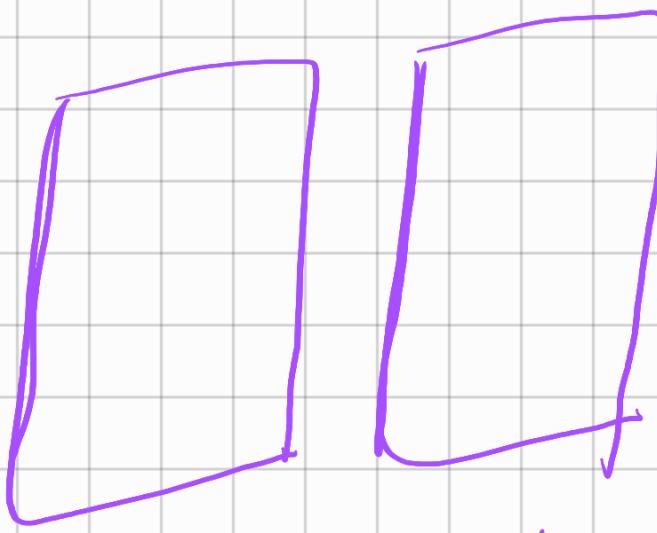
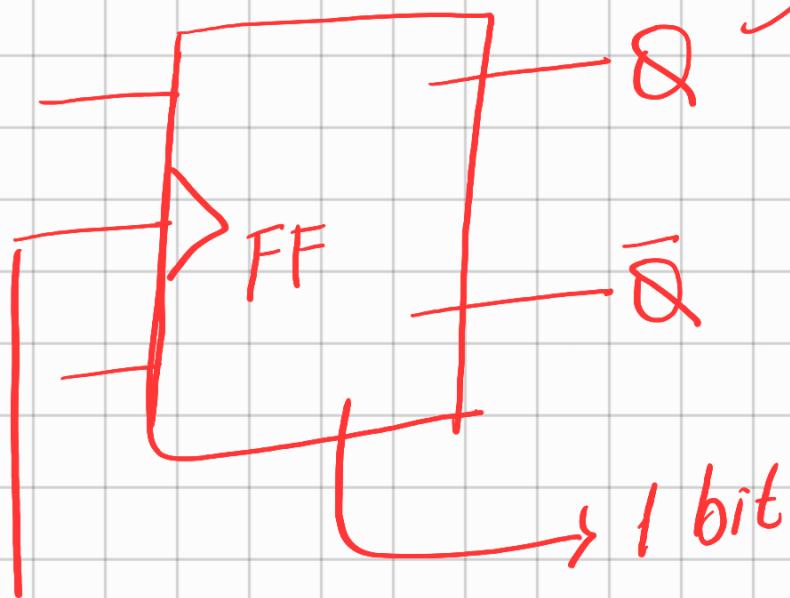


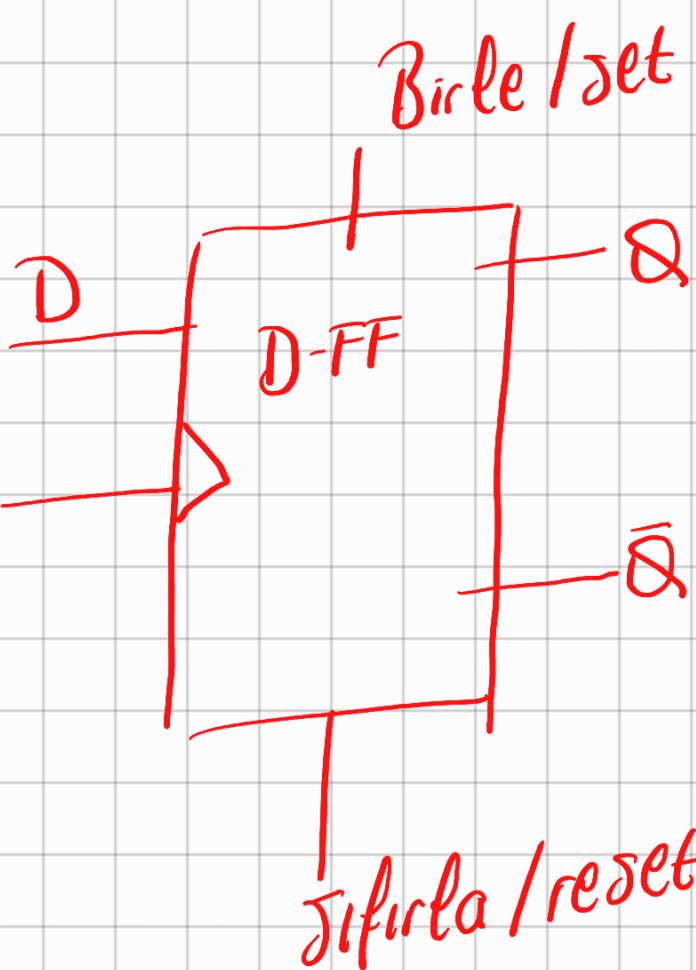
Flip-Floplar



$2^{3\text{ bit}} \rightarrow 8$ farklı durum

*
DFF
JKFF
JRFF
TFF

DFF
}



$$Q(t+1) = D(t)$$

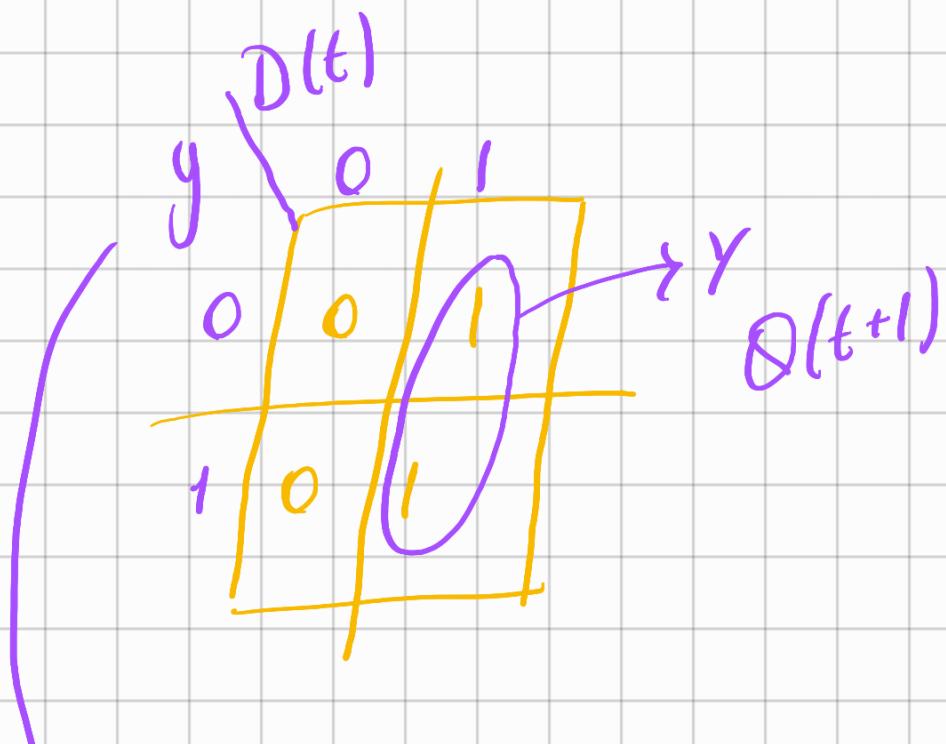


|
 |
 |
 |
 |
 t t+1

$$Q(t+1) = Y$$

$$Q(t) = y$$

piris	jaat	cikolar
D	-	Q Q̄
0	-	0 1
1	-	1 0



$Q(t)$

Bunları
Bil

$$y=D$$

$Q(t) \quad Q(t+1)$

Uyarma
tablosu

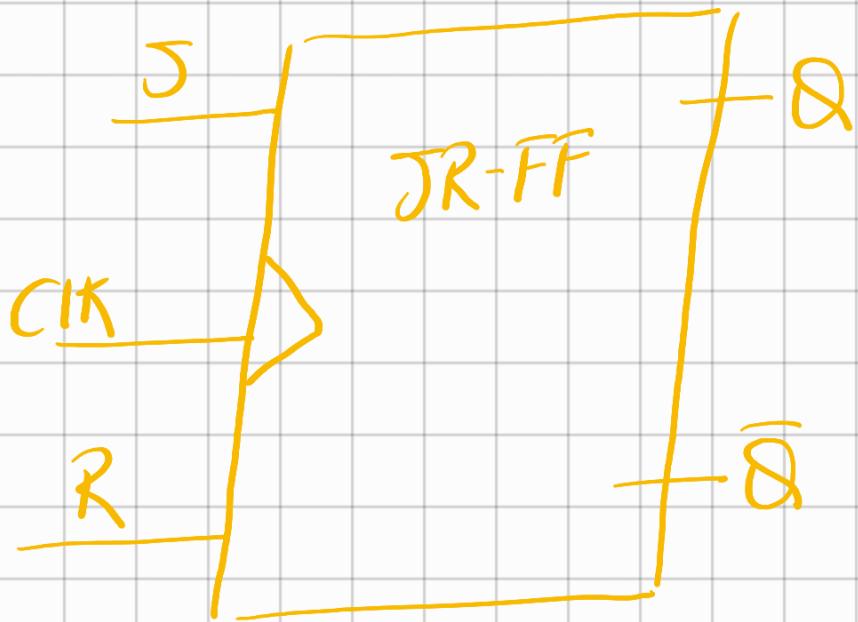
y'	00	01	11	10
D	0	1	t	0

JRFF

(set/reset
FF)



