

① State Assignment:-

S0: 000

S1: 001

S2: 010

S3: 011

S4: 110

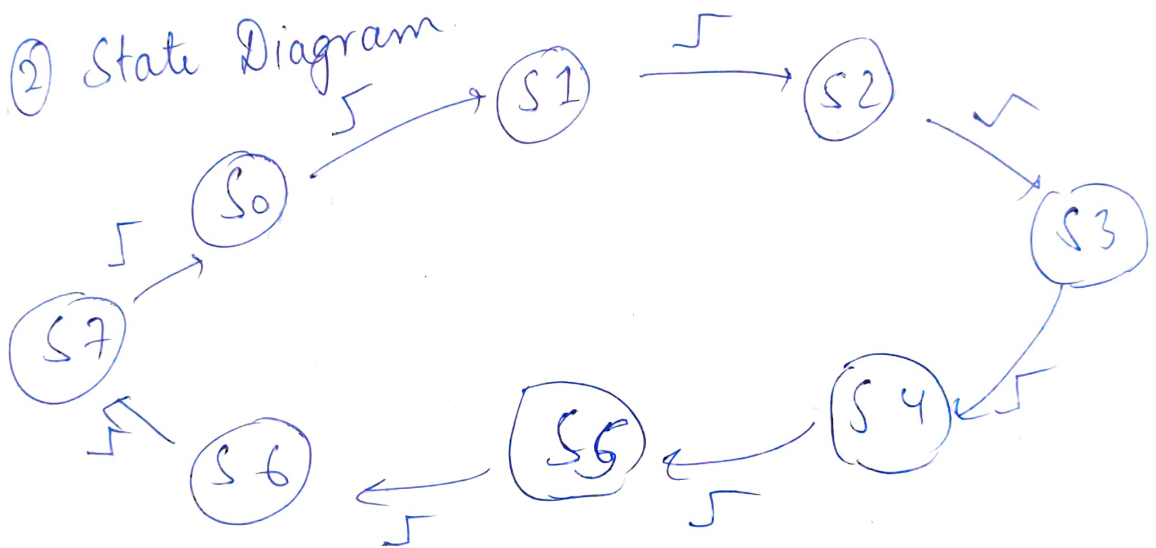
S5: 111

S6: 101

S7: 100

S0: 000

② State Diagram



③ State table

P.S.	N.S	O/P
S0	S1	0
S1	S2	0
S2	S3	0
S3	S4	0
S4	S5	0
S5	S6	0
S6	S7	0

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(a) Transition and output table:-

P.S. ($Q_2 Q_1 Q_0$)	N.S. ($Q_2' Q_1' Q_0'$)	O/P
000		
000	001	0
001	011	0
011	010	0
010	110	0
110	111	0
111	101	0
101	100	0
100	000	1

(b) Excitation table

P.S. (Q_0)	N.S. (Q_0')	J	K
0	1	1	0
1	0		
1	0		
0	1		
0	1		
1	0		
1	0		

Excitation table (80)

Ques P.S	Ques P.N.S	Q	X
0	1	1	0
1	1	X	1
1	0	X	X
0	0	0	X
0	1	1	0
1	1	X	1
1	0	X	
0	0	0	X

0	0	0	X
0	1	1	X
1	1	X	0
1	1	X	0
1	1	X	0
1	1	X	1
1	0		
0	0	0	X
0	0	0	X

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Q2				
0 0 0 0 1 1 1 1 1 1		0 0 0 1 1 1 1 0		X X X X 0 0 0 1

K MAP

$Q_2 Q_1$ \ Q_0	J_2	
00	0	0
01	1	0
10	x	x
11	x	x

$Q_2 Q_1$ \ Q_0	J_1	
00	0	1
01	x	x
10	x	x
11	0	0

$Q_2 Q_1$ \ Q_0	J_0	
00	1	x
01	0	x
10	1	x
11	0	x

$Q_2 Q_1$ \ Q_0	K_2	
00	x	x
01	x	x
10	0	0
11	1	0

$Q_2 Q_1$ \ Q_0	K_1	
00	x	x
01	0	0
10	0	1
11	x	x

$Q_2 Q_1$ \ Q_0	K_0	
00	x	0
01	x	1
10	x	0
11	x	1

$$J_0 = Q_2 + Q_1$$

$$J_1 = \overline{Q_2} Q_0$$

$$J_2 = Q_1 \overline{Q_0}$$

$$K_0 = Q_2 + Q_1$$

$$K_1 = Q_2 Q_0$$

$$K_2 = \overline{Q_1} \overline{Q_0}$$

