%

The next £28000 is taxed at 22%

Any further amount is taxed at 40%

Which of these groups of numbers would fall into the same

equivalence class?

a) £4800; £14000; £28000

b) £5200; £5500; £28000

c) £28001; £32000; £35000

d) £5800; £28000; £32000 ANS-D

15) Test cases are designed during:

a) test recording.

b) test planning.

c) test configuration.

d) test specification. ANS-D

16) An input field takes the year of birth between 1900 and 2004

The boundary values for testing this field are

a. 0,1900,2004,2005

b. 1900, 2004

c. 1899,1900,2004,2005

d. 1899, 1900, 1901,2003,2004,2005 ANS-C

17) Boundary value testing
a. Is the same as equivalence partitioning tests?
b. Test boundary conditions on, below and above the edges of input
and output equivalence classes
c. Tests combinations of input circumstances
d. Is used in white box testing strategy ANS-B

18) When testing a grade calculation system, a tester determines that
all scores from 90 to 100 will yield a grade of A, but

scores below 90 will not. This analysis is known as:
a) Equivalence partitioning
b) Boundary value analysis
c) Decision table
d) Hybrid analysis ANS-B

19) Which technique can be used to achieve input and output
coverage? It can be applied to human input, input via interfaces

to a system, or interface parameters in integration testing.
a) Error Guessing
b) Boundary Value Analysis
c) Decision Table testing
d) Equivalence partitioning ANS-A

20) Features to be tested, approach, item pass/fail criteria and test
deliverables should be specified in which document?
a) Test case specification
b) Test procedure specification
c) Test plan
d) Test design specification ANS-A

21) Which specification-based testing techniques are most closely
related to each other?
a) Decision tables and state transition testing
b) Equivalence partitioning and state transition testing
c) Decision tables and boundary value analysis
d) Equivalence partitioning and boundary value ANS-D
analysis

22) assume postal rates for 'light letters' are:

$0.25 up to 10 grams

$0.35 up to 50 grams

$0.45 up to 75 grams

$0.55 up to 100 grams

Which test inputs (in grams) would be selected using boundary value analysis?

a) 0, 9, 19, 49, 50, 74, 75, 99, 100

b) 10, 50, 75, 100, 250, 1000

c) 0, 1, 10, 11, 50, 51, 75, 76, 100, 101 ANS-C

d) 25, 26, 35, 36, 45, 46, 55, 56

23) If the temperature falls below 18 degrees, the heating system is switched on. When the temperature reaches 21 degrees,

the heating system is switched off. What is the minimum set of test input values to cover all valid equivalence partitions?

a) 15, 19 and 25 degrees

b) 17, 18, 20 and 21 degrees

c) 18, 20 and 22 degrees

d) 16 and 26 degrees ANS-A

24) What is a test condition?

a) An input, expected outcome, precondition and post condition

b) The steps to be taken to get the system to a given point

c) Something that can be tested

d) A specific state of the software, ex: before a test can be run ANS-D

25) What is a key characteristic of specification-based testing techniques?

a) Tests are derived from information about how the software is constructed

b) Tests are derived from models (formal or informal) that specify the problem to be solved by the software or its components

c) Tests are derived based on the skills and experience of the tester

d) Tests are derived from the extent of the coverage of structural elements of the system or components ANS-A

26) Why are both specification-based and structure-based testing techniques useful?

a) They find different types of defect.

b) using more techniques is always better

c) both find the same types of defect.

d) Because specifications tend to be unstructured ANS-D

27) Find the Equivalence class for the following test case

Enter a number to test the validity of being accepting the numbers

between 1 and

99

a) All numbers 99

c) Number = 0

d) All numbers between 1 and 99 ANS-D

28) What is the relationship between equivalence partitioning and

boundary

value analysis techniques?