$$y = yK + \delta$$

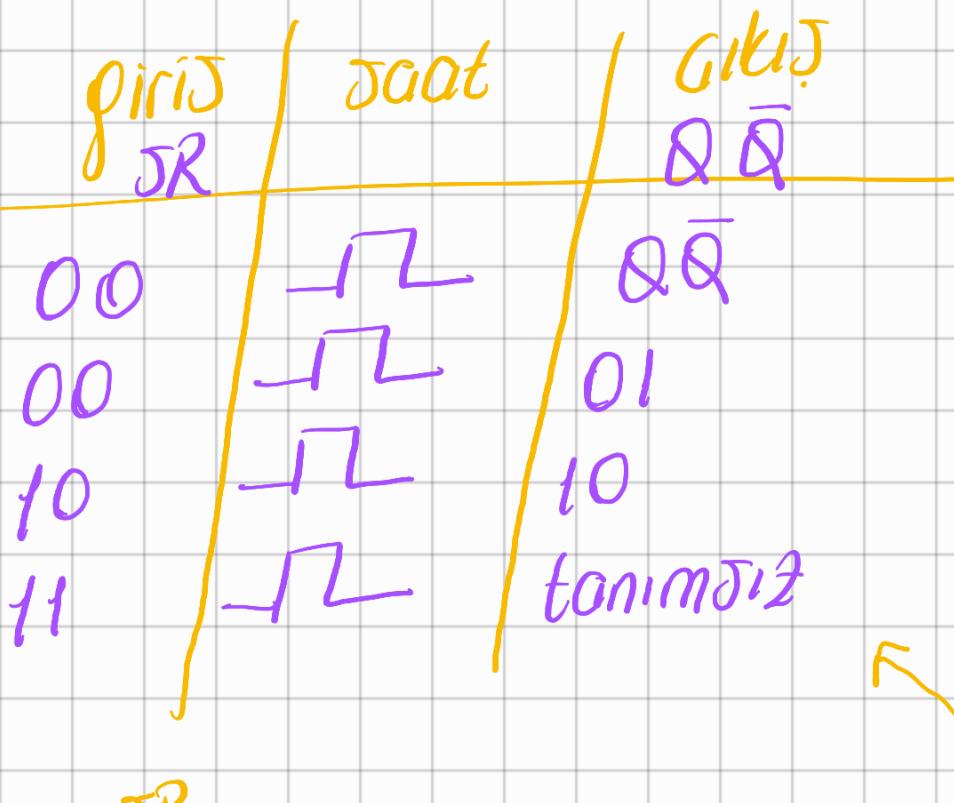


2 girişli
bir
flip-flop'tur

$$Q(t+1) = Q(t) \overline{R(t)} + \delta(t)$$

$$R(t) \delta(t) = 0 \text{ için tonimli}$$

$$R(t) \delta(t) = 1 \text{ için tonimsız}$$



y	00	01	11	10
0	0	0	\emptyset	1
1	1	0	\emptyset	1

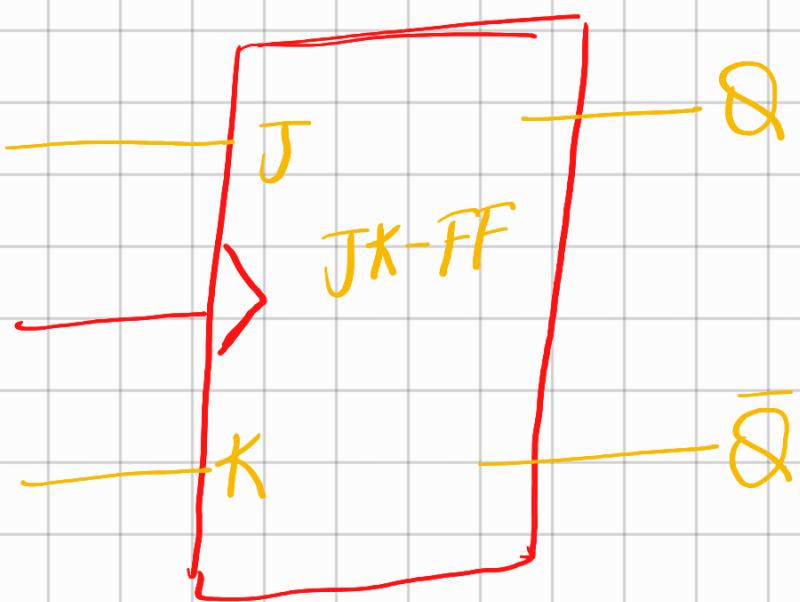
$$y = J + R'y$$

yR	00	01	11	10
JR	$0\emptyset$	10	$\emptyset 0$	01

→ uyarmo tablosu

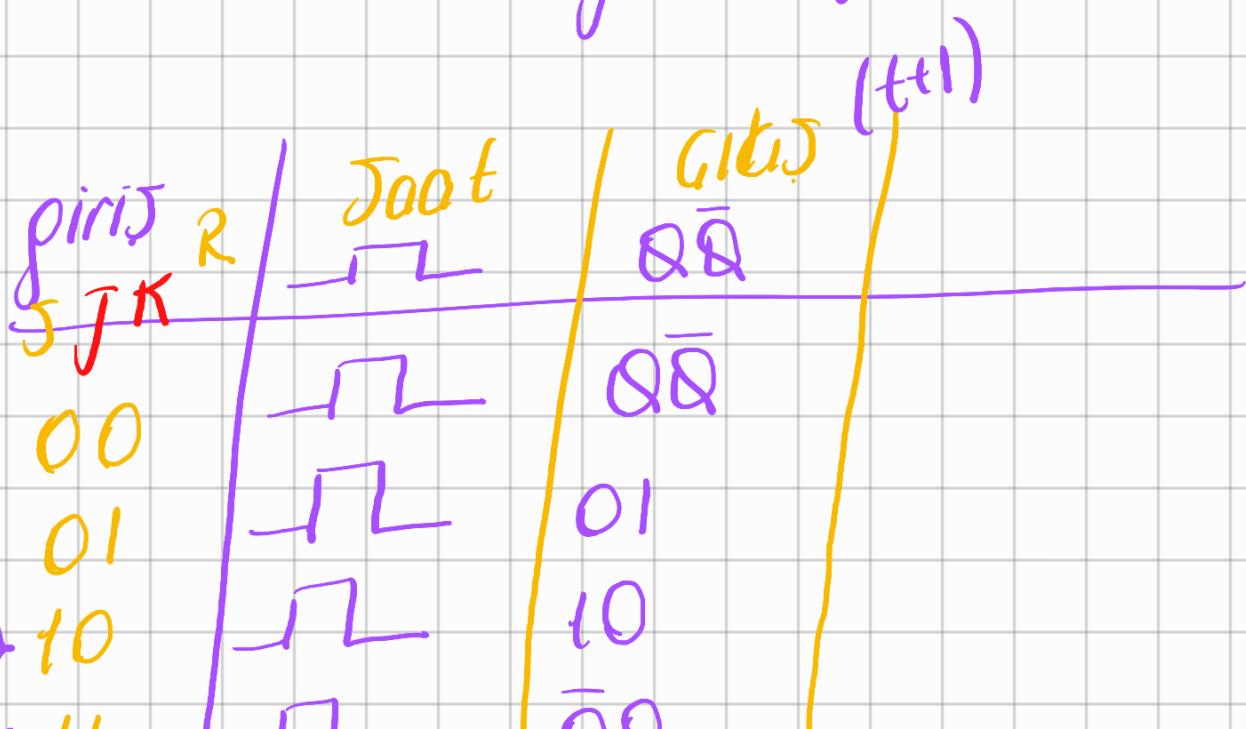
$$\begin{cases} y = Q(t) \\ y = Q(t+1) \end{cases}$$

