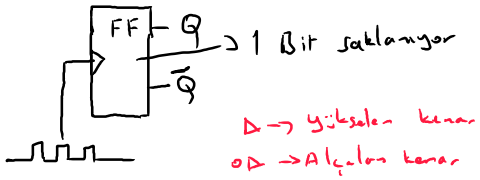
Flip - Floplar

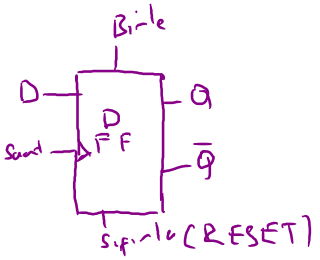


- D FF
- JK FF
- SR FF
- T FF

D Filip Filopu

Bitle (SET)

(t)



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

$Q(t+1) = Y$ → ile gösterilir
$Q(t) = y$

giriş	saat	çıkışlar (Bir sonraki çıkış) Q	$\bar{Q}$
D	⎍		
0	⎍	0	1
1	⎍	1	0

y \ D	0	1
0	0	1
1	0	1

→ $Y = Q(t+1)$

$Y = D$

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

y \ Y	00	01	11	10
D	0	1	1	0

← Uyarma tablosu

Set/Reset (SR) FF

$Q(t+1) = Q(t).R(t) + S(t)$

$R(t).S(t) = 0$ için tanımlı

$R(t).S(t) = 1$ için tanımsız

giriş S	giriş R	saat	çıkış (bir sonraki çıkış) Q	$\bar{Q}$
0	0	⎍	aynı kalır	
0	1	⎍	0	1
1	0	⎍	1	0
1	1	⎍	tanımsız	

Q'nun durumu
y = şimdiki
Y = sonraki Q

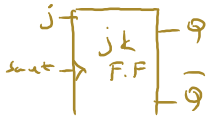
y \ SR	00	01	11	10
0	0	0	Ø	1
1	1	0	Ø	Ø

→ Y

y \ Y	0	1	1	0
SR	0	1	Ø	0
	Ø	Ø	0	1

$Y = S + R'y$

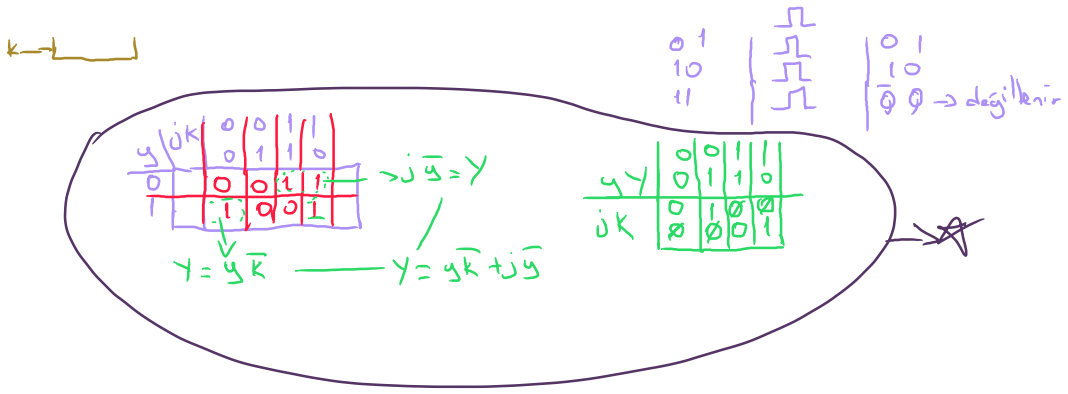
jk F.F. → SR'nin 11'i hariç tanımlı hali



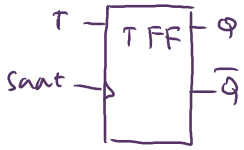
$Q(t+1)$ $Q(t)$

$Y = y.\overline{k(t)} + \bar{y}.j(t)$

giriş j	giriş k	saat	çıkış (sonraki (t+1)) Q	$\bar{Q}$
0	0	⎍	aynı kalır	
0	1	⎍	0	1
			1	0

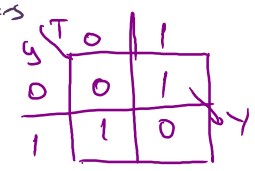


TFF [Toggle (tersine çevirme)]