a) Structural testing

b) Opaque testing

c) Compatibility testing ANS-B

d) All of the above

29) Suggest an alternative for requirement traceability matrix

a) Test Coverage matrix

b) Average defect aging

c) Test Effectiveness

d) Error discovery rate ANS-A

30) The following defines the statement of what the tester is expected

to accomplish or validate during testing activity

a) Test scope

b) Test objective

c) Test environment

d) None of the above ANS-B

31) One technique of Black Box testing is Equivalence Partitioning. In a

program

statement that accepts only one choice from among 10 possible

choices,

numbered 1 through 10, the middle partition would be from _____ to

_____

a) 4 to 6

b) 0 to 10

c) 1 to 10

d) None of the above ANS-A

32) Test design mainly emphasizes all the following except

a) Data planning

b) Test procedures planning

c) Mapping the requirements and test cases

d) Data synchronization ANS-D

33) Deliverables of test design phase include all the following except

a) Test data

b) Test data plan

c) Test summary report

d) Test procedure plan ANS-C

34) Test data planning essentially includes

a) Network

b) Operational Model

c) Boundary value analysis

d) Test Procedure Planning ANS-D

35) Test coverage analysis is the process of

a) Creating additional test cases to increase coverage

b) Finding areas of program exercised by the test cases

c) Determining a quantitative measure of code coverage, which is a

direct measure of quality.

d) All of the above. ANS-D

36) Branch Coverage

a) another name for decision coverage

b) another name for all-edges coverage

c) another name for basic path coverage

d) all the above ANS-A

37) The following example is a

if (condition1 && (condition2 || function1()))

statement1;

else

statement2; (Testing concepts)

a) Decision coverage

b) Condition coverage

c) Statement coverage

d) Path Coverage ANS-D

38) Test cases need to be written for

a) invalid and unexpected conditions

b) valid and expected conditions

c) both a and b

d) none of these ANS-C

39) Path coverage includes

a) statement coverage

b) condition coverage

c) decision coverage

d) none of these ANS-A

40) The benefits of glass box testing are

a) Focused Testing, Testing coverage, control flow

b) Data integrity, Internal boundaries, algorithm specific testing

c) Both a and b

d) Either a or b ANS-C

41) Find the invalid equivalence class for the following test case

Draw a line up to the length of 4 inches

a) Line with 1 dot-width

b) Curve

c) line with 4 inches

d) line with 1 inch. ANS-B

42) Error seeding

a) Evaluates the thoroughness with which a computer program is
tested by purposely inserting errors into a supposedly correct

program.

b) Errors inserted by the developers intentionally to make the system
malfunctioning.

c) for identifying existing errors

d) Both a and b ANS-A

43) Which of the following best describes the difference between clear
box and opaque box?
1. Clear box is structural testing, opaque box is Ad-hoc testing
2. Clear box is done by tester, and opaque box is done by developer
3. Opaque box is functional testing, clear box is exploratory testing
a) 1
b) 1 and 3
c) 2
d) 3 ANS-D

44) What is the concept of introducing a small change to the program
and having the effects of that change show up in some

test?
a) Desk checking
b) Debugging a program
c) A mutation error
d) Introducing mutation ANS-C

45) How many test cases are necessary to cover all the possible
sequences of statements (paths) for the following program

fragment? Assume that the two conditions are independent of each
other : – …………
if (Condition 1)
then statement 1
else statement 2
fi
if (Condition 2)
then statement 3
fi
…………
a. 1 test case
b. 3 Test Cases
c. 4 Test Cases
d. Not achievable ANS-B

46) Given the following code, which is true about the minimum
number of test cases required for full statement and branch

coverage:

Read P

Read Q

IF P+Q > 100 THEN

Print "Large"

ENDIF

If P > 50 THEN

Print "P Large"

ENDIF

a) 1 test for statement coverage, 3 for branch coverage

b) 1 test for statement coverage, 2 for branch coverage

c) 1 test for statement coverage, 1 for branch coverage

d) 2 tests for statement coverage, 3 for branch coverage

e) 2 tests for statement coverage, 2 for branch coverage ANS-E

47) Given the following:

Switch PC on

Start "outlook"

IF outlook appears THEN

Send an email

Close outlook

a) 1 test for statement coverage, 1 for branch coverage

b) 1 test for statement coverage, 2 for branch coverage

c) 1 test for statement coverage. 3 for branch coverage

d) 2 tests for statement coverage, 2 for branch coverage

e) 2 tests for statement coverage, 3 for branch coverage ANS-B

48) If a candidate is given an exam of 40 questions, should get 25
marks to pass (61%) and should get 80% for distinction,

what is equivalence class?