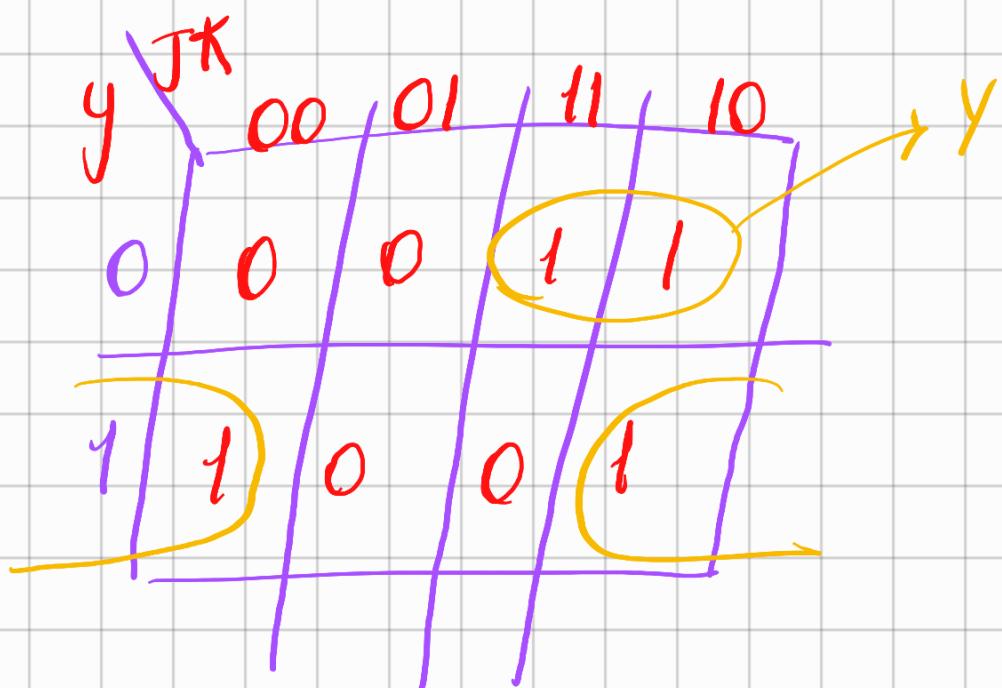
JKFF



$$Q(t+1) = Q(t) \cdot K(t) + \bar{Q}(t) J(t)$$

$$\hookrightarrow yK' + jy'$$



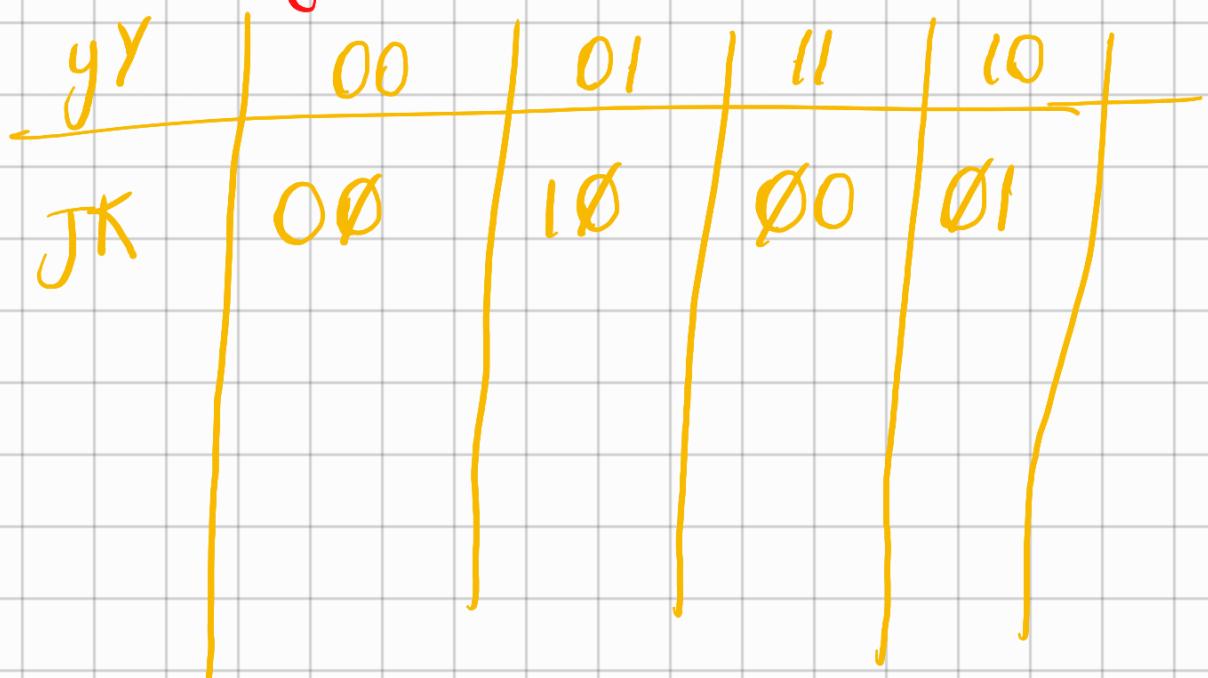


$$Y = JY' + KY$$

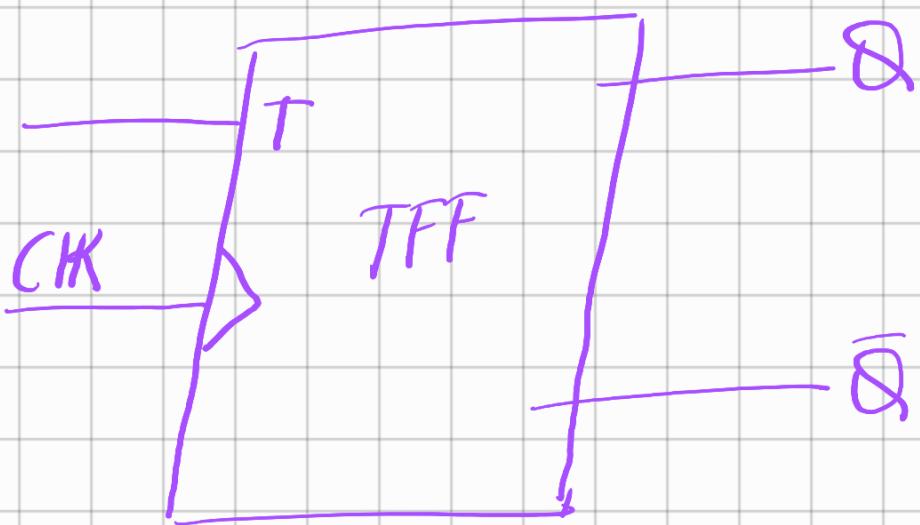
$t \rightarrow t+1$

$t \rightarrow t+1$

$t \rightarrow t+1$

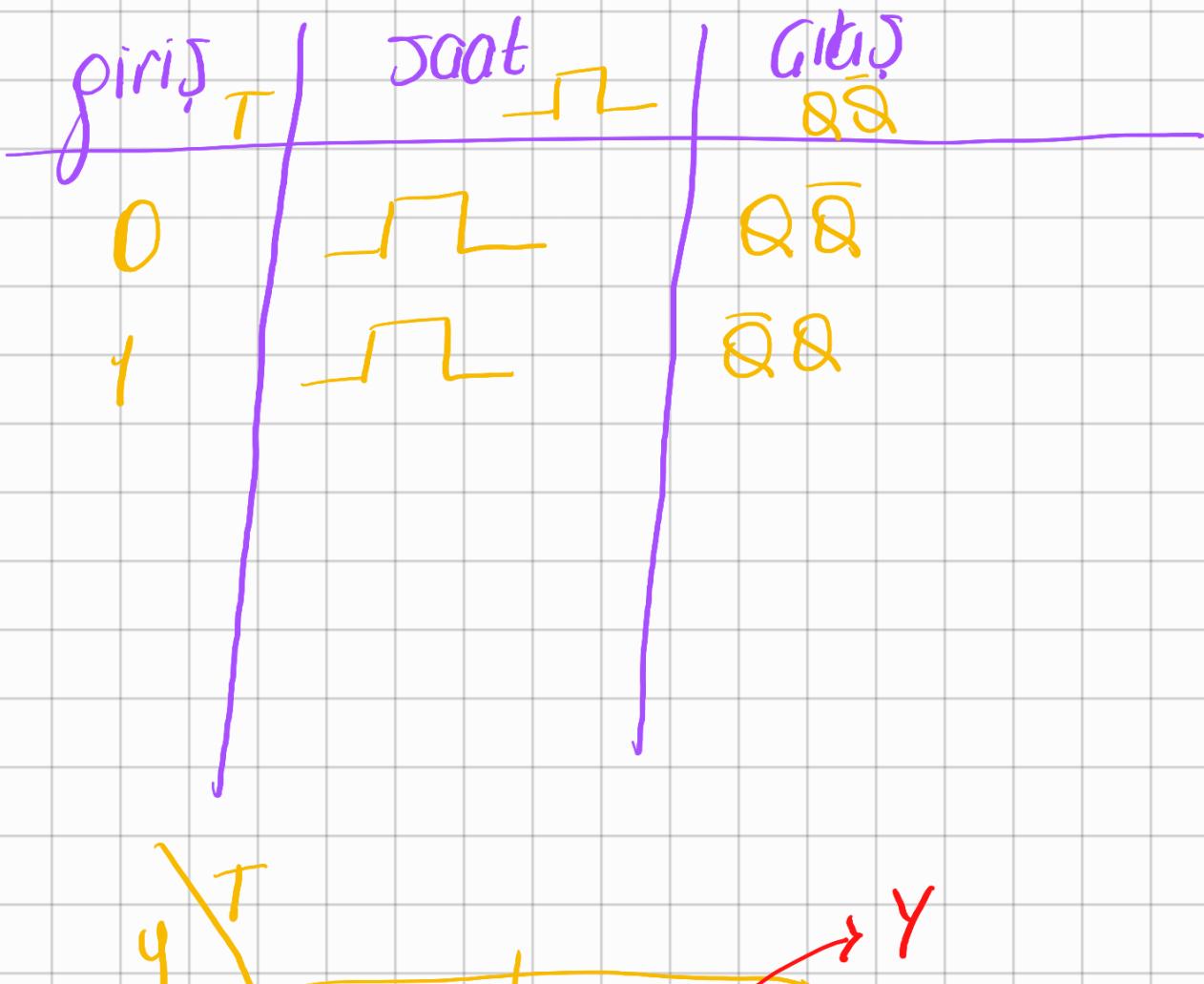


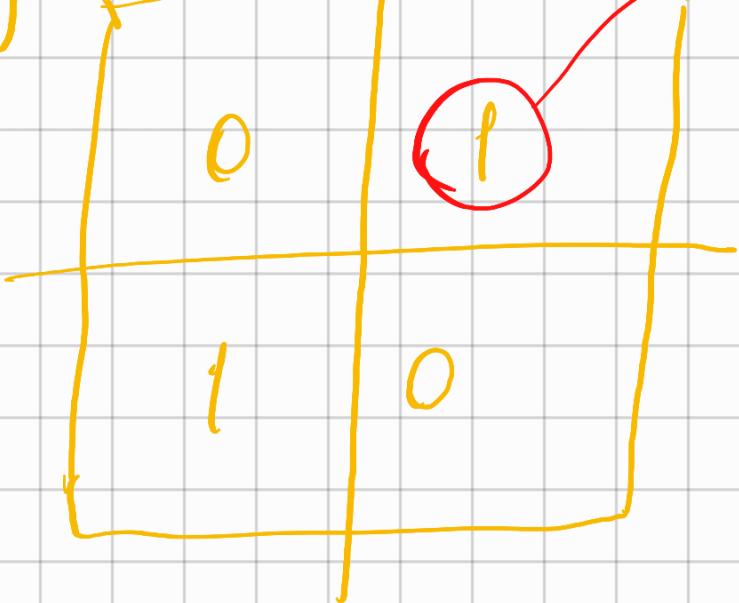
T-FF (toggle)



