

1.  $F(A, B, C, D) = \sum_m (0, 1, 3, 5, 6, 9, 10, 12, 15)$  2020203002 소프트웨어학부 박상준

C

	1	1	1	
		1		1
1			1	
	1			1

A

B

$$F(A, B, C, D) = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}D + \bar{A}\bar{C}D + \bar{B}\bar{C}D + \bar{A}BC\bar{D} + AB\bar{C}\bar{D} + ABCD + A\bar{B}\bar{C}D + A\bar{B}C\bar{D}$$

2.  $F(A, B, C, D) = \sum_m^D (0, 1, 3, 8, 9, 11, 12, 13, 14, 15)$

C

1	1	1	
1	1	1	1
1	1	1	

A

B

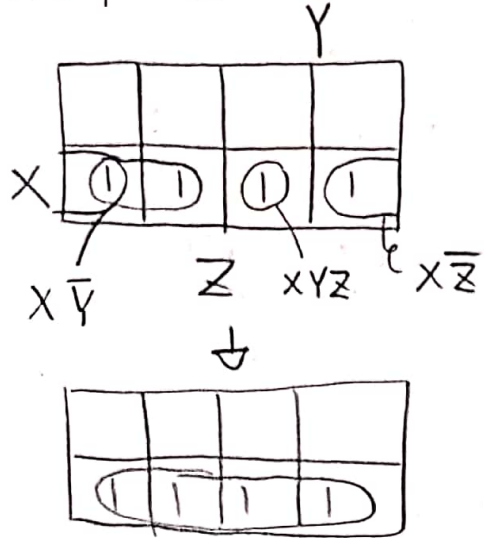
$$F(A, B, C, D) = \bar{B}\bar{C} + \bar{B}D + AB$$

3.  $F(A, B, C, D) = \sum_m^D (0, 1, 2, 8, 9, 10, 11, 12, 13, 14, 15)$

1	1		1
1	1	1	1

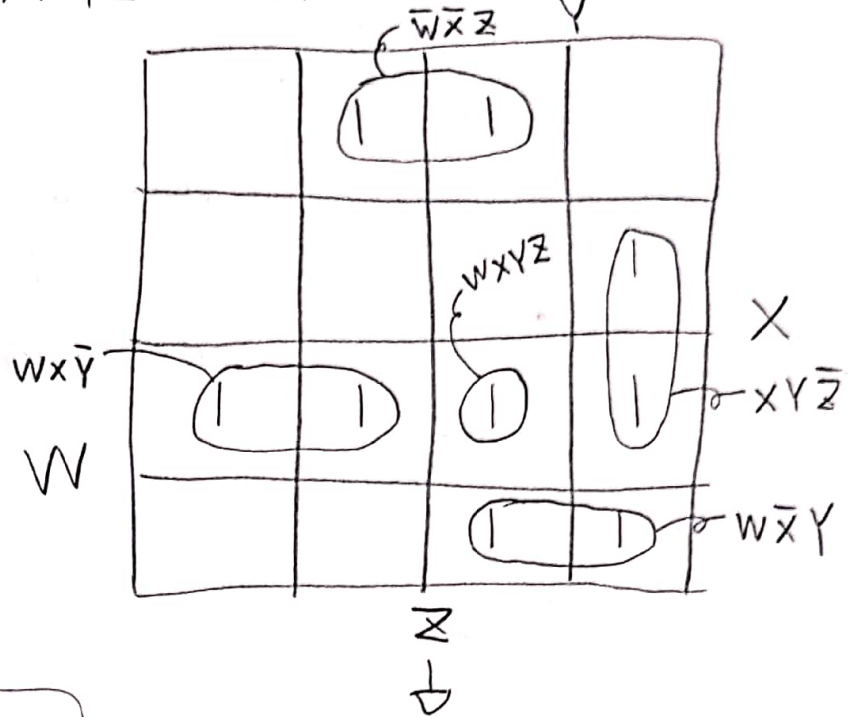
$$F(A, B, C, D) = \bar{B}\bar{D} + \bar{B}\bar{C} + A$$

