Date

No

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CO 221 - Digital Design E/17/153

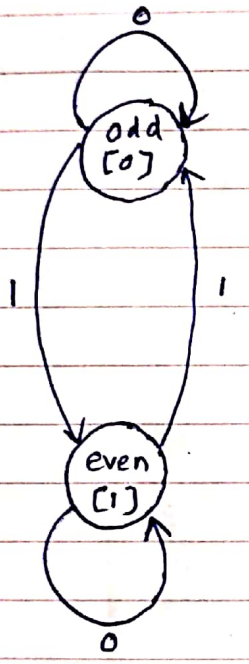
Lab 07 - Pre lab

(1) Out put = z

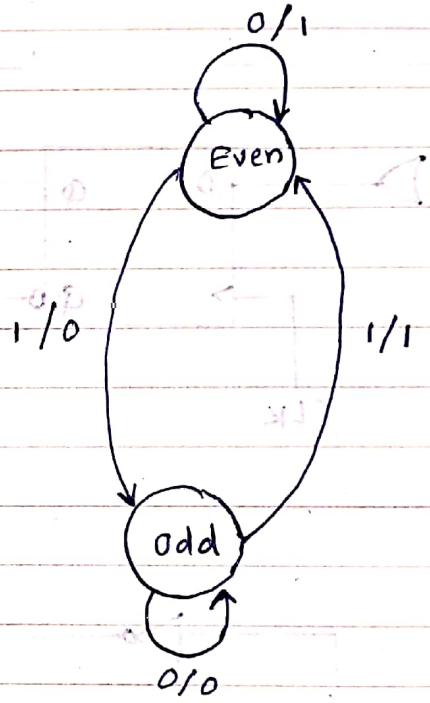
→ z = 1 if there are even number of 1s in input

→ z = 0 if there are odd number of 1s in input

Moore model



Mealy model



Let, even = 1

odd = 0

Moore

Present State	Input	Next state	Present Output
0	0	0	1
0	1	1	1
1	0	1	0
1	1	0	0

Mealy

Present state	Input	Next state	Present output
0	0	0	1
0	1	1	0
1	0	1	0
1	1	0	1

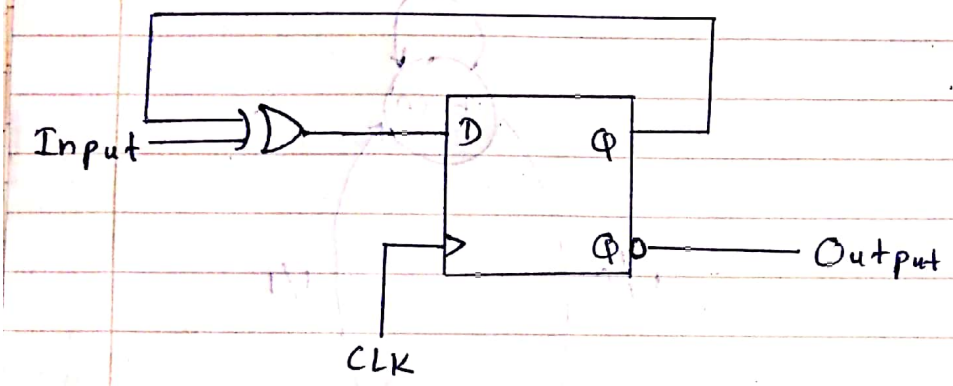
mango

For both models, Flip flop input = (present state) XOR (Input)

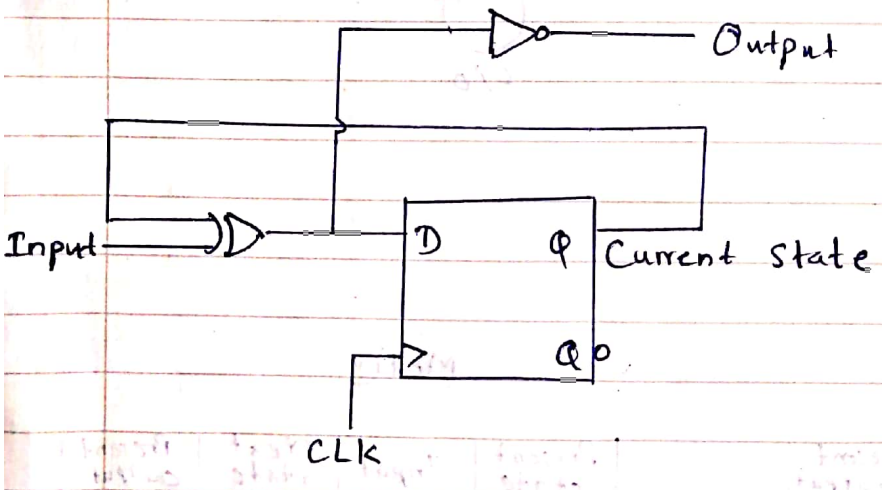
For moore model, Output = NOT (Present state)