$$\boxed{Q(t+1) \rightarrow Q(t) \oplus T(t)}$$

$$Y = y \oplus T$$





$$Y = T y' + T' y$$

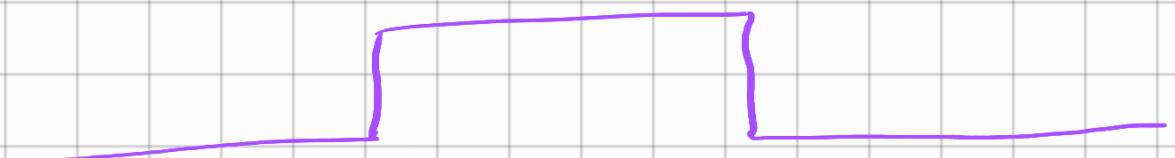
$$Y = T \oplus y$$

$$\overline{Y} = \overline{D}$$

CLK



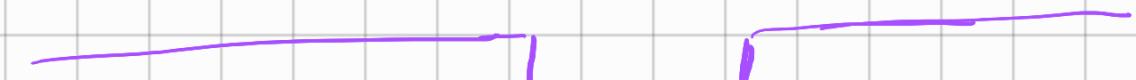
D



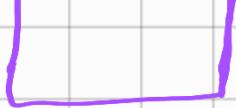
Q



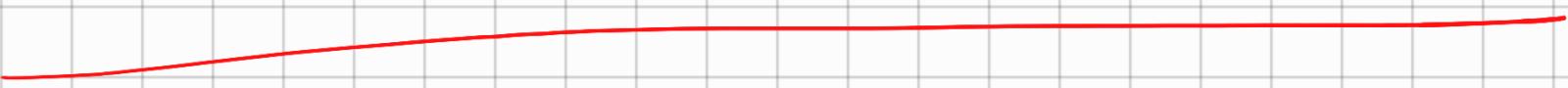
Q̄



~~Q~~



D-FF

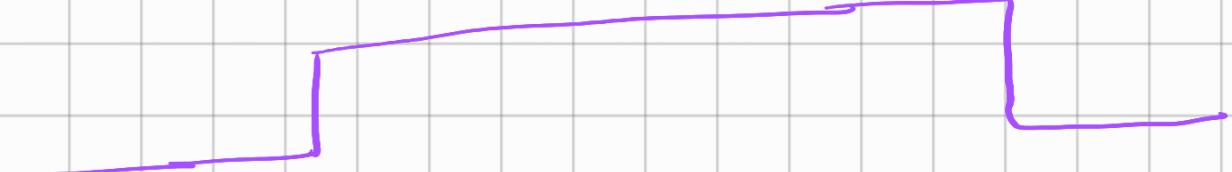


JK-FF