$$4. X\bar{Y} + X\bar{Z} + XY\bar{Z}$$

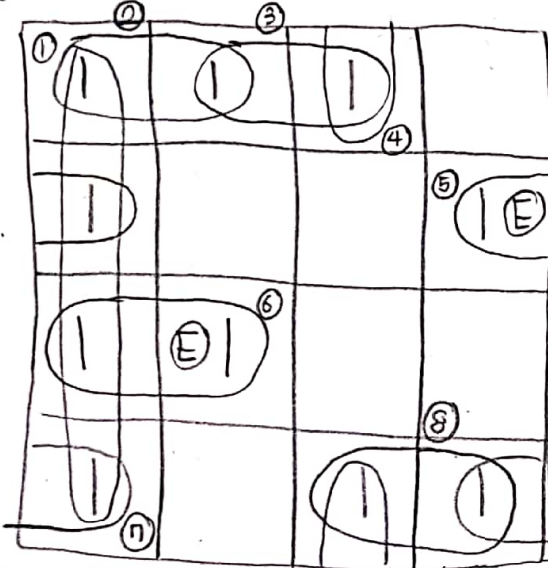


$$= X$$

$$5. XY\bar{Z} + W\bar{X}Y + WXY\bar{Z} + \bar{W}\bar{X}Z + WXYZ$$

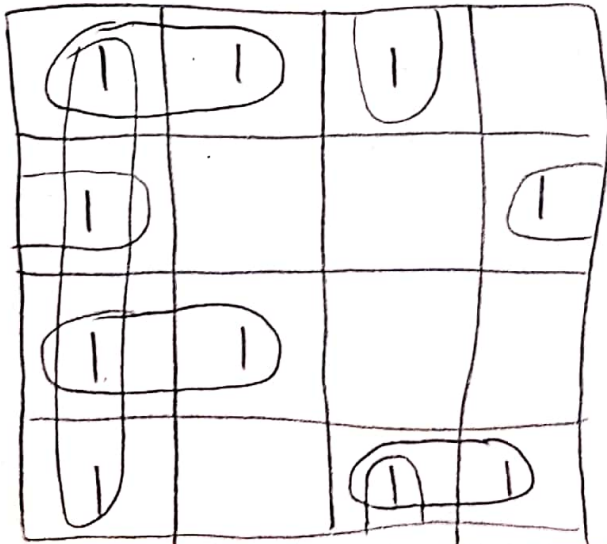


$$6. F(W, X, Y, Z) = \sum_m(0, 1, 3, 4, 6, 8, 10, 11, 12, 13)$$



Prime:  $\bar{W}\bar{X}\bar{Y}$ ,  $\bar{Y}\bar{Z}$ ,  $\bar{W}\bar{X}Z$ ,  $\bar{X}Y\bar{Z}$ ,  
 $\bar{W}X\bar{Z}$ ,  $WXY\bar{Z}$ ,  $W\bar{X}\bar{Z}$ ,  $W\bar{X}Y$

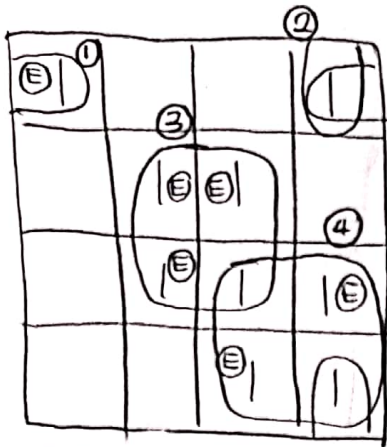
essential:  $\bar{W}X\bar{Z}$ ,  $WXY\bar{Z}$



$$\Rightarrow \bar{W}\bar{X}Z + X\bar{Y}\bar{Z} + W\bar{X} + WY$$

$$\therefore F(W, X, Y, Z) = \bar{W}\bar{X}\bar{Y} + \bar{X}Y\bar{Z} + \bar{Y}\bar{Z} + \bar{W}X\bar{Z} + WXY\bar{Z} + W\bar{X}Y$$

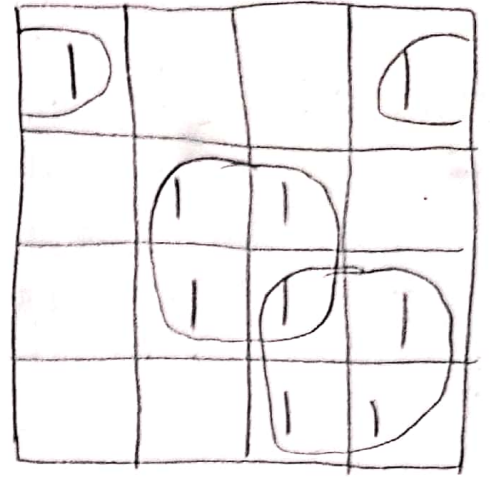
7.  $F(A,B,C,D) = \sum_m (0, 2, 5, 7, 10, 11, 13, 14, 15)$