A. 23, 24, 25

B. 0, 12, 25

C. 30, 36, 39

D. 32, 37, 40 ANS-C

49) Consider the following statements:

i. 100% statement coverage guarantees 100% branch coverage.

ii. 100% branch coverage guarantees 100% statement coverage.

iii. 100% branch coverage guarantees 100% decision coverage.

iv. 100% decision coverage guarantees 100% branch coverage.

v. 100% statement coverage guarantees 100% decision coverage.

a) ii is True; i, iii, iv & v are False

b) i & v are True; ii, iii & iv are False

c) ii & iii are True; i, iv & v are False

d) ii, iii & iv are True; i & v are False ANS-C

50) Which statement about expected outcomes is FALSE?

a) Expected outcomes are defined by the software's behavior

b) Expected outcomes are derived from a specification, not from the code

c) Expected outcomes should be predicted before a test is run

d) Expected outcomes may include timing constraints such as response times ANS-A

51) Which of the following is not a white box testing?

a) Random testing

b) Data Flow testing

c) Statement testing

d) Syntax testing ANS-D

52) If the pseudo code below were a programming language, how many tests are required to achieve 100% statement coverage?

1. If x=3 then

2. Display_messageX;

3. If y=2 then

4. Display_messageY;

5. Else

6. Display_messageZ;

a. 1

b. 2

c. 3

d. 4 ANS-B

53) Using the same code example as question 17, how many tests are required to achieve 100% branch/decision coverage?

a. 1

b. 2

c. 3 ANS-B

d. 4

54) Which of the following technique is NOT a black box technique?
a) Equivalence partitioning
b) State transition testing
c) LCSAJ
d) Syntax testing ANS-D

55) Given the following code, which is true?
IF A>B THEN
C = A – B
ELSE
C = A + B
ENDIF
Read D
IF C = D THEN ANS-B
Print "Error"
ENDIF
a) 1 test for statement coverage, 1 for branch coverage
b) 2 tests for statement coverage, 2 for branch coverage
c) 2 tests for statement coverage, 3 for branch coverage
d) 3 tests for statement coverage, 3 for branch coverage
e) 3 tests for statement coverage, 2 for branch coverage

56) Consider the following:
Pick up and read the news paper
Look at what is on television
If there is a program that you are interested in watching then switch
the television on and watch the program
Otherwise
Continue reading the news paper
If there a crossword in the news paper then try and complete the
crossword
a) SC = 1 and DC = 3
b) SC = 1 and DC = 2
c) SC = 2 and DC = 2
d) SC = 2 and DC = 3 ANS-C

57) The specification: an integer field shall contain values from and
including 1 to and including 12 (number of the month)
Which equivalence class partitioning is correct?
a) Less than 1, 1 through 12, larger than 12

b) Less than 1, 1 through 11, larger than 12
c) Less than 0, 1 through 12, larger than 12 ANS-A
d) Less than 1, 1 through 11, and above

58) Analyze the following highly simplified procedure:
Ask: "What type of ticket do you require, single or return?"
IF the customer wants 'return'
Ask: "What rate, Standard or Cheap-day?"
IF the customer replies 'Cheap-day'
Say: "That will be £11:20"
ELSE
Say: "That will be £19:50"
ENDIF
ELSE
Say: "That will be £9:75"
ENDIF

Now decide the minimum number of tests that are needed to ensure
that all the questions have been asked, all combinations

have occurred and all replies given.
a) 3
b) 4
c) 5
d) 6 ANS-A

Thanks in advance…..

#139 **madhuri**
verry nicely explained !
thanx a lot sir……

#140 **Swetha Sreenivasa**
I would like to thank each and every one for the clear explanation.
Thank you.

#141 **Deepali Shahabadi**
Very nice and Simple Explanation with a good example

#142 **Shweta**
Very good Explanation & Easy to understand..

#143 **Nivi**
My question is for the specified range 1-100 we test the values 0,1,2
and 99,100,101 for ECP but what if the range is 0-99999,how am i
suppose to use BVA or ECP and is the logic n, n-1,n+1 still
applicable?? Plz help me with this!!!

#144 **narap**
nice

#145 **narap**
simple clarification

#146 **Joydip**
Good One

#147 **sahim**
Thanks 4 providing such a good material…

and also very thankful to kishor, shuhas,vijay and vijetha. they are
sharing such a very important knowledge between us..

