

Examrace

Digital Electronics: Karnaugh Map (K-Map) : Binary to Gray Code Conversion

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Topics to be Covered

- Karnaugh Map (k-map)
- What is the need of k-map?
- Types of k-map
- SOP and POS simplification

Minterm \rightarrow 1

Maxterm \rightarrow 0

Binary to Gray Code Conversion

	Binary Code	Gray Code	
0	0 0 0	0 0 0	0
1	0 0 1	0 0 1	1
2	0 1 0	0 1 1	3
3	0 1 1	0 1 0	2
4	1 0 0	1 1 0	6
5	1 0 1	1 1 1	7
6	1 1 0	1 0 1	5
7	1 1 1	1 0 0	4

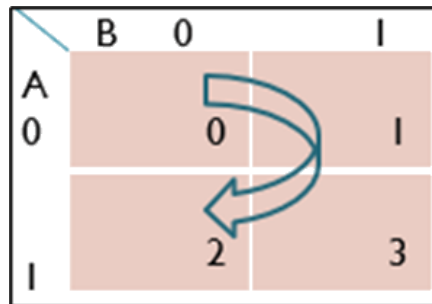
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Types of K-Map

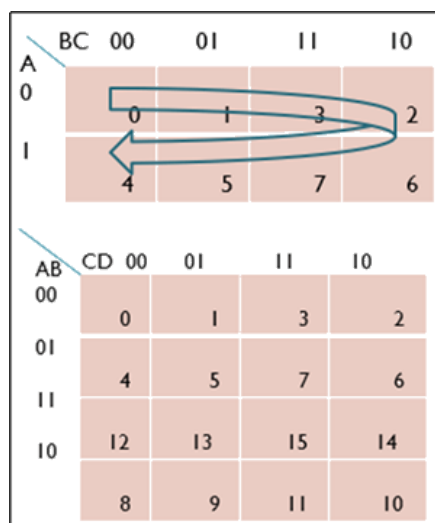
Grouping

- Pair = 2
- Quad = 4

- Octet = 8
- Word = 16



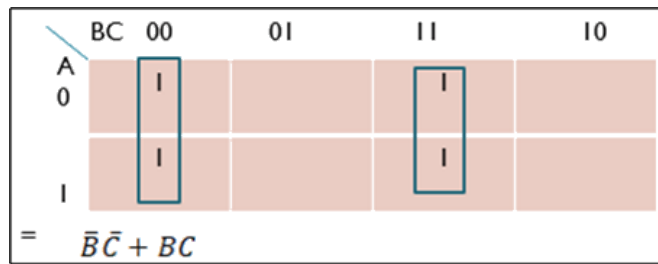
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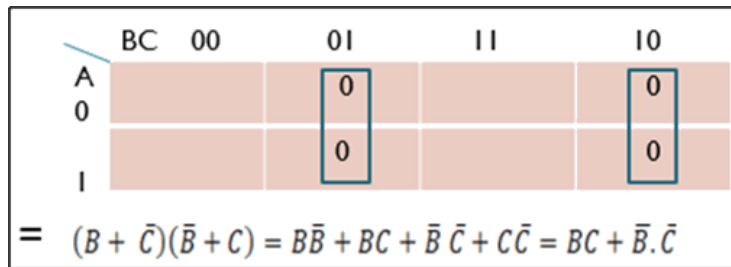
Examples:

$$f(A, B, C) = \sum m(0, 3, 4, 7)$$



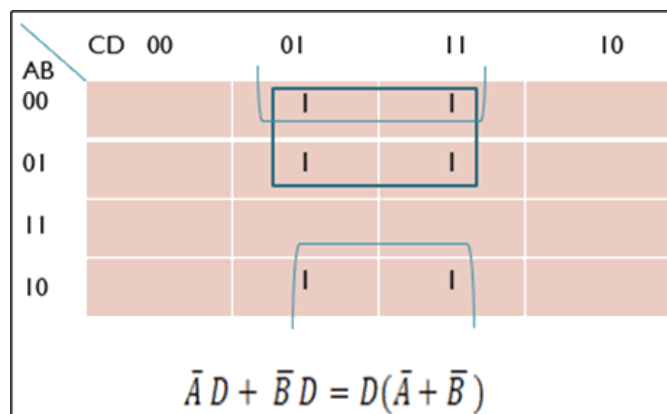
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$f(A, B, C) = \prod m(0, 3, 4, 7)$



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$f(A, B, C, D) = \sum (1, 3, 5, 7, 9, 11)$



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