



Research Paper

Testing Technique to test 19 Functionalities & its combination fastly by Manual Testing

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ABSTRACT : In this paper, we have developed a testing technique to test 19 Functionalities & its combination fastly.

KEYWORDS: Testing Technique, Position exchange circular shifting Algorithm, K-mean central pivot method

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I. INTRODUCTION

Testing Techniques is the method applied to evaluate a system or a component with a purpose to find if it satisfies the given requirements. Testing of a system helps to identify gaps, errors, or any kind of missing requirements differing from the actual requirements. Testing techniques are the best practices used by the testing team to assess the developed software in regards to given requirements. These techniques ensure the overall quality of the product or software including performance, security, customer experience, and so on. By employing a particular technique, we get guidelines on what to test and how to define test conditions. In other words, each test design technique helps to convert available data into efficient test cases.

II. POSITION EXCHANGE CIRCULAR SHIFTING ALGORITHM

Here we assume that the functionalities are different type of objects & any functionality can come to first position if it comes to first position from any other position that vacancy should be filled by the first functionality

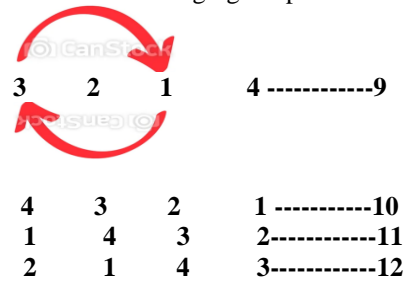
First Iteration

1	2	3	4-----1
4	1	2	3-----2
3	4	1	2-----3
2	3	4	1-----4

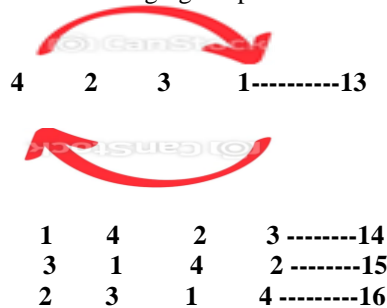
- Second Iteration (Here we are exchanging the position of 1 & 2)

2	1	3	4 ----- 5
4	2	1	3 -----6
3	4	2	1 -----7
1	3	4	2 -----8

- Third Iteration (Here we are exchanging the position of 1 & 3)



- Fourth Iteration (Here we are exchanging the position of 1 & 4)



From the Above Algorithm we have concluded that if we have N functionalities then we have N^2 (N square) Iterations

Here we have 4 Functionalities we are getting 16 Iterations

So, for testing the 19 Functionalities & its combinations effectively & fastly we have use the Position Exchange circular shifting algorithm

Since these 19 Functionalities are placed one after the other it is assumed to be a continuous function with $F(x) = X$

So, it has got a minimum value & Maximum value

Minimum value is taken as **4** & Maximum value is taken as **8**

This because if we take 3 as minimum
Then the iteration becomes like this

1 2 3
3 1 2
2 3 1

2 1 3-----Iteration repeated

3 2 1
1 3 2

3 2 1
1 3 2

2 1 3-----Iteration repeated

Here we do not get N^2 iterations since the iterations are repeated

Since we have 19 functionalities we have 19^2 (19×19) iterations which is a huge value that is we have 361 iterations.

So to reduce the iterations we have fixed the maximum value as 8 because we have taken the maximum value as 50. since 8^2 is 64 which is above 50 since 7^2 is 49 only then we can take only 8

Now we have taken the minimum value for iteration as 10 then only one value is suitable which is 4 i.e., 4^2 is 16 which is above 10

So Min: value is 4 & Max: Value is 8

Since we have 19 functionalities which gives 361 iterations. Which exceed the max value (=50). We have to divide the Functionalities using Central pivot method

In central pivot method we should divide the functionalities in such a way that it should be near to the pivot

So now we are going to divide the 19 Functionalities using Central Pivot method

III. K-MEAN CENTRAL PIVOT METHOD

19 Functionality if we divide equally, it becomes

$$19/2=9.5$$

So, 9.5 is the pivot. Now we have to group the functionality in such a way that the value should be near to the pivot and it should be within the Min: & Max value

Since 8 is max value, we have to subtract 8 from 19 which is

$19-8=11$ This value we cannot divide equally

So, we take $19-7=12$ this value can be divided equally which is 6

And it is near to the pivot which is 9.5

So, one value will be 7 & other values are 6,6

So, we have grouped the 19 Functionalities are 7,6,6 which is within the range & near to pivot

Now we apply the Position Exchange circular shifting Algorithm to the newly founded group which is (7,6,6).

Since we have N functionality then we have N^2 (n square iteration) THEN the vectors becomes 49,36,36 iterations ie

$$a=49, b=36, c=36$$

$$a^2 + b^2 + c^2 = ab + bc + ca \quad \text{if } a=b=c$$

Here we have 49 iterations ie we have 36 +(Additional 13 iterations extra) & others are 36 iterations each so we have $a=b=c$

SO, if we apply the algorithm & add the groups you will get all the combinations

Here we get all the combinations as per the equation since $a=b=c$.

IV. STEPS TO TEST THE 19 FUNCTIONALITY & ITS COMBINATIONS

STEP1: CHECK THE SIZE OF THE FUNCTIONALITY IF IT IS MORE THAN THE MAX VALUE WE WILL DIVIDE IT.

STEP 2: DIVIDE THE FUNCTIONALITY USING CENTRAL PIVOT METHOD AND IT SHOULD BE WITH IN THE MIN VALUE & MAX VALUE.

STEP 3: APPLY THE POSITION EXCHANGE CIRCULAR SHIFTING ALGORITHM.

STEP 4: VERIFY THE RESULT USING THE ALGEBRAIC EQUATION

$$a^2 + b^2 + c^2 = ab + bc + ca$$

If a=b=c