#148 **SAALIM**
THANX TO UR COOPERATION ME

#149 **Deepu**
kilimanjaro

#150 **Bikash Jajodia**
I have often seen the above example being provided for BVA and EQP.
However, I would like to provide another example that would
demonstrate the 2 techniques better.
Let us assume that there is a field called "Age" that has inputs from 1-
80.
Based on the age, customer is provided discount on tickets.
1-18: 50%
19-50: 10%
51-80: 40%

Applying BVA, the test cases would be 0, 1, 2, 79, 80, 81 and 1
random number from within the range let's say it is 45.

Applying EQP, the test cases would be 1 number from each of the
classes let's say,

5 from 1-18 class,
29 from 19-50 class,
72 from 51 to 80 class.

Besides these, applying BVA again, the internal boundaries also should
be tested, hence, we should also include 18, 19, 50 and 51 in our test
cases.

Thus, overall, test cases should be for 0, 1, 2, 5, 18, 19, 29, 45, 50,
51, 72, 79, 80, 81 (total of 14).

Since the number of test cases is high, we can easily optimize the
same and reduce it to the following set:
0, 1, 2, 18, 19, 29, 50, 51, 79, 80, 81 (total of 11).

#151 **Bikash Jajodia**
Reply to Nivi's query:

Theoretically, we still apply the same logic. But, practically, we have to
see what can be tested and what cannot be tested and adapt our test
cases accordingly.
For example, there may be a field that says that application may allow
upto 9999 accounts to be created. It is practically impossible to create
so many accounts and test the limit. In such cases, these techniques
cannot be applied.

#152 **Shekhar**
Can BVA be applied to alphabetic values?If yes , could you please
explain with an example?

#153 **Viswanathan D**
Very good article on Boundary Value Analysis.

Thanks,
Viswa
dviswa29@gmail.com

#154 **loser**
worst article i have ever read :-(

#155 **Sherin**

This aritcle is not clear..it explains only the boundary values..... wat
abt Equivalence Partioning?

#156 **some**
Very descriptive

#157 **ravi**
what value we select in equivalance partioning if value is 150 to 1500

#158 **Parag**
If a input takes integer value from 1 to 100.
applying equivalence partitioning to above problem we
get following classes.
1 to 100(valid)
less than1(Invalid)
greater than 100(invalid)

as in equivalence partitioning there is no hard and fast rule to select
input from partitions.

so here from valid class i take input value (1 ,2 99 ,100)
from invalid class lower than1 takes value(0,-1,50)
from invalid class greater than 100 takes value(101,500)

so by taking all this value together(1,2,99,100,0,-1,50,0,-1,50)
i have covered values which lies on boundary.

so why u need to apply BVA(Boundary Value Analysis).if we can get
boundary values applying EP(Equivalence Partitioning). Can anyone
explain…?

#159 **thiru**
How to calculate Cyclomatic complexity for the below code using the
formula M=E-N+P. where,
E = the number of edges of the graph
N = the number of nodes of the graph
P = the number of connected components (exit nodes).

Q. 23: The following code snippet reads through a file and determines
whether the numbers contained are prime or not.

```
1 Read (Val);
2 While NOT End of File Do
3 Prime := TRUE;
4 For Holder := 2 TO Val DIV 2 Do
5 if Val – (Val DIV Holder) * Holder= 0 Then
6 Write (Holder, ' is a factor of ', Val);
7 Prime := FALSE;
8 Endif;
9 Endfor;
10 if Prime = TRUE Then
11 Write (Val, ' is prime');
12 Endif;
13 Read (Val);
14 Endwhile;
15 Write ('End of run)
```

#160 **arunkamatchi**

anybody say about latant bug,and golden bug definition and the
differents between then…. Please and thanks in advance…

#161 **Satish**

Suppose password field allows length of 3 to 9 characters. Then as per
BVA we will test for characters having length as 2,3,4 and 8,9,10.
Interviewer question was Why to test for 4 and 8 when we already test
for 3 and 9, isn't it time consuming?

#162 **pankaj goyal**

i want to know that what is the main difference between EP and BVA.
that mean which strategy should be perform and why? why these both
are different from each other?
any one can explain my problem?

#163 **Hansa**

Please let me know, how by using a testing technique, we will prepare
Test Case for a Field accepting decimal numeric value e.g.
"XXXXXXX.XX"

#164 **HDN**

Good explaination and really simple to undestand.So in the boundry
values how many test cases(minimum) that we have to write
according to above eg.????

