



$$f(x_1, \dots, x_4) = \sum (m(0, 4, 8, 10, 11, 12) + d(13, 15))$$

하이플 개수 안셈

# of 1s	Minterm	Binary	Combined	→ # of 1s	pairs	Binary
0	0	0000	✓	0	(0, 4)	0-00
	4	0100	✓		(0, 8)	-000
1	8	1000	✓	1	(8, 10)	10-0
	10	1010	✓		(4, 12)	-100
2	12	1100	✓		(8, 12)	1-00
3	11	1011	✓	2	(10, 11)	101-
	13	1101	✓		(12, 13)	110-
4	15	1111	✓	3	(11, 15)	1-11
					(13, 15)	11-1

# of 1s	pairs	Binary	→	# of 1s	Quad	Binary	combined
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0	(0,4)	0-00 ✓		0	(0,4,8,12)	--00	✱
	(0,8)	-000 ✓					
1	(8,10)	10-0 ✱		1		X	
	(4,12)	-100 ✓					
	(8,12)	1-00 ✓		2		X	
2	(10,11)	101- ✱					
	(12,13)	110- ✱					
3	(11,15)	1-11 ✱					
	(13,15)	11-1 ✱					

$$f = \sum (0, 1, 2, 3, 8, 9, 10, 13, 15)$$

# of 1s	min term	binary	combined $\rightarrow$	# of 1s	pair	Binary
0	0	0000	✓	0	(0,1) (0,2) (0,8)	000- 00-0 -000
1	1	0001	✓	1	(1,3) (1,9)	00-1 -001
	2	0010	✓		(2,3) (2,10)	001- -010
	8	1000	✓		(8,9) (8,10)	100- 10-0
2	3	0011	✓			
	9	1001	✓			
	10	1010	✓			
3	13	1101	✓	2	(9,13)	1-01
4	15	1111	✓	3	(13,15)	11-1

# of 1s	pair	Binary	→	# of 1s	Quad	Binary
0	(0,1)	000-✓		0	(0,1,2,3)	00-- ✕
	(0,4)	00-0✓			(0,1,8,9)	-00- ✕
	(0,8)	-000✓			(0,2,8,12)	-0-0 ✕
1	(1,3)	00-1✓		1	x	
	(1,9)	-001✓				
	(2,3)	001-✓		2	x	
	(2,10)	-010✓				
	(8,9)	100-✓				
	(8,10)	10-0✓				
2	(4,13)	1-01 ✕				
3	(13,15)	11-1 ✕				

			0	1	2	3	8	9	10	13	15
$P_1$	(0,1,2,3)	00--	✓	✓	✓	✓					
$P_2$	(0,1,8,9)	-00-	✓	✓			✓	✓			
$P_3$	(0,2,8,10)	-0-0	✓		✓		✓		✓		
$P_4$	(9,13)	1-01						✓		✓	
$P_5$	(13,15)	11-1								✓	✓
						EPI			EPI		EPI

NEPI			9	
$P_2$	(0,1,8,9)	-00-	✓	← cost가 저렴
$P_4$	(9,13)	1-01	✓	

$$\therefore f = \sum (0,1,2,3,8,9,10,13,15) = P_1 + P_2 + P_3 + P_5$$