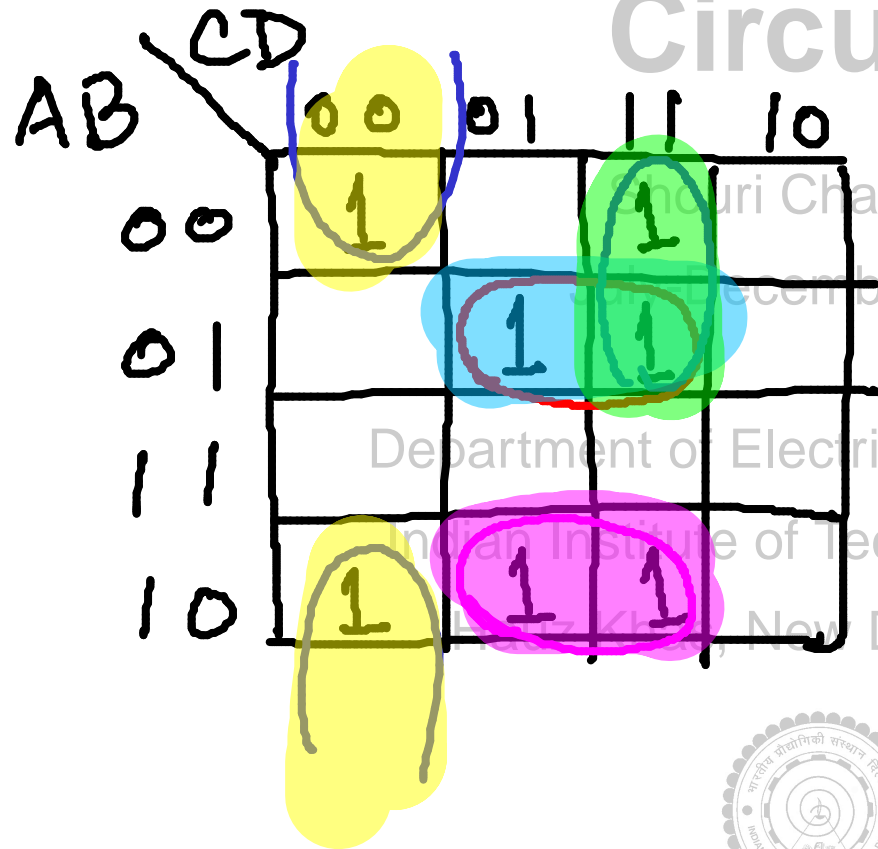


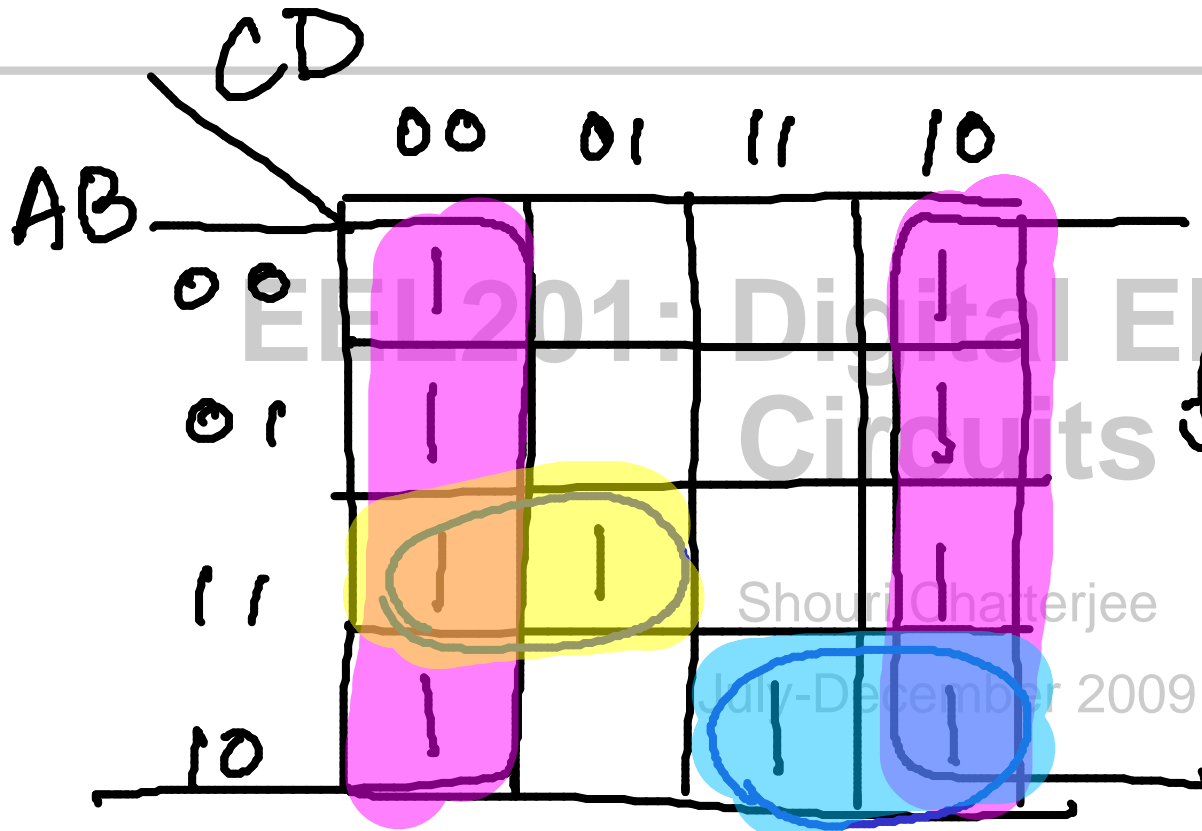
Minimization

Karnaugh Maps $f = \sum 0, 3, 5, 7, 8, 9, 11$



$$\begin{aligned} & \overline{B} \overline{C} \overline{D} \\ & + \overline{A} B D \\ & + \overline{A} C D \\ & + A \overline{B} D \end{aligned}$$





$$f = \sum 0, 2, 4, 6, 8, 10, 11, 12, 13, 14$$

$$= \overline{D} + ABC\overline{C} + A\overline{B}C$$

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Don't care states

EEL201: Digital Electronic
Circuits

→ R G Y
0 0 0

0 0 1

0 1 0

→ 0 1 1

1 0 0

→ 1 0 1

→ 1 1 0
→ 1 1 1



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0 - 9 → 4 bits

0000 → 0
0001 → 1

⋮

1001 → 9

{ 1010
1011
⋮
1111

don't care states

EEL201: Digital Electronic Circuits