#165 **kur**
Can the Equivalence analysis have the following casses added under
invalid inputs:

1) input data with letters (a-z),(A-Z),Special characters too??

#166 **Aman Saxena**
Great Article……… Really very useful

#167 **Manpreet**
Is test cases are written in a particular report ? if yes tell me how test
cases are managed

#168 **lakshmi**
very good one ,it helped me a lot

#169 **Rajesh**
Very good article. Really nice one !!!!

#170 **law choudhary**
BVA IS THE ANALYSIS OF MIN-1,MIN,MAX,MAX+1 IF ANYONE WANT
THE FULL EXPLANATION WITH EXAMPLE PLZ TELL ME

#171 **law choudhary**
EQUIVALENCE PARTIONING IS GIVEN PRESSMAN………IF YOU WANT
ANYONE WANTS THE 3 POINTS OF THIS TELL ME I WILL
EXPLAIN………..

#172 **Karan**
good explanation with good example

#173 **usha**
max
min
max+1
max-1
min+1
min-1

are possible input values for boundary value analysis.

#174 **Ravi**
Very Useful.simply gud

#175 **saurabh**

I need details of Decision Table tree and Tracibilty Matrix… please mail
me all details with example… @ shahsaurabh1983@gmail.com

#176 **Ball**

good

#177 **kkr**

Super..

#178 **shivani**

can u pls explian the function,procedures in black box testing

#179 **Be Modipe**

always got lazy when coming to all this but thanx to u guys for
opening my mind now i no um gonna show ISTQB wat i got…….thanx
for the examples u used,it helped alot,was rili stuck..

#180 **Anand**

Checking for the nor, max+, max-, min+,min- are the boundary
values
Partitioning the inputs based on requirements is equivalence partitions.

Thanks for the clear information abt both techniques.

#181 **Chaitali**

Explained in such a simple way. Very useful. Thanks a lot… :)

#182 **Sagar**

We need to check total 6 inputs
n,n-1,n+1,m,m-1,m+1…correct if m wrong

#183 **ishu**

ya nice vav it s very useful for us
-prince na gethu

#184 **ishu**

awesomee……………………………………………………..
-prince na gethu

#185 **sriram**

Hi,

Can anyone tell me how many testcase can we write for the below scenario in Equivalence Partitioning and Boundary Level

Marks – 0-100
Student type — First Time/Repeat
Grade – F, D, C, B, A
First Time
0-40 – F; 41-50-D; 51-60-C; 61-70-B; 71-100-A
Repeat
0-50 – F; 51-60-D; 61-70-C; 71-80-B; 81-100-A

#186 **Vikrant**
Value Range: 1-100

What is Valid Equivalence Partition and Boundary Value of 1-100 range?

What is invalid Equivalence Partition and Boundary Value of 1-100 range?

Please Explain me..

#187 **anil**
When it comes API testing, I do not think this theories really helps always. You will be working with Objects rather than numbers like 1-100. And as an API tester you have the full freedom to go and see the dev code that consumes these input parameters and design your test cases accordingly.

#188 **Aparna**
Can you please any one explain the answer for my question?
Postal rates for 'light letters' are 25p up to l0g, 35p up to 50g plus an extra l0p for each additional 25g up to l00g.
Which test inputs (in grams) would be selected using equivalence partitioning?
a. 8,42,82,102
b. 4,15, 65, 92,159
c. 10,50,75,100
d. 5, 20, 40, 60, 80

#189 **Thulasiram**
Great Going Guys :)

Just a suggestion , nothing Personal on this ..
Testing Techniques are introduced to find the minimal number of test
cases that can make full coverage (say optimal coverage) , but i see
few Pals going out of the Testing Techniques like (EP , BVA)

Like.,,
to check for no of testcases for a text box accepting values between 1
-100 ,

Note :
the main focus on this is to check how system behaves values between
1 – 100 and the values on the boundaries (this shouldn't be like what
happens if we give charactes , spl chars and symbols , that will be
carried in other form of testing like field validation (GUI Testing).

As per EP :
we get 3 clauses ,
100(invalid clause). we take 1 value from each clause to check
whether system behaves as supposed and not supposed to work .,

To go for further coverage , we go for Boundary checks
which assures our coverage .

