New chapter

Test Design Techniques in Detail

Specification-based or Black-box Techniques

Let's learn about following Specification based or black box Techniques in detail

Equivalence Partitioning	Boundary Value Analysis

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J & J Training

Equivalence Partitioning

- Equivalence partitioning is a black box test design technique
- Can be applied at all levels of testing
- Idea behind EP is to divide or partition a group of test conditions into a set that is considered same by the software
- We need to test just one condition from that partition as it is assumed that all the values in that partition will be treated in same way
  - If one of the value in a partition will work then we assume all the values in that partition will work.
  - If one of the value in that partition fails then it is assumed that all the values in that partition will fail
- These conditions may not always be true however testers can use better partitions and also test some more conditions within those partitions to confirm that the selection of that partition is fine.
- Equivalence partitions are also known as equivalence class

Equivalence Partitioning Example

A store in city offers different discounts depending on the purchase amount. Minimum cart amount is $5

If purchase is in the range of $5.00 up to $50.00 - no discounts

Purchase over $50.01 and up to $200.00 - 5% discount

Purchase of $200.01 and up to $500.00 - 10% discounts

Purchase of $500.01 and up to $max - 15% discounts.

Now to test this we can identify 4 valid equivalence partitions and 2 invalid partition as shown below.

Invalid Partition	Valid Partition(No Discounts)	Valid Partition(5%)	Valid Partition(10%)	Valid Partition(15%)	Invalid partition
-$4.99	$5.00-$50	$50.01-$200	$200.01-$500	$500.01-$max	$max+$0.01

Equivalence Class Partitioning - Black Box Test Design Technique

•Software Inputs are divided into Group according to their similar behavior
•Examples:

1.Data Range: Text field accepting values from 1 to 100

1. Dividing into three partitions (Invalid - Valid - Invalid)
2. Invalid - -5
3. Valid - 75
4. Invalid – 121

2.Data Type: Text field only accepts positive number

1. Dividing into different partitions (Alphabets, Positive Numbers, Negative Numbers, Special Characters, Combination)
    1. Invalid (c) - Valid (9) - Invalid (-3) - Invalid ($) - Invalid (c9, 9$ etc)

3.Data Size: Text field accepts 10 size (Ex: Mobile Number)

1. Dividing into different partitions (Less than 10 size, Size 10, More than 10 Size)
    1. Invalid (1

3456789101112)

Price

$1 – $2,200+

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Deals & Discounts

All Discounts
Today's Deals

Men's Shoe Size

4	4.5	5	5.5	6
6.5	7	7.5	8	8.5
9	9.5	10	10.5	11
11.5	12	12.5	13	13.5
14	14.5	15	15.5	16
16.5	17	17.5	18	18.5
19	19.5	20		

Color

Men's Shoe Width

Narrow
Medium

Skechers
Women's Squad Sr Food Service Shoe
4.4 out of 5 stars 48,111
1K+ bought in past month
$44.97 List: $67.00
prime
FREE delivery **Fri, Aug 2**
Or fastest delivery **Tomorrow, Jul 29**

+11

adidas
Men's Swift Run
4.5 out of 5 stars 6,313
50+ bought in past month
$80.00 List: $90.00
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+19

Under Armour
Men's Charged Assert 9 Running Shoe
4.5 out of 5 stars 59,924
500+ bought in past month
$59.00 List: $70.00
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Women's Grand Court 2.0 Tennis Shoe
4.4 out of 5 stars 5,535
800+ bought in past month
$49.99 List: $70.00
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Price

$1 – $2,200+

Go

Deals & Discounts

All Discounts
Today's Deals

Men's Shoe Size

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9	9.5	10	10.5	11
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14	14.5	15	15.5	16
16.5	17	17.5	18	18.5
19	19.5	20		

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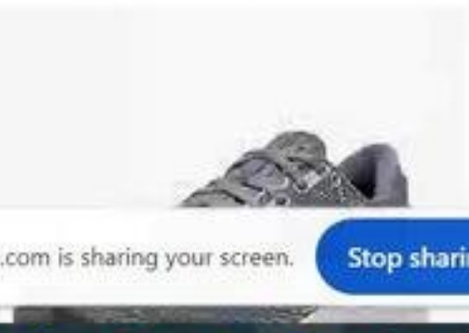

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New tab

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Import favorites

For quick access, place your favorites here on the favorites bar. Manage favorites now

Restore pages

Microsoft Edge closed unexpectedly.

Restore

Personalize your feed based on your interests

Select a topic to get started

NFL

Pets

Fitness

Stocks

Recipes

Food and Drink

NBA

Celebrities

Amazon

Select a topic to get started

Go to publishers

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Type here to search

Result

12:36 PM
7/28/2024

Deeptick Unlocked Cell Phones I15 PROMAX 2023 Android...

Currently unavailable.

Delete

Add to list

Just For Men Shampoo-In Color (Formerly Original For...

$26.88

2K+ bought in past month

In Stock

Eligible for FREE Shipping

Size: 1 Count (Pack of 3)

Color: Real Black H-55

Move to cart

Delete

Add to list

Compare with similar items

Fire TV Stick Lite, free and live TV, Alexa Voice Remote Lite,...

Currently ur

Delete

Add to list

Shopping List
Private

Create a list

Boundary Value Analysis (BVA)

A boundary value is any input or output value on the edge of an equivalence partition.

Boundary value analysis is based on testing at the boundaries between partitions

Boundary Value Analysis is a black box test design technique where test case are designed by using boundary values, BVA is used in range checking.