CLK

J



K

Q

\bar{Q}

$$y = Jy' + K'y$$

giriş

JK

çıkış

Q

00

Q

01

0

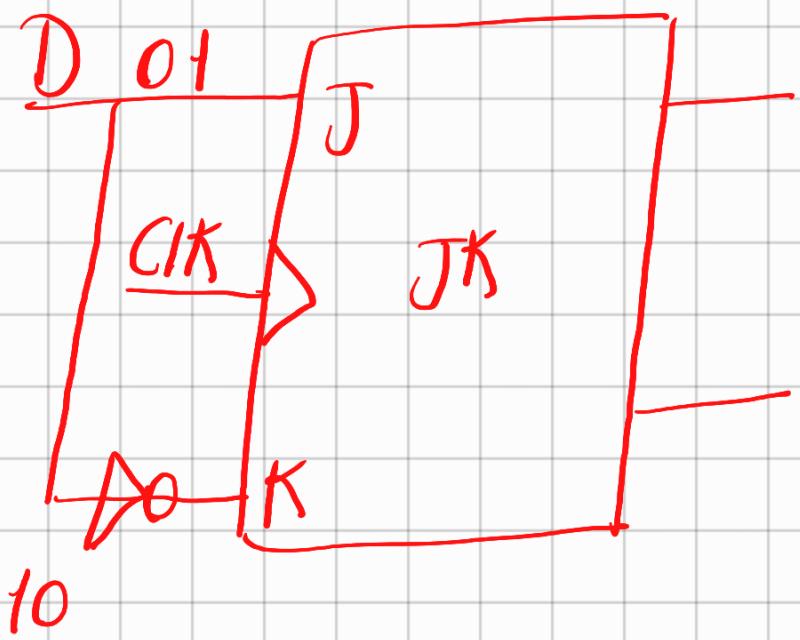
10

1

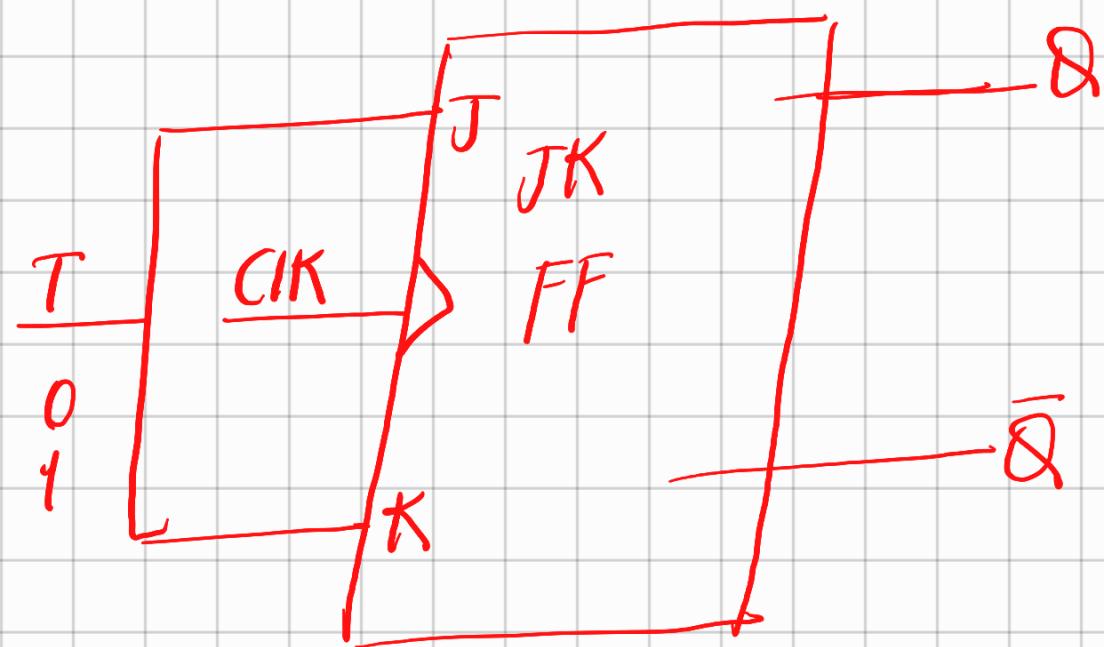
11

Q̅

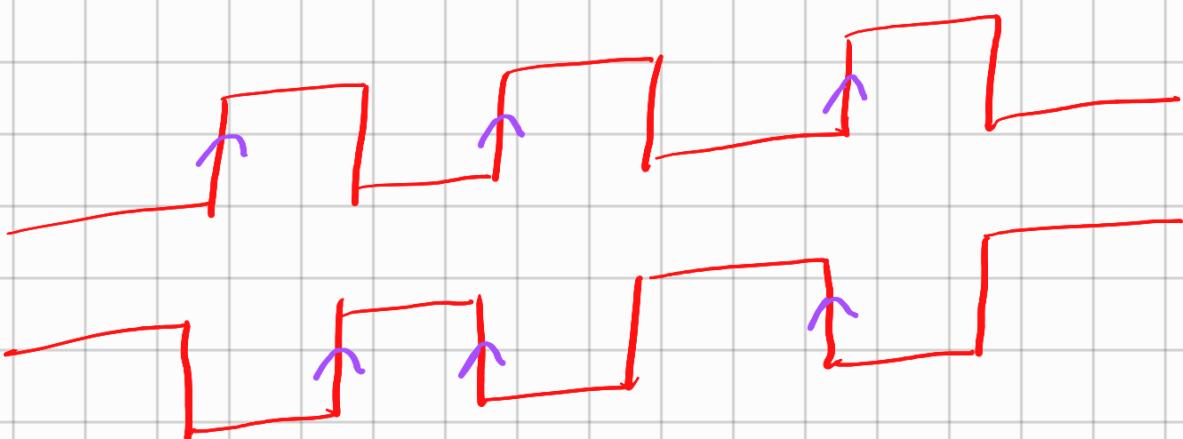
Örnek \rightarrow JK-FF T ve D tipi FF yapmak mümkün müdür?

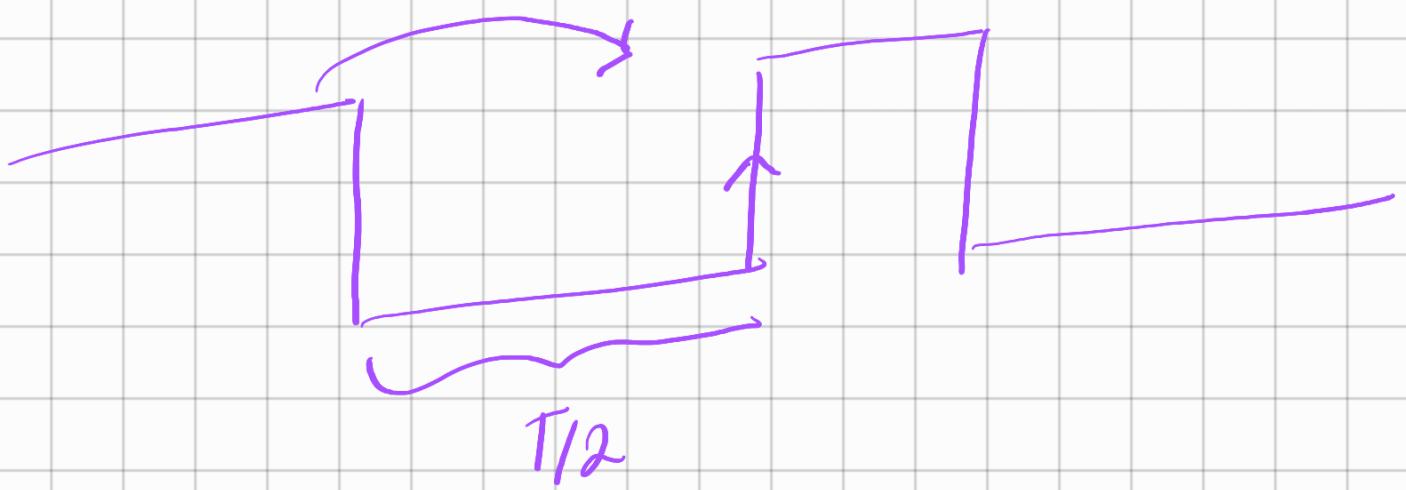
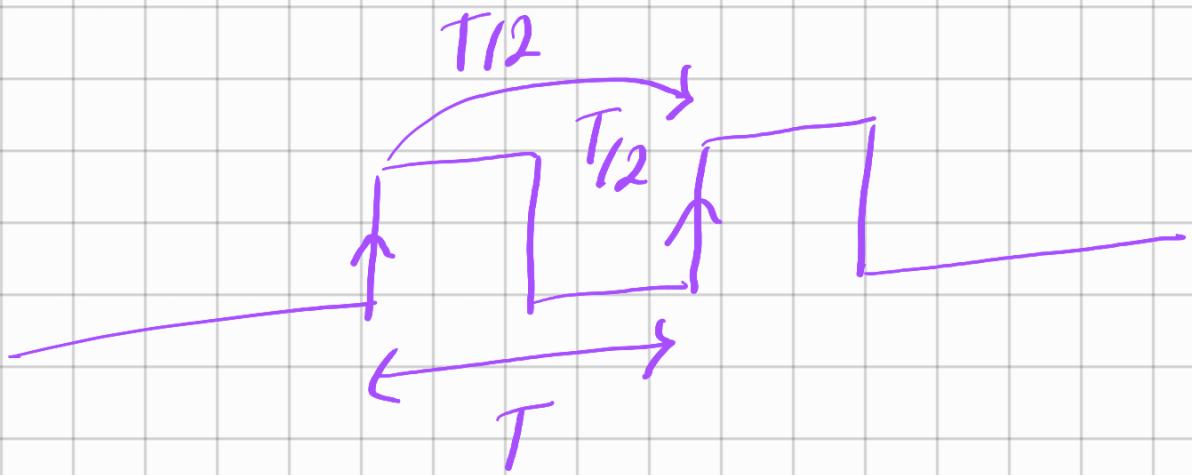
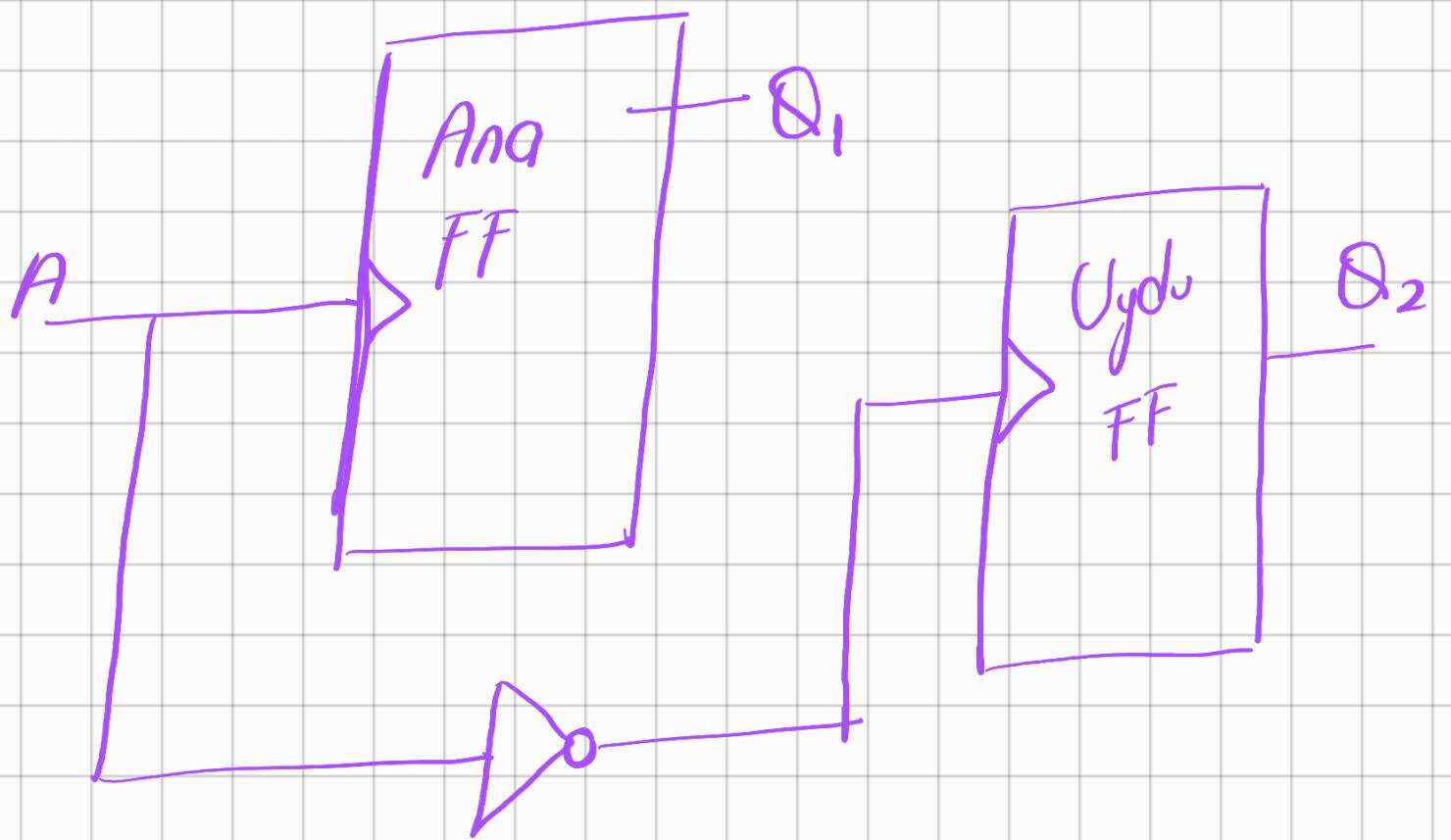