#190 **Thulasiram**
Some of my comments missing *

As per EP :
we get 3 clauses ,
100(invalid clause). we take 1 value from each clause to check
whether system behaves as supposed and not supposed to work .,

To go for further coverage , we go for Boundary checks
which assures our coverage .

#191 **Thulasiram**
Apologies again :(

different clauses are getting missed
lessthan 1 will be invalid clause
1 to 100 will be a valid clause and greatethan 100 will be a invalid
caluse

we take 1 value from each clause to check whether system behaves as supposed and not supposed to work .,

#192 **Thulasiram**
@Aparna ,

Its a bit confusing question , they didn't explicitly said about which partition to pick up for the test case design .

Expalnation :
10g 25p
50g 35P
75g 45p
100g 55P

Thing to worry here is if we are going to consider the valid partition of weight (in grams) then u r answer should be "c. 10,50,75,100" which covers all the four cases .

If they are expecting to cover us with , invalid partions then we are in trouble :p we got no option in answers to cover those (we may get additional 2 testcases for invalid partitions)

#193 **Thulasiram**
@vikrant ,

1-100
valid partition is 1- 100
invalid partitions 0 , 101 (if its a pure interger)

#194 **Geetika**
can anyone let me know the difference between boundary value and equivalence classes ?????

#195 **suji**
i could not understand the BVA..but other one example is good

#196 **Muhammad Zeeshan Mazhar**
In Boundary value analysis there are three basic steps to perform this validation:

1) First enter extreme valid values both from lower and upper limit

2) Then decrement by 1 from both upper limit and lower limit and test validation on that data

Test Data = Lower limit -1
Test Data = Upper Limit -1

3) Then increment by 1 from both upper limit and lower limit and test validation on that data

Test Data = Lower limit +1
Test Data = Upper limit +1

#197 **Thulasiram**
@Geethika ,
Though they sounds similar there is a difference between BVA and EP testing techniques

1. EP(Equivalence partitioning)
finding the partitions or combinations (valid /invalid)

Eg :
To check for the valid and invalid partitions between 10 – 100
Valid partion : 10 – 100
Invalid Partitions : 100
— While preparing the testdata if we select number between 10- 100 , then we are testing with valid data. here system should behave as documented
— If we are selecting value 100 then we are testing with the invalid partition (negative testing) , in this system should have some exception handling (error messages/popups)

2 . BVA(Boundary value analysis) :
Testing with the boundary values

Eg : considering the same example ,
to check with values 10-100
–Valid data : 10 -100 : system going to behave same for all the values from 10 -100 , so we dont test all the values , we just check with 10 and 100(we got 2 testdata)

— Invalid date 100 , so we take 9 and 101(as additional negative testdata) for this system should throw error messages .

Note :
I Know both sounds similar , but we can say Equivalence partitioning is part of BVA , so its upto tested to select the technique for testing .

Like if you are not worried about negative cases , then you can go for EP cases (valid partition).
if you want to test the negative as well then you can go for BVA.

There are multiple external parameters on which we should choose the best technique.like
1. Time
2.Expected Coverage
3.logic complexity etcc..

#198 **rehana**
Some one please help me how to write test case for boundary value analysis for ex:1000

#199 **Thulasiram**
Hi Rehana ,

+1 and -1 is the boundary value for a pure integer .
In your case if 1000 ,
you need to test with
1. 1000 is the positive or valid data , data should be accepted
2. 999,1001 are the invalid values , likely negative testing where values shoulnt be accepted.

Eg : if x + y = 1000 and its already given y = 0
then x should be 1000 is the positive testing

for the values 999,1001 it should get failed.