For mealy model, Output = NOT [(Present state) XOR (Input)]

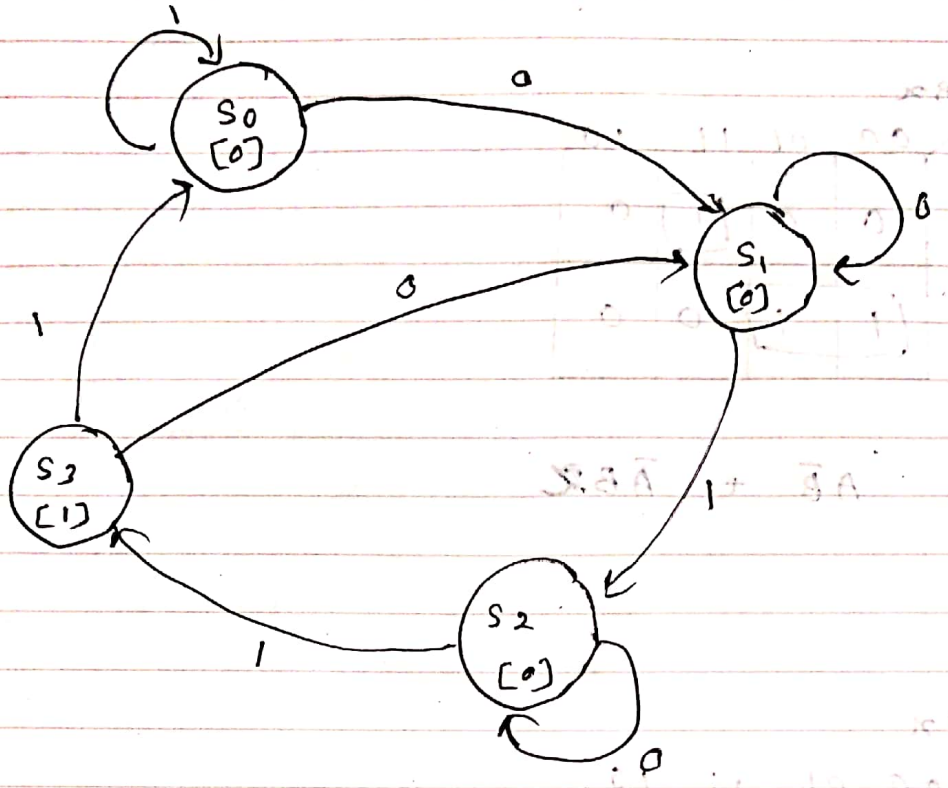
Moore



Mealy



02



Present state A	B	Input x	Next state A^+	B^+	Output y	Flip-Flops D_A	D_B
0	0	0	0	1	0	0	1
0	0	1	0	0	0	0	0
0	1	0	0	1	0	0	1
0	1	1	1	0	0	1	0
1	0	0	1	0	0	1	0
1	0	1	1	1	0	1	1
1	1	0	0	1	1	0	1
1	1	1	0	0	1	0	0