10



Ana Uydu FF

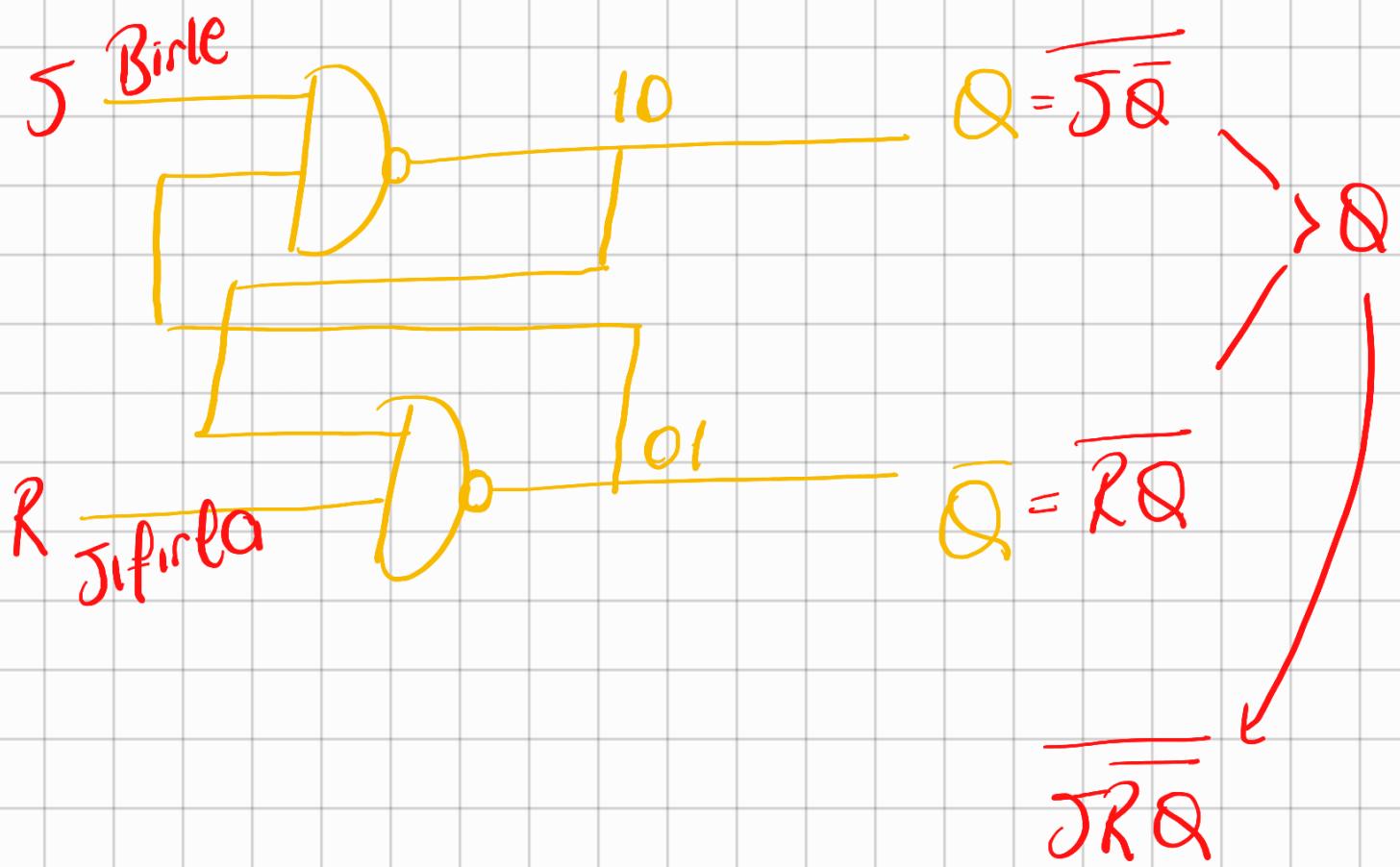




$$T = 1/F$$

$$T_{1/2} = 1/T_{1/2} = 2F$$

Efectuador (latches)



$$\overline{Q(t)} = 1 \text{ ije}$$

$$JR = 00$$

$$JR = 01$$

$$JR = 10$$

$$Q(t+1) = \tan(\omega_1 t)$$

$$Q(t+1) = 0$$

$$Q(t+1) = 1$$

$JR = 10$ $Q(t+1) = 1$ $JR = 11$ $Q(t+1) = Q(t) = 1$ $\underbrace{Q(t) = 0 \text{ ije}}$ $JR = 00$ $Q(t+1) = \text{donmez}$ $JR = 01$ $Q(t+1) = 0$ $JR = 10$ $Q(t+1) = 1$ $JR = 11$ $Q(t+1) = Q(t) = 0$

flip flopların haricinde latcherler
de kullanılır

① Ardışılı Derre Analiz yöntemleri
inceleme Süreci

① FF (Durum soklama brimleri)
- Daire cikuslarina ait
linceleme

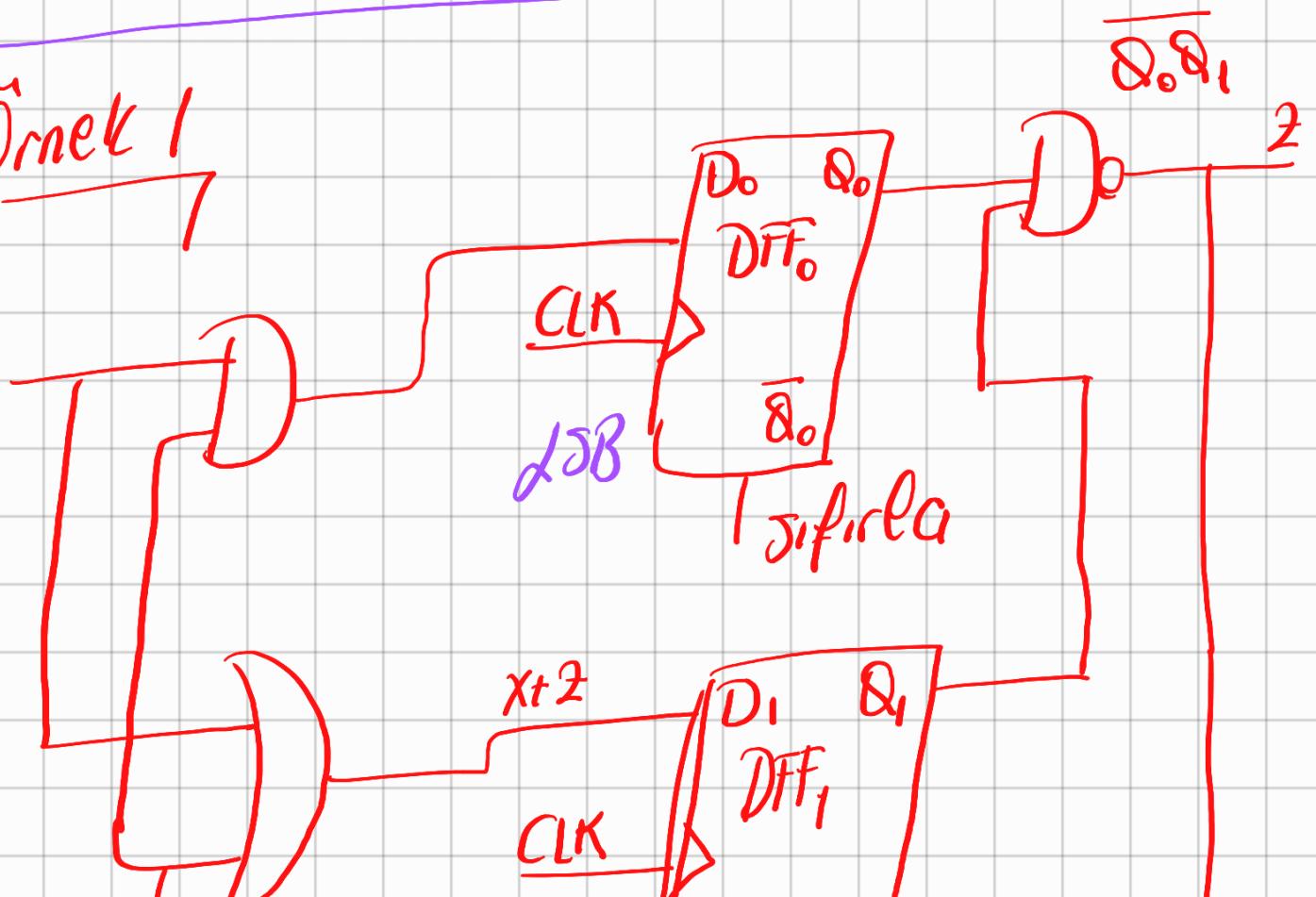
ve devre
boole fonksiyonları devre
bölçükler yazılır

