

Karnaugh Map Simplification Process



STUDY FOR FE

1. Construct K-Map based on truth table
2. Group large sets of adjacent cells containing 1's and form least # of groups.

Groups can be formed in sets of 1, 2, 4, 8 etc.

3. Adjacent cells are the cells that differ in only one variable
4. Cells in Top and Bottom rows of the K Map are adjacent

		CD				
		00	01	11	10	
AB	00	1	1	1	1	A'B'
	01					
	11					
	10	1	1	1	1	AB'

$$A'B' + AB' = (A' + A)B' = B'$$

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4. Cells in Top and Bottom rows of the K Map are adjacent
5. Cells in Left and Right columns are adjacent

		CD			
		00	01	11	10
AB	00	1			1
	01	1			1
	11	1			1
	10	1			1
		C'D'		CD'	

$$CD' + C'D' = (C+C')D' = D'$$

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4. Cells in Top and Bottom rows of the K Map are adjacent
5. Cells in Left and Right columns are adjacent
6. Cells in the four corners of K Map are adjacent (non-diagonal)

		CD			
		00	01	11	10
AB	00	1			1
	01				
	11				
	10	1			1

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4. Cells in Top and Bottom rows of the K Map are adjacent
5. Cells in Left and Right columns are adjacent
6. Cells in the four corners of K Map are adjacent
7. Write the OR sum of all groups

		CD			
		00	01	11	10
AB	00				
	01		1	1	
	11		1	1	
	10				

BD