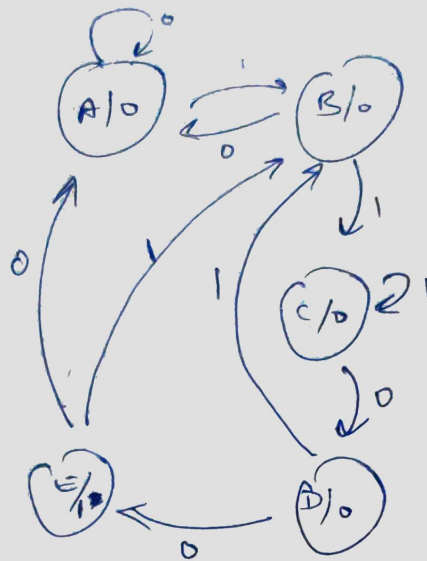


①

Q)

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①



State diagram for the FSM

(b)

PS (P, R, E)	Input (i)	N (Next, n)	Output
A (000)	0	A (000)	0
A (000)	1	B (001)	0
B (001)	0	A (000)	0
B (001)	1	C (010)	0
C (010)	0	D (011)	0
C (010)	1	C (010)	0
D (011)	0	E (100)	0
D (011)	1	B (001)	0
E (100)	0	A (000)	1
E (100)	1	B (001)	1

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P_0	P_1	P_2	Input (i)	n_0	n_1	n_2	output
0	0	0	0	0	0	0	0
0	0	0	1	0	0	1	0
0	0	1	0	0	0	0	0
0	0	1	1	0	1	0	0
0	1	0	0	0	1	1	0
0	1	0	1	0	1	0	0
0	1	1	0	1	0	0	0
0	1	1	1	0	0	1	0
1	0	0	0	0	0	0	0
1	0	0	1	0	0	0	1
1	0	1	0	x	x		1
1	0	1	1	x	x	x	x
1	1	0	0	x	x	x	x
1	1	0	1	x	x	x	x
1	1	1	0	x	x	x	x
1	1	1	1	x	x	x	x

$n_0 \Rightarrow$

$P_0 P_1$	$P_2 i$	n_0
	00 01 11 10	
00	0 0 0 0	
01	0 0 0 1	
11	x x x x	
10	0 0 x x	

$$n_0 = P_1 P_2 i'$$

$n_1 \Rightarrow$

$P_0 P_1$	$P_2 i$	n_1
	00 01 11 10	
00	0 0 1 0	
01	1 1 0 0	
11	x x x x	
10	0 0 x x	

$$n_1 = P_1' P_2 i + P_1 P_2'$$

$m_2 \Rightarrow P_1 P_2$

$P_2 \backslash P_1$	00	01	11	10
00	0	1	0	0
01	1	0	1	0
11	x	x	x	x
10	0	1	x	x

③

$$m_2 = P_1 P_2 i' + P_1' P_2' i + P_1 P_2 i$$

$$\therefore m_0 = P_1 P_2 i'$$

$$m_1 = P_1' P_2 i + P_1 P_2'$$

$$m_2 = P_1 P_2' i' + P_1' P_2' i + P_1 P_2 i$$