② $\bar{F}F(ds)$ pegasus fonksiyonları
kullanarak bir son-
rakı durum fonksiyonları
elde edilir

③ Durum tablosu oluşturular

④ Durum diyapomini çizilir

Örnek 1





$$D_o = X, Z = X_1(Q_1, Q_0)$$

$$D_i = X + Z = X + (\bar{Q}_1, \bar{Q}_0)$$

$$Z = (\bar{Q}_1, \bar{Q}_0)$$

Jimpedel durum | Jimdiki durumlar

	\bar{Q}_1	\bar{Q}_0
d_0	0	0
d_1	0	1
d_2	1	0
d_3	1	1

(t+1)

Bir sonraki
durumlar

FF girişleri

$x=1$

$X=0$	$X=1$	$X=0$	$X=1$
$D_1 D_0$	$D_1 D_0$	$Q_1^+ Q_0^+$	$Q_1^+ Q_0^+$
10	11	10	11
10	11	10	11
10	11	10	11
00	10	00	10

$$Y = D$$

G_{1k1j}
1
1
1
0

$(y)_t$

Zimdiki
durum

d_0

d_1

$Y(t+1)$

Bir sonraki
durum

d_2

d_3

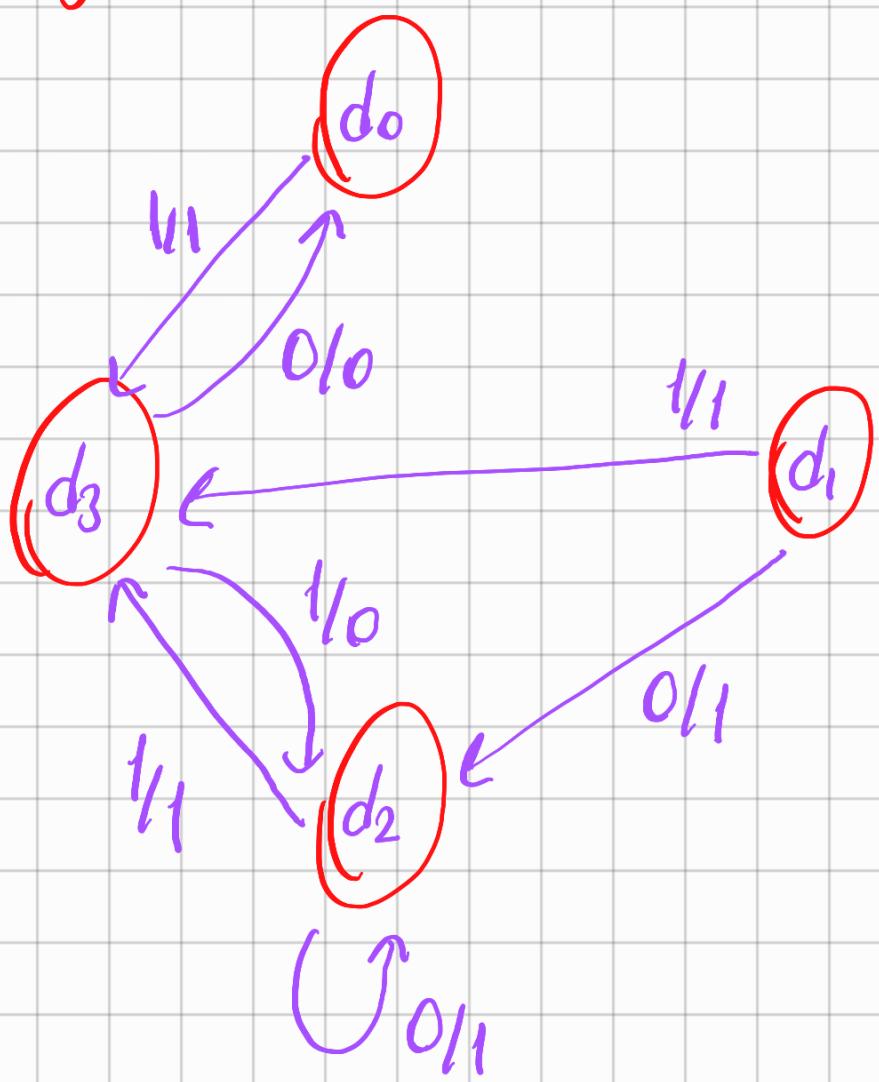
G_{1k1j}
2

1

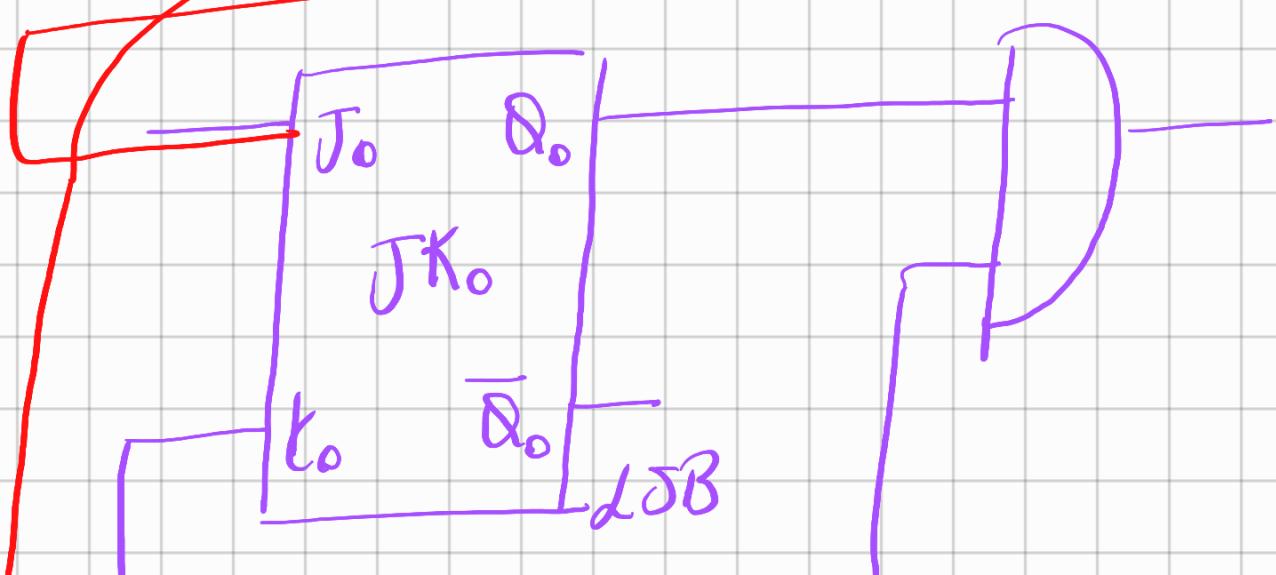
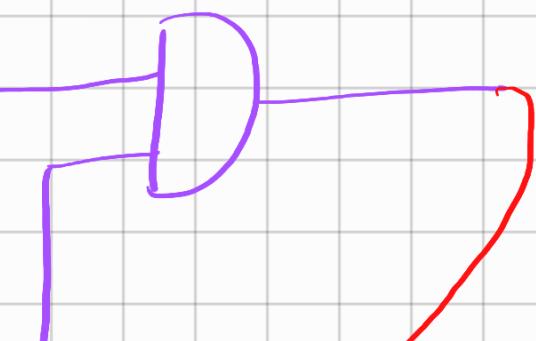
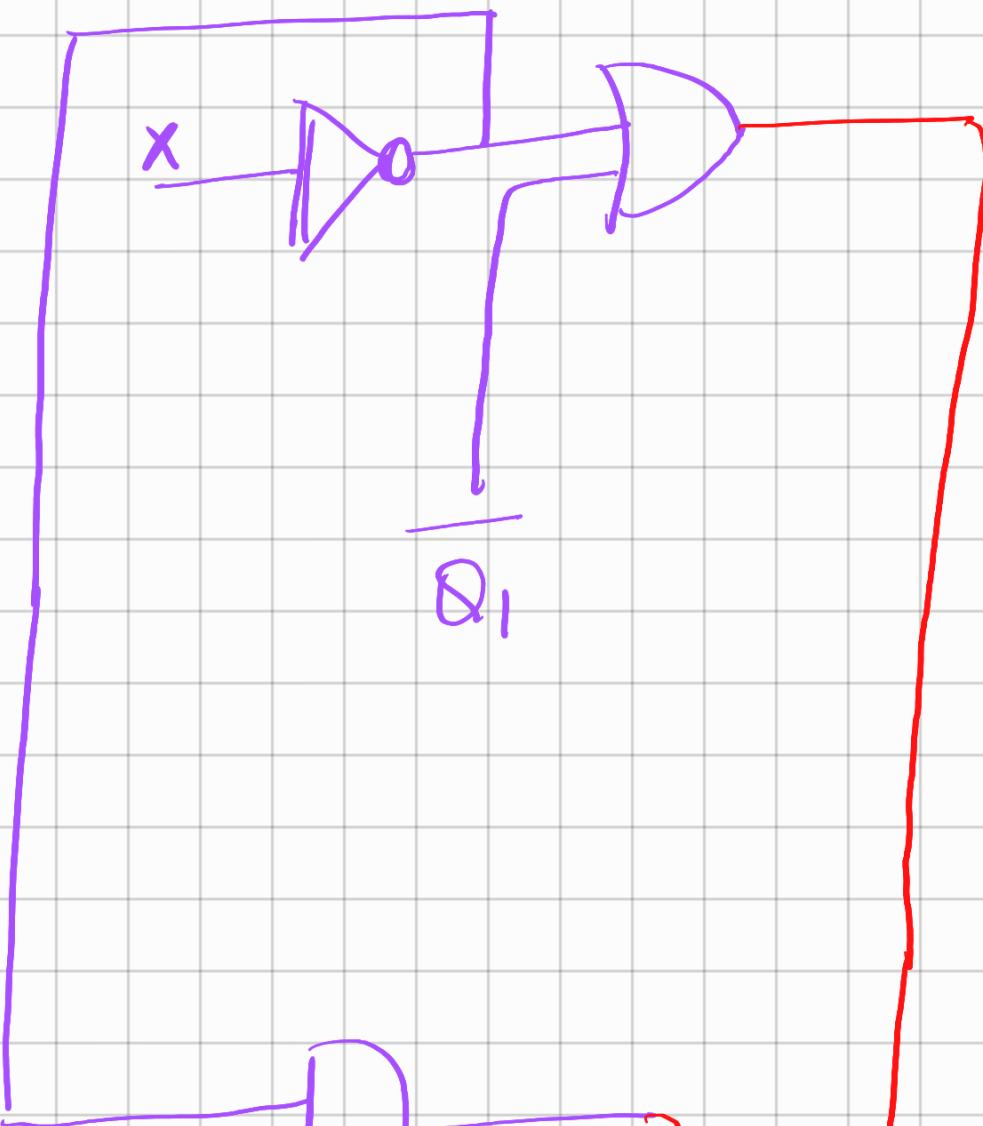
1