#200 **keshav pav**
Defenitly it is best artical wid example ever i seen…..everybody get easily understand

#201 **Sechaba**

This side is very helpful,i would like to know wich sort of technical questions should you ask during the interview for Test analyst

#202 **khan**
Can any plz help out with worst test cases on BVA

#203 **Amrath**
Helpful

#204 **sunil verma**
great …the way u express simple and meaningful

#205 **roma**
hi
>this is roma … i want your help… i want to know the test cases for Microsoft outlook 2007..i hope you will help me..
>i prepared test scenario which i mentioned below:-

>please help me…urgently
>thanks
>
>Ms. Roma
>
>1 Always BCC •Performs a CC or a BCC automatically for every email.
>•Customize the email messages that get CC'ed or BCC'ed.
>2 Attachment Reminder • Check your outgoing email for keywords and prompt you in case you
> forgot to attach a file.
>• Keywords are configurable.
>• Intelligently considers signature files.
>3 Attachment Save •Replaces attachments with links.
>•Reduces Outlook storage spaces.
>•Improve Outlook performance.
>•Delete the attachment when deleting an email.
>4 Duplicate Appointment Remover •Removes duplicate appointments.
>•Customizable
>•Fast
>5 Duplicate Contact Remover •Removes duplicate contacts.
>•Customizable
>•Fast

>6 Duplicate Email Remover •Remove duplicate emails in Microsoft
Outlook.
>•Customizable
>•Fast
>7 Duplicate Note Remover •Delete duplicates or move them to a
folder.
>•Comparisons of two appointments based on subject, body and color.
>•Works with a single folder or multiple folders at once.
>8 Duplicate Task Remover •Delete duplicates or move them to a
folder.
>•Comparisons of two tasks based on subject, due date, categories,
> contacts, company, body and start date.
>•Works with a single folder or multiple folders at once.
>•Works with Microsoft Outlook 2013, Outlook 2010 and Outlook
2007.
>9 Follow Up Reminder •Reminds you if you have not heard back from
someone.
>•List all your pending reminders with a click of a button.
>•Add follow up reminders to any email in any Outlook folder.
>•Quick Snooze.
>10 Remove Subject Prefix •Remove redundant 'Re:', 'Fw:' etc. from
message subjects.
>11 Reply To All •Prompts you when you reply to everyone. Avoid
sending out information
> you may not want to share with everyone.
>• Prevent Outlook from including your name and email address in a
reply to all message thus avoiding extra copies.
>• Prompts with a confirmation message if you were BCC'ed on the
> message.
>12 Save as PDF •Saves all your emails as PDF files.
>•Saves attachments as PDF files.
>•Save the emails on receipt or batch mode.
>•No other PDF printer driver needed.
>13 Send Individually •Sends email marketing to each of your
recipients, one at a time.
>•Adds a convenient "Send Individually" Outlook button.
>•Easily handles distribution lists, contact groups, and Excel lists.

#206 **Ron**

Good post, I have to say the Equivalence Partitioning technique has saved me from writing and executing a large number of unnecessary tests.

#207 **minnie**
very clear and simple explanation thnku so much

#208 **kavita**
Hi,
I want to know whether I have written correct ECP and BVA values for the condition if(a>b) and both are of type INT32 .
a>b Valid class
a==b Invalid class
a<b Valid class

and values are like b,b+1,b-1,minium and maximum and in the ECP can we change the both variable value or we should keep one as a constant to have good ECP
Please help me .

Thanks

#209 **kavita**
Hi,
I want to know whether I have written correct ECP and BVA values for the condition if(a>b) and both are of type INT32 .
a>b Valid class
a==b Invalid class
a<b Invalid class

and values are like b,b+1,b-1,minium and maximum and in the ECP can we change the both variable value or we should keep one as a constant to have good ECP
Please help me .

Thanks

#210 **priya**
Awesome explanation for Boundary value Analysis and Equivalence Class partitioning. Easy to understand.
Thanks a ton for the clear explanation.

#211 **Sudham**
Very Useful.. thanks for posting

#212 **Manish**
Simple & Useful..

#213 **Martin**
Good one!

#214 **shilpa**
my question is
what is BVA and ECP value for -1 to 1022 range

#215 **Avnish**
Don't Forget "Testing is Context Dependent".

-2 -1 0 1021 1022 1023

#216 **Nava chaithanya**
Really its good. .

#217 **Sanjay**
How to write BVA for Date range .

Suppose a field take data between following date range then how to
write BVA

Date: 1 Jan 2014 to 31 March 2014

Please help me.

#218 **KANIKA**
Dear Frnds

pl help me how to write test cases for regristration form of any website

#219 **Prathap Reddy**
Nice and Easy to learn….to understand easy…tanKQ…

#220 **vishnu shankar**
This kind of Articles helps every one especially freshers

#221 **Shashank Sissodia**
great artical,It makes me to understand very easy.