D_A

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

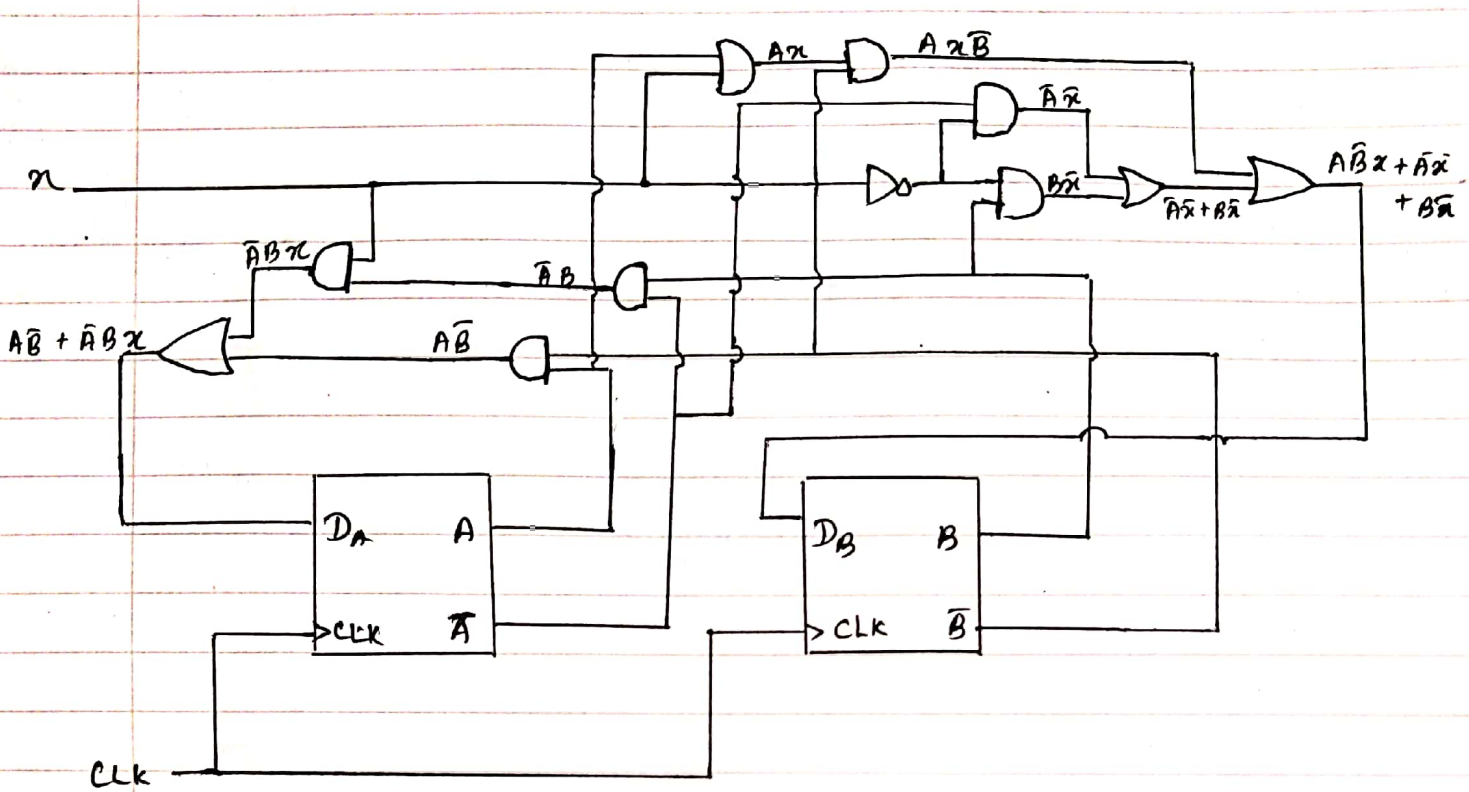
$$D_A = A\bar{B} + \bar{A}Bx$$

D_B

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

~~$D_B = A\bar{B}x + \bar{B}x\ B\bar{x}$~~

$$D_B = A\bar{B}x + B\bar{x} + \bar{A}\bar{x}$$



Date

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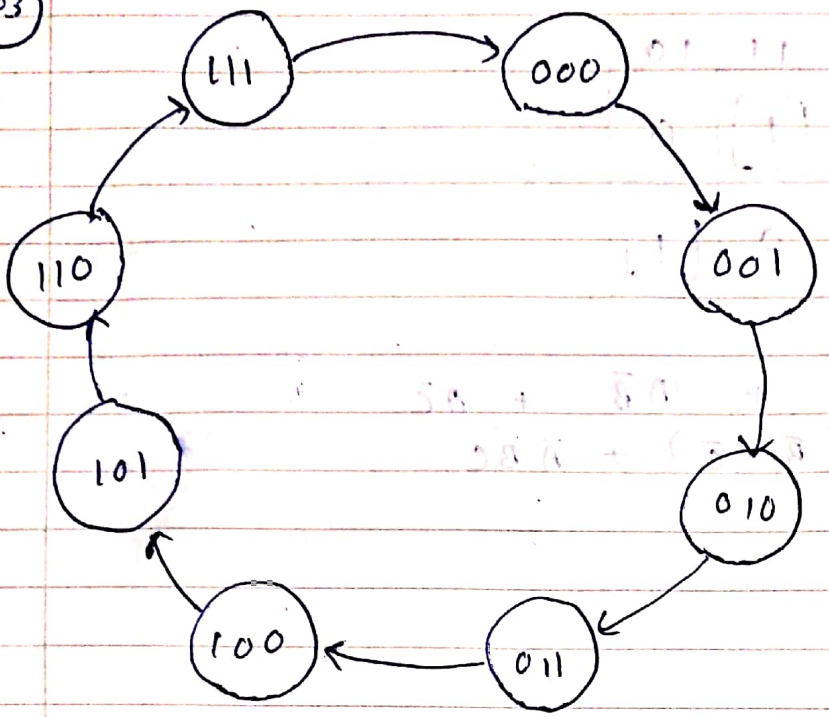
03



Present state			Next State			flipflop input		
A	B	C	A^+	B^+	C^+	D_A	D_B	D_C
0	0	0	0	0	1	0	0	1
0	0	1	0	1	0	0	1	0
0	1	0	0	1	1	0	1	1
0	1	1	1	0	0	1	0	0
1	0	0	1	0	1	1	0	1
1	0	1	1	1	0	1	1	0
1	1	0	1	1	1	1	1	1
1	1	1	0	0	0	0	0	0

Date

No

D_A

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

$$D_A = \bar{A}BC + A\bar{B} + A\bar{C}$$

$$D_A = A(\bar{B} + \bar{C}) + \bar{A}BC$$

D_B

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

$$D_B = \bar{B}C + B\bar{C}$$

$$= B \oplus C$$

D_C

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

$$D_C = \bar{C}$$