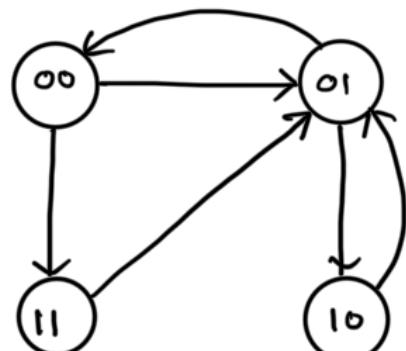


## Quiz - 4

\* J-K FF

Sleep → Eat → Work → Eat → Sleep → Exercise → Eat → Sleep

Sleep = 00 → 01, 11  
 Eat = 01 → 10, 00  
 Work = 10 → 01  
 Exercise = 11 → 01



State table :

A	B	x	A+B	JA	KA	JB	KB
0	0	0	0	1	0	x	1
0	0	1	1	1	1	x	1
0	1	0	1	0	1	x	x
0	1	1	0	0	0	x	x
1	0	0	0	1	x	1	1
1	0	1	0	1	x	1	x
1	1	0	0	1	x	1	x
1	1	1	0	1	x	1	x

ET of JK

00	0x
01	1x
10	x1
11	x0

K Map :

• JA

		Bx			
		Bx = 00	Bx = 01	Bx = 11	Bx = 10
A':0	1	1		1	
	x	x	x	x	x
A=1					
		x	x	x	x

$B'x + Bx' = B \oplus x$

• KA

		Bx			
		Bx = 00	Bx = 01	Bx = 11	Bx = 10
A':0	x	x	x	x	x
	1	1	1	1	1
A=1					
		1	1	1	1

$1$

• JB

		Bx			
		Bx = 00	Bx = 01	Bx = 11	Bx = 10
A':0	1	1	1	x	x
	x	x	x	x	x
A=1					
		x	x	x	x

$1$

• KB

		Bx			
		Bx = 00	Bx = 01	Bx = 11	Bx = 10
A':0	x	x	1	1	1
	x	x	x	x	x
A=1					
		x	x	x	x

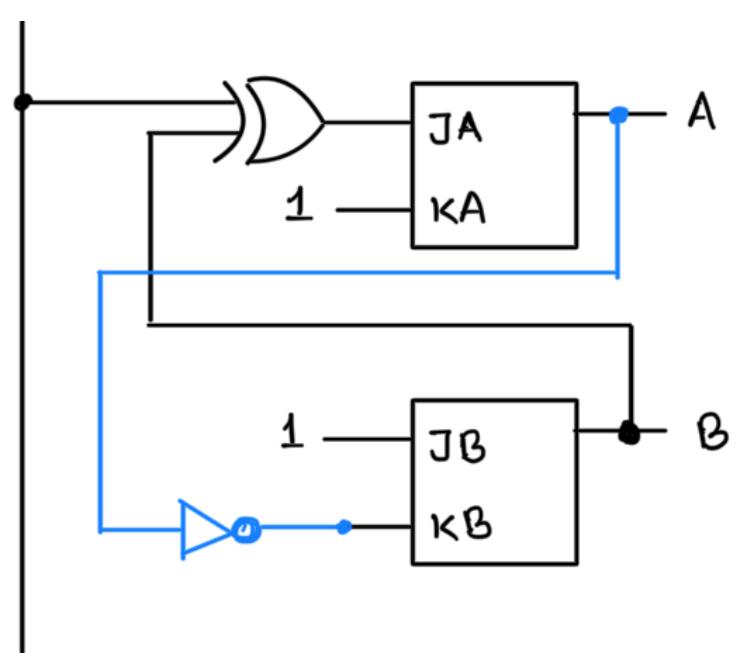
$A'$

• JA =  $B \oplus x$

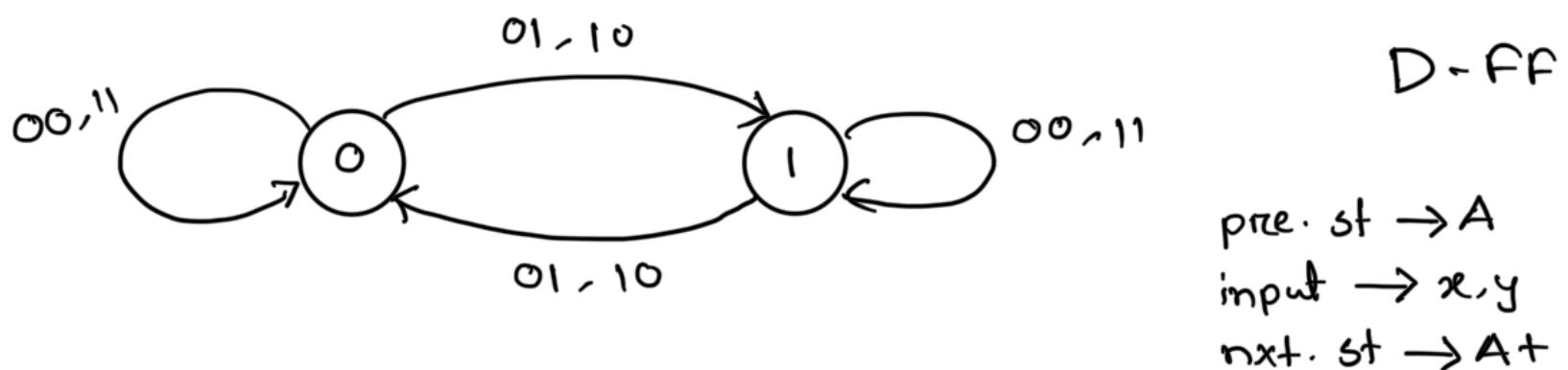
• JB = 1

• KA = 1

KB = A'



\* Bonus :



A	x	y	A+	DA
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	0
1	0	0	1	1
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

A	xy	x'y'	x'y	xy	xy'
A'			1		1
A	1			1	

$$\begin{aligned}
 & \Rightarrow A x'y' + A' x'y + A' x'y' + A x'y \\
 & \Rightarrow A' (x'y + x'y') + A (x'y' + x'y) \\
 & \Rightarrow A' (x \oplus y) + A (x \oplus y)' \\
 & \Rightarrow A \oplus x \oplus y
 \end{aligned}$$

