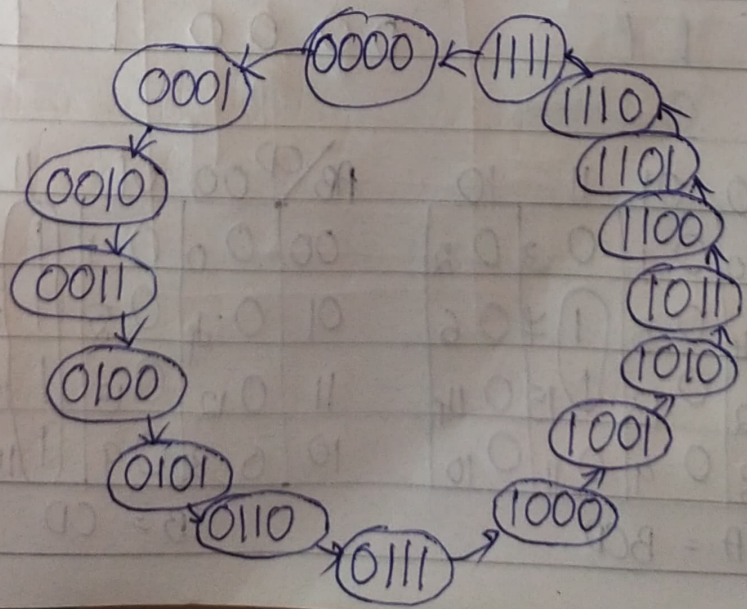
DSD Lab-7

Yashas Ramath
200905132
Yashas
1122

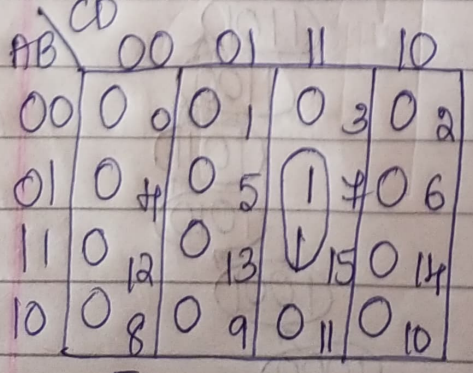
1.a) Count sequence

A3	A2	A1	A0
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

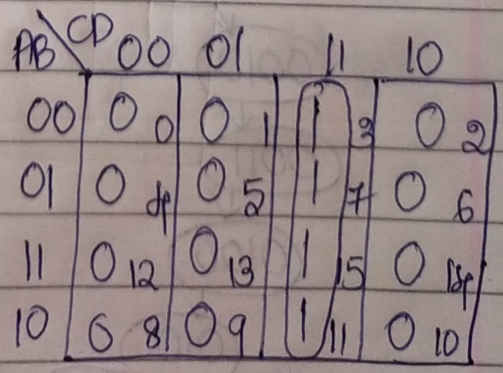


Excitation table :

Inputs of combinational circuit				Next state				Outputs of combinational circuits			
Present state								T FF inputs			
A	B	C	D	A	B	C	D	TA	TB	TC	TD
0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	1	0	0	1	0	0	0	1	1
0	0	1	0	0	0	1	1	0	0	0	1
0	0	1	1	0	1	0	0	0	1	1	1
0	1	0	0	0	1	0	1	0	0	0	1
0	1	0	1	0	1	1	0	0	0	1	1
0	1	1	0	0	1	1	1	0	0	0	1
0	1	1	1	1	0	0	0	1	1	1	1
1	0	0	0	1	0	0	1	0	0	0	1
1	0	0	1	1	0	1	0	0	0	1	1
1	0	1	0	0	1	1	1	0	0	0	1
1	0	1	1	1	1	0	0	0	1	1	1
1	1	0	0	1	1	0	1	0	0	0	1
1	1	0	1	1	1	1	0	0	0	1	1
1	1	1	0	1	1	1	1	0	0	0	1
1	1	1	1	0	0	0	0	1	1	1	1



TA = BCD.



