

Col215P SW1

Manshi Sagar, 2020CS50438

Richa Yadav, 2020CS50438

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1 Implementation

We used a helper function **makegraycode** to compute the gray code ordering (separately for columns and rows) and stored the ordering in the form of an array (of string).

For columns: number of variables = $n-n/2$

For rows: number of variables = $n/2$

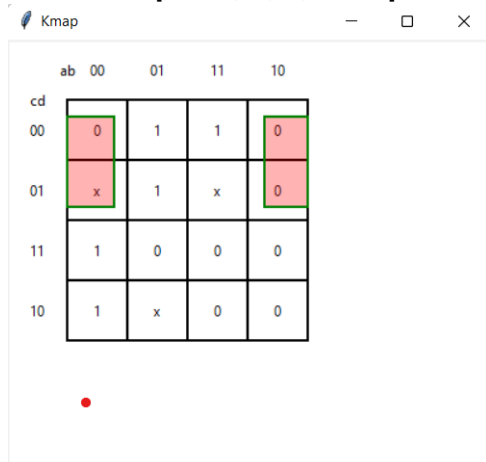
Now we scanned the gray code ordering for columns and matched them with the first $(n-n/2)$ elements of **term** array. For every digit in the ordering, we check it that digit is matching with the corresponding digit of the **term** or not. If all the digits match, we include it in the list of permissible columns.

Made a list of permissible rows in the same way.

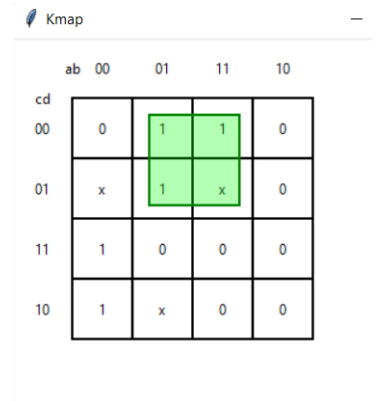
According to these permissible rows and columns, we found the values of x_1, x_2, y_1, y_2 . After computing the region (i.e. values of x_1, x_2, y_1, y_2), we used nested-for-loops to check all values in this region, if 0 is found i.e the region is Not Legal, function returns Boolean value False and shows the region in red colour, else if the for-loops are exited and False is not returned, this means that the region is Legal. So after completion of for-loops, Boolean value True is returned and region is displayed in green colour.

2 Testcases

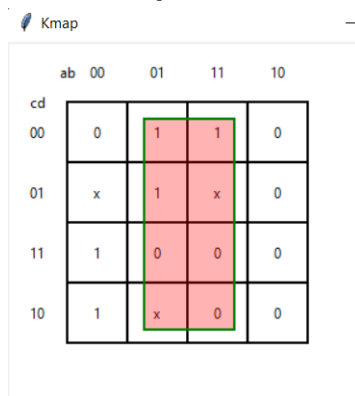
1. **term** = [None, 0, 0, None] = $b'c'$



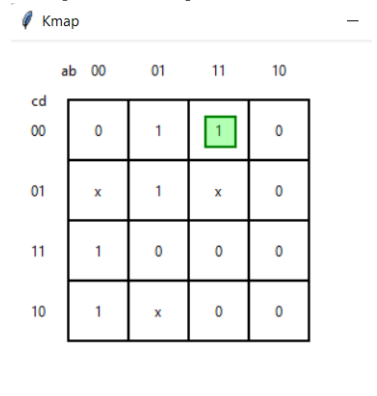
2. **term** = [None, 1, 0, None] = bc'



3. **term** = [None, 1, None, None] = b



4. **term** = [1, 1, 0, 0] = $abc'd'$



5. term = [1, 1, 0, 0] = abc'd'

Kmap

ab	00	01	11	10
cd				
00	0	1	0	0
01	x	1	x	0
11	1	0	0	0
10	1	x	0	0

6. term = [0,1,1,0] = a'bd'

Kmap

ab	00	01	11	10
cd				
00	x	1	x	1
01	0	0	1	1
11	1	0	x	1
10	x	0	1	0

7. term = [None, 0, None, None] = b'

Kmap

ab	00	01	11	10
cd				
00	x	1	x	1
01	0	0	1	1
11	1	0	x	1
10	x	0	1	0

8. term = [None, None, None, 0] = d'

Kmap

ab	00	01	11	10
cd				
00	x	1	x	1
01	0	0	1	1
11	1	0	x	1
10	x	0	1	0

9. term = [0, None, None, 0] = a'd'

Kmap

ab	00	01	11	10
cd				
00	x	1	x	1
01	0	0	1	1
11	1	0	x	1
10	x	0	1	0

10. term = [None, 0, 0, None] = b'c'

Kmap

ab	00	01	11	10
cd				
00	x	1	x	1
01	0	0	1	1
11	1	0	x	1
10	x	0	1	0

11. term = [0, None, None] = a'b'

Kmap

ab	00	01	11	10
c				
0	x	1	x	1
1	0	0	1	1

12. term = [1, None, None] = a

Kmap

ab	00	01	11	10
c				
0	x	1	x	1
1	0	0	1	1

13. term = [None, 0, None] = b'

Kmap

ab	00	01	11	10
c				
0	x	1	x	1
1	0	0	1	1

14. term = [1, None] = a

Kmap

a	0	1
b		
0	x	1
1	0	x

15. term = [None, 1] = b

Kmap

a	0	1
b		
0	x	1
1	0	x

16. term = [0, 0] = a'b'

Kmap

a	0	1
b		
0	x	1
1	0	1