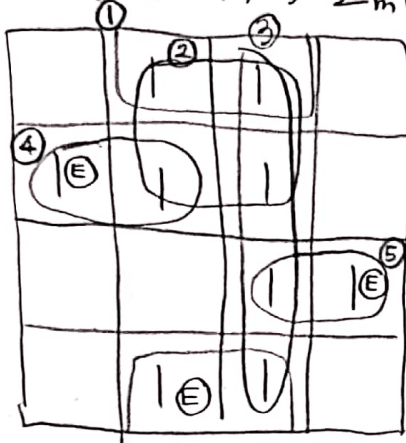
Prime:  $\bar{A}\bar{B}\bar{D}, \bar{A}C\bar{D}, BD, AC$

essential:  $\bar{A}\bar{B}\bar{D}, BD, AC$

$F(A,B,C,D) = \bar{A}\bar{B}\bar{D} + BD + AC$



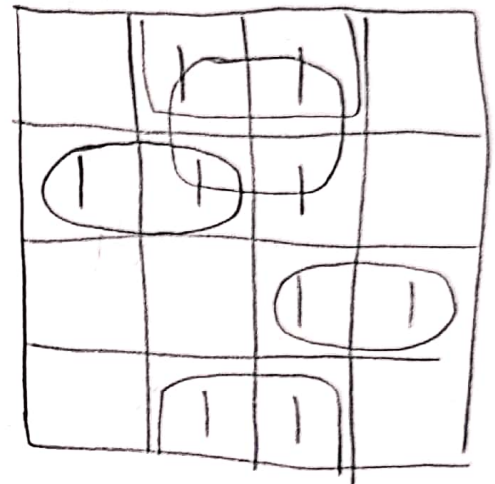
8.  $F(W,X,Y,Z) = \sum_m (1, 3, 4, 5, 7, 9, 11, 14, 15)$



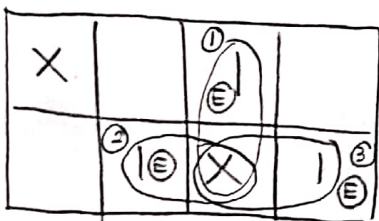
Prime:  $\bar{X}Z, \bar{W}Z, YZ, \bar{W}X\bar{Y}, WX\bar{Y}$

essential:  $\bar{W}X\bar{Y}, WX\bar{Y}, \bar{X}Z$

$F(W,X,Y,Z) = \bar{X}Z + \bar{W}Z + \bar{W}X\bar{Y} + WX\bar{Y}$



9.  $F(A,B,C) = \sum_m (3, 5, 6), d(A,B,C) = \sum_m (0, 7)$



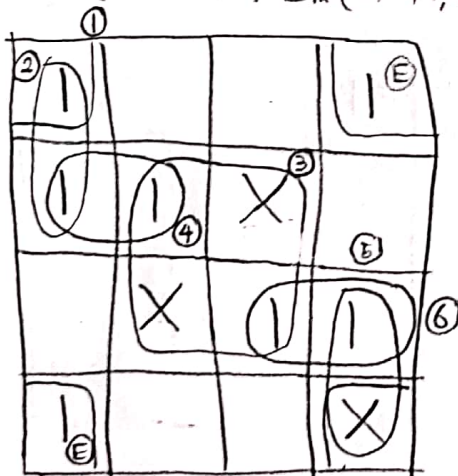
Prime:  $BC, AC, AB$

essential:  $BC, AC, AB$

$F(A,B,C) = BC + AC + AB$

=> 최적화된 상태 (applied the selection rule)

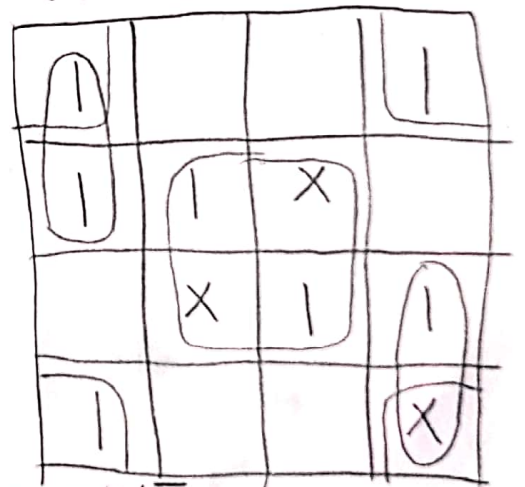
10.  $F(W,X,Y,Z) = \sum_m (0, 2, 4, 5, 8, 14, 15), d(W,X,Y,Z) = \sum_m (7, 10, 13)$



Prime:  $\bar{X}\bar{Z}, \bar{W}\bar{Y}\bar{Z}, XZ, \bar{W}X\bar{Y}, WX\bar{Y}, WY\bar{Z}$

essential:  $\bar{X}\bar{Z}$

$F(W,X,Y,Z) = \bar{X}\bar{Z} + \bar{W}\bar{Y}\bar{Z} + XZ + WY\bar{Z}$





11.  $F(A,B,C,D) = \sum_m(4,6,7,8,12,15)$ ,  $d(A,B,C,D) = \sum_m(2,3,5,10,11,14)$

		①	X	X
③	②		X	
			1	1
			1	X
			X	X

prime:  $C, \bar{A}B, B\bar{D}$ ,

$A\bar{D}$

essential:  $C, A\bar{D}$



		X	X
	X	1	1
		1	X
		X	X

$$F(A,B,C,D) = C + A\bar{D} + B\bar{D}$$