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Using Boolean Algebra to reduce logic equation is not trivial!

monday	10 — 11 AM	
Thursday	9:30 — 10:30 Am	
Thursday	3 — 4pm	

Karnaugh Map (K-map)

	x_1	x_2	f
m_0	0	0	1
m_1	0	1	0
m_2	1	0	1
m_3	1	1	1

$f = \sum m(0, 2, 3)$

x_2 \ x_1	0 ①	1 ②
0	00: 1	10: 1
1	01: 0	11: 1

0 ? 0 ?

1 1

$2^n \times 2^m$

- 2x1 ✓
- 1x2 ✓
- 3x1 ✗
- 1x3 ✗
- 4x2 ✓
- 2x4 ✓

$f = \bar{x}_1\bar{x}_2 + x_1\bar{x}_2 + x_1x_2$

$= (\bar{x}_1 + x_1)\bar{x}_2 + x_1(\bar{x}_2 + x_2)$

$= \bar{x}_2 + x_1$

$f = ① + ②$

$= \bar{x}_2 + x_1$

$g = x_1 + \bar{x}_2$

x_2 \ x_1	0	1
0	1	0
1	0	1

$\bar{x}_1\bar{x}_2 + x_1x_2$

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LS variable

$f(x_1, x_2, x_3) = \sum m(1,3,4,6,7)$

MS variable

4X2 , 2X4

x_3 \ x_1x_2	00	01	11	10
0	0: 0	2: 0	6: 1	4: 1
1	1: 1	3: 1	7: 1	5: 0

x_2x_3 \ x_1	0	1
00	0: 0	4: 1
01	1: 1	5: 0
11	3: 1	7: 1
10	2: 0	6: 1

$f = (1) + (2) + (3)$

$= \bar{x}_1 x_3 + x_2 x_3 + x_1 \bar{x}_3$

$f = (4) + (5) + (6)$

$= x_1\bar{x}_3 + \bar{x}_1 x_3 + x_1 x_2$

EX

$f(x_1, x_2, x_3) = \sum m(1,2,3,5)$

x_2x_3 \ x_1	0	1
00	0	0
01	1	1
11	1	0
10	1	0

$f = \bar{x}_2 x_3 + \bar{x}_1 x_2$

x_3 \ x_1x_2	00	01	11	10
0	0	1	0	0
1	1	1	0	1

$f = \bar{x}_2 x_3 + \bar{x}_1 x_2$

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$$f(x_1, x_2, x_3, x_4) = \sum m(0, 2, 8, 9, 10, 15)$$

$x_3x_4 \backslash x_1x_2$	00	01	11	10
00	0: 1	4	12	8: 1
01	1: 1	5	13	9: 1
11	3	7	15: $\boxed{1}$	11
10	2: 1	6	14	10: 1

$$f = \bar{x}_2\bar{x}_4 + \bar{x}_2\bar{x}_3 + x_1x_2x_3x_4$$