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→ $\sum 0, 1, 2, 3, 4, 7, 8, 9$

+ d $\sum 10, 11, 12, 13, 14, 15$

AB / CD

	00	01	11	10
00	1	1	1	1
01	1	0	1	0
11	X	X	X	X
10	1	1	X	X

\bar{B}
+ $\bar{C}\bar{D}$
+ CD

Product of max-terms form

$$\sum 0, 1, 2, 3, 4, 7, 8, 9$$

$$+ d \sum 10, 11, 12, 13, 14, 15$$

$$= \prod 5, 6 \cdot d \prod 10, 11, 12, 13, 14, 15$$

		CD			
		00	01	11	10
AB	00				
	01		0		0
	11	X	X	X	X
	10			X	X

$$B\bar{C}D + BC\bar{D}$$

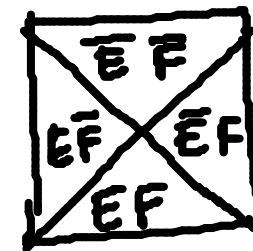
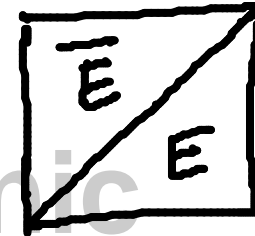
$$f = B\bar{C}D + BC\bar{D}$$

$$f = \bar{B} + \bar{C}\bar{D} + CD = (\bar{B} + C + D)(\bar{B} + \bar{C} + D)$$



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AB \ CD	00	01	11	10
00	0	2	6	4
01	8	10	14	12
11	24	26	30	28
10	16	18	22	20



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