

1 Sum of product

AB \ CD	00	01	11	10
00	0	1	1	0
01	0	1	1	0
11	0	0	1	0
10	0	0	1	0

$$f = \bar{A}\bar{B} + CD$$

A	B	C	D	f
0	0	0	1	1
0	0	0	0	0
0	0	1	1	1
0	0	1	0	0
0	1	0	1	0
0	1	0	0	0
0	1	1	1	1
0	1	1	0	0
1	0	0	1	0
1	0	0	0	0
1	0	1	1	1
1	0	1	0	0
1	1	0	1	0
1	1	0	0	0
1	1	1	1	1
1	1	1	0	0

2

AB \ CDE	000	001	011	010	110	111	101	100
00	0	1	0	1	0	0	0	1
01	0	1	1	0	0	1	1	0
11	0	1	1	0	0	1	1	0
10	1	1	1	0	0	1	1	0

$$f = \bar{A}\bar{B}\bar{D}\bar{E} + \bar{A}\bar{B} + \bar{D}\bar{E} + \bar{B}\bar{C}\bar{E} + \bar{B}CE + \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}\bar{D}\bar{E} + \bar{B}\bar{C}\bar{D}\bar{E}$$

A	B	C	D	E	f
0	0	0	0	0	0
0	0	0	0	1	0
0	0	0	1	0	0
0	0	0	1	1	0
0	0	1	0	0	0
0	0	1	0	1	0
0	0	1	1	0	0
0	0	1	1	1	0
0	1	0	0	0	0
0	1	0	0	1	0
0	1	0	1	0	0
0	1	0	1	1	0
0	1	1	0	0	0
0	1	1	0	1	0
0	1	1	1	0	0
0	1	1	1	1	0

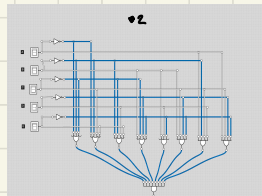
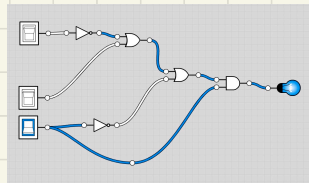
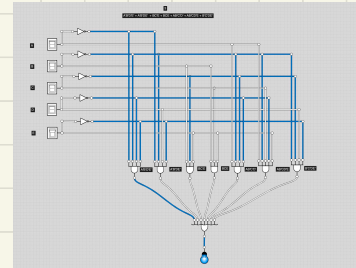
A	B	C	D	E	f
1	0	0	0	0	0
1	0	0	0	1	0
1	0	0	1	0	0
1	0	0	1	1	0
1	0	1	0	0	0
1	0	1	0	1	0
1	0	1	1	0	0
1	0	1	1	1	0
1	1	0	0	0	0
1	1	0	0	1	0
1	1	0	1	0	0
1	1	0	1	1	0
1	1	1	0	0	0
1	1	1	0	1	0
1	1	1	1	0	0
1	1	1	1	1	0

3

AB \ CD	00	01	11	10
00	0	1	1	0
01	0	1	1	0
11	0	1	1	0
10	0	1	1	0

$$f = \bar{D} + A\bar{C}D \rightarrow D \cdot (\bar{A} + C + \bar{D})$$

A	B	C	D	f
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0



4

AB \ CDE	000	001	011	010	110	111	101	100
00	0	x	0	0	x	0	0	1
01	0	0	1	0	0	1	1	0
11	0	x	1	0	0	1	1	0
10	1	1	1	0	0	0	1	0

$\bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}CE + \bar{B}\bar{C}DE + B\bar{C}\bar{D}\bar{E} + B\bar{D}\bar{E}$
 $+ B\bar{C}\bar{D}\bar{E} + \bar{A}\bar{B}CD + A\bar{C}\bar{D}\bar{E}$

$\rightarrow \text{convert } (\bar{A} + \bar{B} + \bar{C}) \cdot (\bar{A}\bar{B} + C + E) \cdot (\bar{B} + \bar{C} + D + E) \cdot (B + \bar{C} + \bar{D} + \bar{E}) \cdot (B + D + E) \cdot (B + C + \bar{D} + \bar{E}) \cdot (A + \bar{B} + C + D) \cdot (A + C + \bar{D} + \bar{E})$

A	B	C	D	E	F
0	0	0	0	0	x
0	0	0	0	1	0
0	0	0	1	0	x
0	0	0	1	1	0
0	0	1	0	0	1
0	0	1	0	1	0
0	0	1	1	0	1
0	0	1	1	1	0
0	1	0	0	0	0
0	1	0	0	1	1
0	1	0	1	0	0
0	1	0	1	1	1
0	1	1	0	0	0
0	1	1	0	1	1
0	1	1	1	0	0
0	1	1	1	1	1

A	B	C	D	E	F
1	0	0	0	0	1
1	0	0	0	1	1
1	0	0	1	0	1
1	0	0	1	1	0
1	0	1	0	0	0
1	0	1	0	1	1
1	0	1	1	0	0
1	0	1	1	1	0
1	1	0	0	0	0
1	1	0	0	1	x
1	1	0	1	0	0
1	1	0	1	1	1
1	1	1	0	0	0
1	1	1	0	1	1
1	1	1	1	0	0
1	1	1	1	1	1