TB = CD

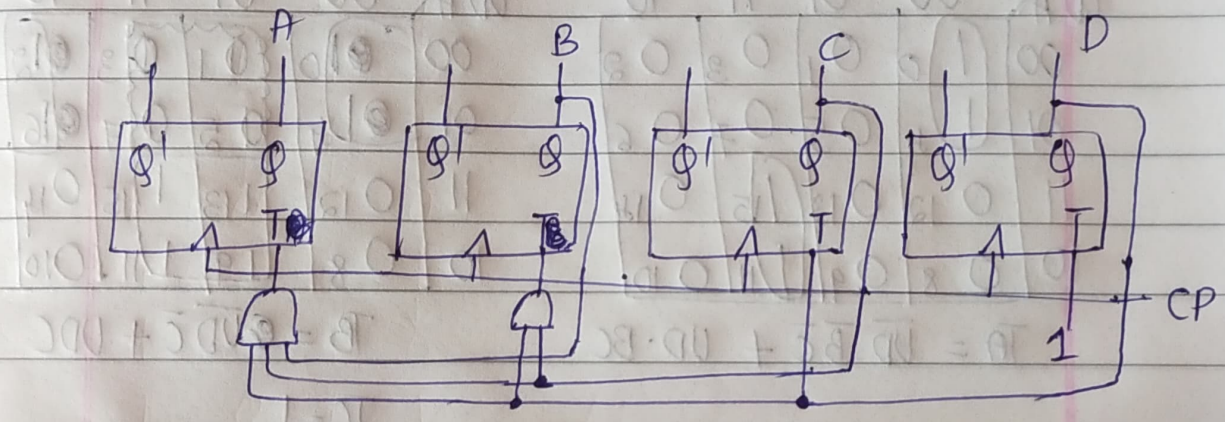
AB \ CD	00	01	11	10
00	0 0	1 1	1 3	0 2
01	0 4	1 5	1 7	0 6
11	0 12	1 13	1 15	0 14
10	0 8	1 9	1 11	0 10

$TC = D$

AB \ CD	00	01	11	10
00	1 0	1 1	1 3	1 2
01	1 4	1 5	1 7	1 6
11	1 12	1 13	1 15	1 14
10	1 8	1 9	1 11	1 10

$TD = 1$

Circuit :-



Q2) I/p of CC

(Input) UD	Present state A	B	C	Next state A	B	C
0	0	0	0	1	1	1
0	0	0	1	0	0	0
0	0	1	0	0	0	1
0	0	1	1	0	1	0
0	1	0	0	0	1	1
0	1	0	1	1	0	0
0	1	1	0	1	0	1
0	1	1	1	1	1	0

O/p of CC
I FF i/p

T_A	T_B	T_C
1	1	1
0	0	1
0	1	1
0	0	1
1	1	1
0	0	1
0	1	1
0	0	1

1	0	0	0	0	0	1	0	0	1
1	0	0	1	0	1	0	0	1	1
1	0	1	0	0	1	1	0	0	1
1	0	1	1	1	0	0	1	1	1
1	1	0	0	1	0	1	0	0	1
1	1	0	1	1	1	0	0	1	1
1	1	1	0	1	1	1	0	0	1
1	1	1	1	0	0	0	1	1	1

UD A \ BC	00	01	11	10
00	1 0	0 1	0 3	0 2
01	1 4	0 5	0 7	0 6
11	0 12	0 13	1 15	0 14
10	0 8	0 9	1 11	0 10

$T_A = \overline{UD}\,\overline{B}\,\overline{C} + UD \cdot BC$

UD A \ BC	00	01	11	10
00	1 0	0 1	0 3	1 2
01	1 4	0 5	0 7	1 6
11	0 12	1 13	1 15	0 14
10	0 8	1 9	1 11	0 10

$T_B = \overline{UD}\,\overline{C} + UDC$

$T_C = 1$