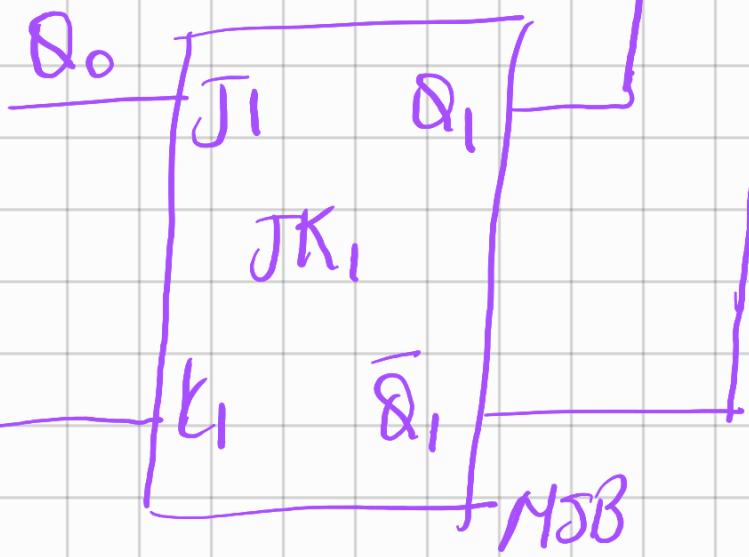
d_1	d_2	d_3	d_1
d_2	d_2	d_3	d_1
d_3	d_0	d_2	d_0

8/16



X/G Durum Diyagramı





2FF \rightarrow 4 durum

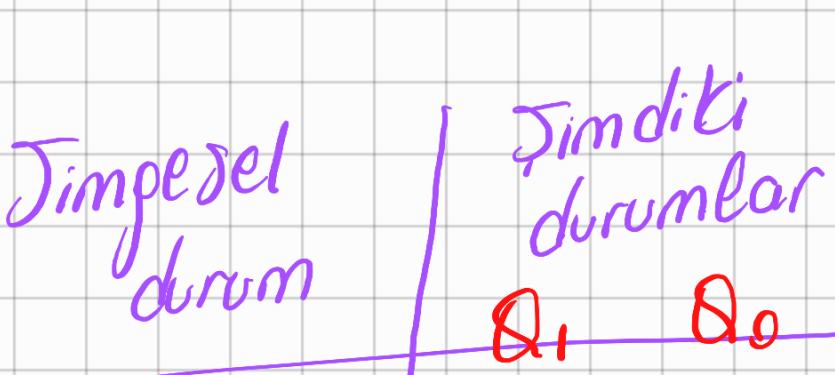
$$J_0 = \bar{X} + \bar{Q}_1$$

$$K_0 = Q_1$$

$$J_1 = Q_0$$

$$K_1 = \bar{X} \bar{Q}_0$$

$$Z = \bar{Q}_1 Q_0$$



d_0	0	0
d_1	0	1
d_2	1	0
d_3	1	1

FF pırıtları

$x=0$

$x=1$

$J_1 K_1$	$J_0 K_0$	$J_1 K_1$	$J_0 K_0$
01	10	00	10
10	10	10	10
01	11	00	01
10	11	10	01

y $(t+1)$

Bir sonraki durumlar

$X=0$	Q_1	Q_0	$X=1$	Q_1^+	Q_0^+
	0	1		0	1

1 1
0 1
1 0

J K	Bir sonraki durumlar
0 0	Q
0 1	0
1 0	1
1 1	\bar{Q}

Giriş (2)	
0	
1	
0	
0	

$Q(t+1)$

$y(t)$

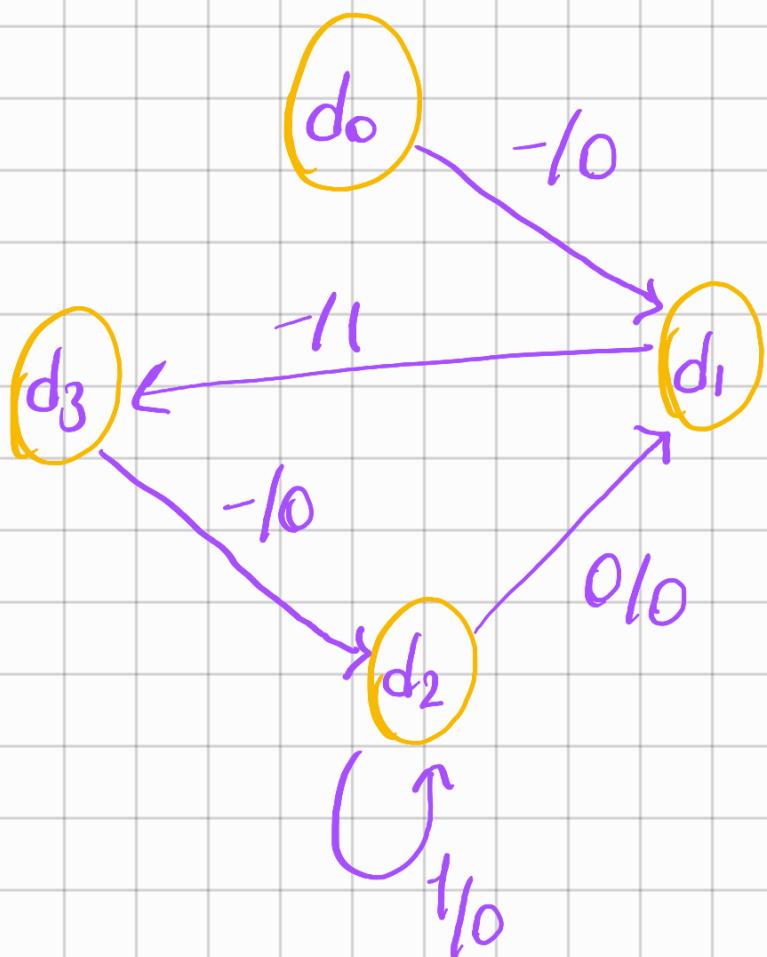
Şimdiki
durum

$y(t+1)$

Gök
(2)

Bir sonraki
durum
 $x=0$ $x=1$

d_0	d_1	d_1	0
d_1	d_3	d_3	1
d_2	d_1	d_2	0
d_3	d_2	d_2	0



Durum Diyagramı

~~Do~~

