

4-7

$A_3$	$A_2$	$A_1$	$A_0$
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
0	1	1	0
0	1	1	1
1	0	0	0
1	0	0	1
1	0	1	0
1	0	1	1
1	1	0	0
1	1	0	1
1	1	1	0
1	1	1	1

$$X = \bar{A}_3 \bar{A}_2 A_1 A_0 + \bar{A}_3 A_2 \bar{A}_1 \bar{A}_0 + \bar{A}_3 A_2 \bar{A}_1 A_0 + \bar{A}_3 A_2 A_1 \bar{A}_0 + \bar{A}_3 A_2 A_1 A_0$$

$$= \bar{A}_3 (\bar{A}_2 A_1 A_0 + A_2 \bar{A}_1 \bar{A}_0 + A_2 \bar{A}_1 A_0 + A_2 A_1 \bar{A}_0 + A_2 A_1 A_0)$$

$$= \bar{A}_3 (A_1 A_0 + A_2 A_0 + A_2 A_1 + A_2 \bar{A}_1 \bar{A}_0 + A_2 A_1 A_0)$$

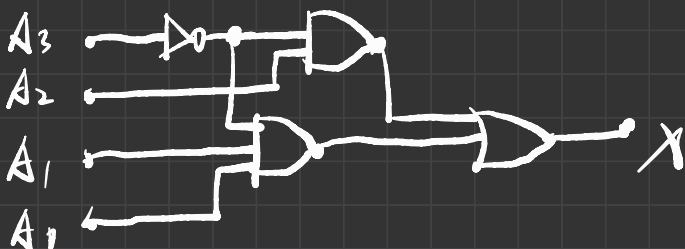
$$= \bar{A}_3 [A_1 A_0 + A_2 (A_0 + A_1 + \bar{A}_1 \bar{A}_0 + A_1 A_0)]$$

$$= \bar{A}_3 [A_1 A_0 + A_2 (A_0 + A_1 + \bar{A}_1 \bar{A}_0 + \bar{A}_1 A_0 + A_1 A_0)]$$

$$= \bar{A}_3 [A_1 A_0 + A_2 (A_0 + \bar{A}_1 + A_1 + \bar{A}_0 + A_1 A_0)]$$

$$= \bar{A}_3 [A_1 A_0 + A_2 (A_0 + \bar{A}_1 + A_1 + \bar{A}_0)]$$

$$= \bar{A}_3 (A_1 A_0 + A_2) = \bar{A}_3 A_1 A_0 + \bar{A}_3 A_2$$



4-8. Let the status of door be A, ignition be B, lights be C.

A  
0000  
1111

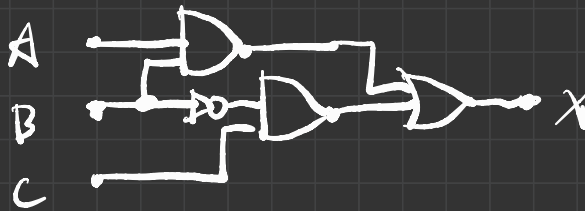
B  
0011  
0011

C  
0101  
0101

X  
0100  
0011  
1111

A \ BC				
	00	01	11	10
0		1		
1		1	1	1

$$x = \bar{B}C + AB$$



4-11 (a)

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

$$x = \bar{A}\bar{C} + \bar{A}\bar{B} + \bar{B}C + AC\bar{D}$$

1b)

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

$$x = \bar{B}CD + A\bar{D} + \bar{B}C$$

1c)

AB \ C		0	1
00	1	1	
01			
11	1		
10	1		*

$$x = AB + AC$$