#222 Rahul
Good article…
Thanks lot

#223 Uma Gupta
Nice article with very gud examples. Thanks a lot to Vijay for the
support.

#224 Deepa
Hi,
Can someone help me to write BVA(Boundary Value Analysis) for input
field that accepts only 10 digit Phone numbers? What will be the
boundary numbers?

#225 Nisarg
Really thanks for the help.. It will be helpful in my mid semester
exam..

#226 Rabi
Hello Everybody,
I have one doubt Regarding boundary value analysis and Equivalent
class partitioning.
Let I have one Test cases for input box accepting numbers between 1
and 1000.
So as we know through boundary value analysis and Equivalent class
partitioning we can check min value i.e. 0,1,2 and max value i.e
999,1000,1001.
But user may give some random number like 55,555555,45566,289
and So on.
So,My doubt is how we can check that number is valid or not ?

#227 Anoop
Thanks for sharing………

#228 Kavita
Nice questions for brushing before exam.

#229 kavita
Hi Friends ,

Could anyone be kind enough to send me questions or dumps with
answers for ISTQB Fundamental Certification . I am appearing For
ISTQB certification exam next week.

kskadian@yahoo.com

Thanking you all in anticipation.
Kavita

#230 **Vijay**
@Kavita and all

If you want free ISTQB foundation level exam material you can get it
from below page by registering with your email.

You will get some sample papers over the period of couple of weeks
through this option:
https://www.softwaretestinghelp.com/istqb-free-updates/

If you are interested in premium sure-pass study guide to easily pass
and score high in this exam please check this study guide:
http://www.softwaretestinghelp.org/istqb-certification-complete-
study-package/

#231 **Devaraju**
That would be 9 test cases, let me know if it's not right

#232 **vignesh**
i have doubt regarding Test Matrices , Test Metrics, & Test matrix can
u pls explain tis

#233 **srikanth kamera**
valuable info

#234 **Gustav**
So, in the equivalence class test cases for numbers from 1 to 1000,
since there are only three test cases, do we also perform only three
tests, or do we still need to perform 1000 tests? If we are supposed to
perform only three tests, then how can we be sure that every single
number gives the same result? Maybe the software has a bug that
gives a different result for 99.

#235 **Ahmed Raza Siddique**
You Rock Dude Awesome

#236 **Ravella Baji**
Thank you very much,its very helpful one …..!

#237 **Raghava**
Hi all,this article is really good,thank you very much for sharing

#238 **Raghava**
I have some confusion between ecp and bva,both are looking same,in
ecp we cover bva also,please can anyone explain with example

#239 **Atif Niaz**
Dear,
Any one tell me the correct formula for boundary value analysis

BV = LV-1, LV, LV+1, UV-1, UV, UV+1.
BV = LV-1, LV+1, UV-1,UV+1.

#240 **Shifa sahin**
Can anyone help me out on below questions:

Below you will find the requirements to identify the Account Diversity
Grade of a user. Read the
requirements carefully and identify what test users you need to setup
in order to completely
test and make sure all the below requirements are covered. (Note: you
should identify the
optimum (minimum) number of users needed to test all of the
requirements)
Requirements:
A user can have different types of loan accounts. Now we grade a
user's Account Diversity based
on two factors.
1) loanTypeCount
2) totalAccounts
loanTypeCount = the number of different (distinct) LoanType values
for all accounts that the
user has.
However do not include LoanType = Unknown & Collections but include
all others
Applicable values for LoanType are (Home Loan, Heloc, Credit Card,
Car Loan, Collections,
Unknown)
totalAccounts = total number of loan accounts user has (do not include
LoanType = Unknown &
Collections but include all others)

example-> if user has 3 credit cards and 2 home loans and 1
Collection account, then
totalAccounts = 5 and loanTypeCount = 2)
The logic to determine accountDiversityGrade is the following:
If totalAccounts> 20 or loanTypeCount >= 4, accountDiversityGrade =
A
Else if totalAccounts> 10 or loanTypeCount = 3,
accountDiversityGrade = B
Else if totalAccounts>= 5 or loanTypeCount= 2, accountDiversityGrade
= C
Else if totalAccounts > 0 or loanTypeCount = 1, accountDiversityGrade
= D
Else accountDiversityGrade=null (n/a)

#241 **Meena**
Really a useful and valid info. Thanks

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