To apply BVA you need to take maximum and minimum values from valid partition together with first or last value respectively in each of the invalid partition adjacent to the valid partition

Boundary Value Analysis (BVA) example

Suppose you have a text field on webpage which accepts values between 1-1000, so the valid partition will be (1-1000), equivalence partitions will be like:

Invalid Partition	Valid Partition	Invalid Partition
0	1-1000	1001 and above

And the boundary values will be 1, 1000 from valid partition and 0,1001 from invalid partitions.

Boundary Value Analysis - Black Box Test Design Technique

This is an extension of the Equivalence Class Partition.

- The maximum and minimum values from the boundary values of ECP
- Edge Values - (maximum + 1, maximum and maximum -1) and (minimum + 1, minimum and minimum -1) for every ECP partition
- Generally we get defects with the boundary values, hence BVA is useful
- Example: Text fields accepts value from 1 to 100

1.Three Partitions - Less than 1, 1 to 100 and More than 100

2.First Partition

1. Min/Max - 0

3.Second Partition

1. Min - 1
2. Max - 100

4.Third Partition

1. Min/Max - 101

Why do both EP and BVA?

Testing only boundaries does not give much confidence as we are testing just extreme values of partitions

It is important to test some values in between the partitions

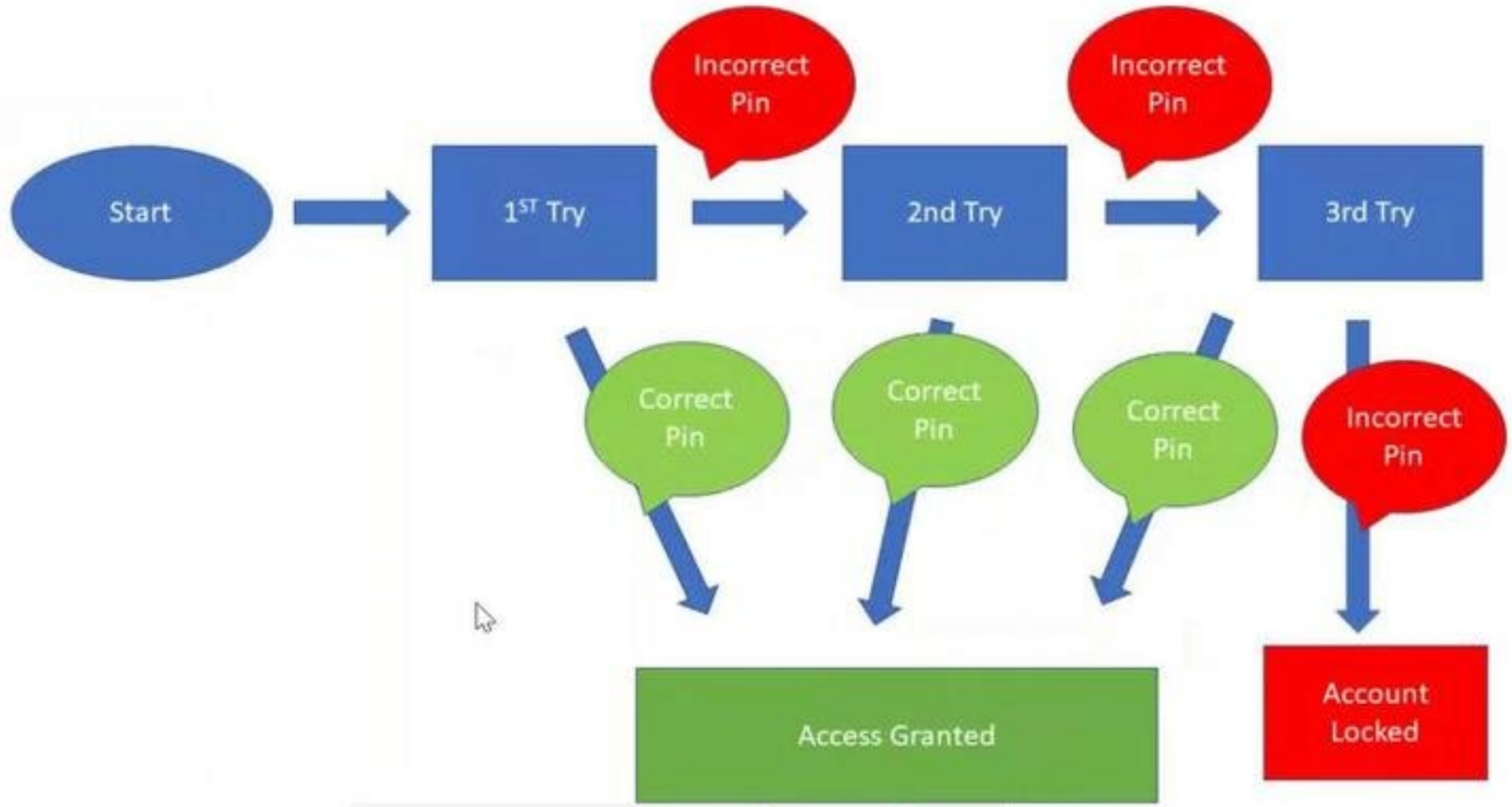
It is recommended that partitions should be tested separately from boundary values

If you want to be more thorough then start with valid partition testing then invalid partitions, then valid boundaries and finally invalid boundaries

Decision Tables Technique

Field/Case	Case 1	Case 2	Case 3	Case 4
Username	Valid	Valid	Invalid	Invalid
Password	Valid	Invalid	Valid	Invalid
Output	Home Page	Error Message	Error Message	Error Message

State Transition Testing



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