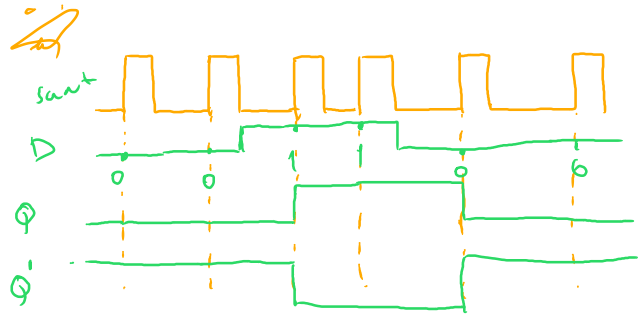
$Q(t+1) = Q(t) \oplus T(t)$

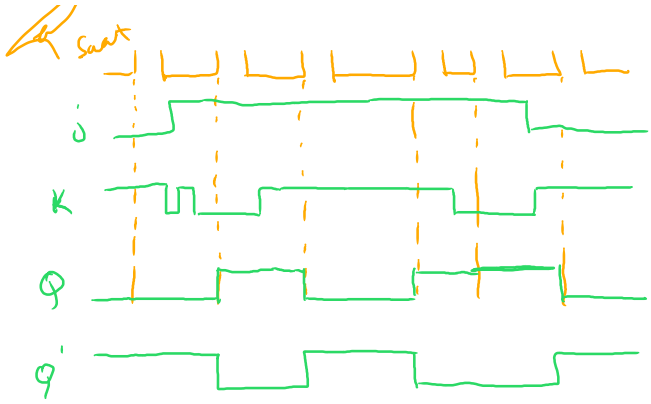
yüz iş T	saat	çıkış Q Q̄	
0	⎍	q q	aynı
1	⎍	q̄ q	ters



$Y = Ty' + T'y$

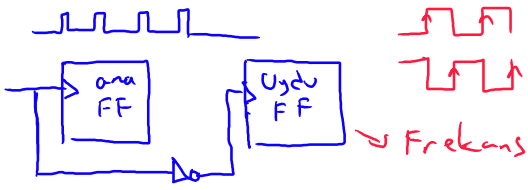
$Y = T \oplus y$





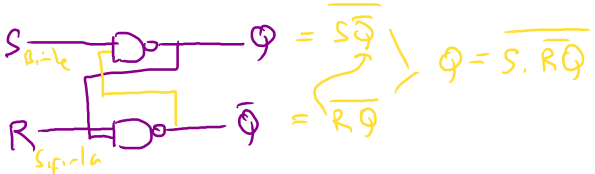
jk FF ile D ve T tipi FF yapılabilir mi?

Ana Uydu FF



→ Frekansı 2'ye katlamak için

Tutucular



Q(t)=0 ise

SR=00 Q(t+1)=tanımsız

SR=01 " =0

SR=10 " =1

SR=11 " =0=Q(t)

Q(t)=1 ise

SR=00 Q(t+1)=tanımsız

SR=01 " =0

SR=10 " =1

SR=11 " =Q(t)=1

SR = 11 ise $Q = Q^{t+1}$

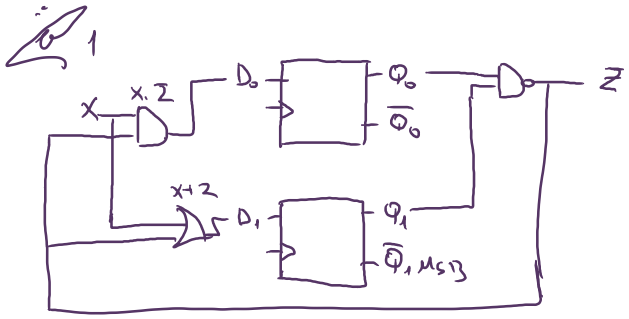
Ardışıl devre analiz yöntemleri önce analiz inceleme

① FF (Durum saklama birimleri) ve devre çıkışlarına ait boole fonksiyonları devreye bakarak yazılır.

② FF (dur. s. b.) geçiş fonk. kullanılarak bir sonraki durum fonksiyonu elde ediliyor.

③ Durum tablosu oluşturulur

④ Durum Diyagramı çizilir.



$D_0 = x.z = x.(\overline{Q_1}\,Q_0)$

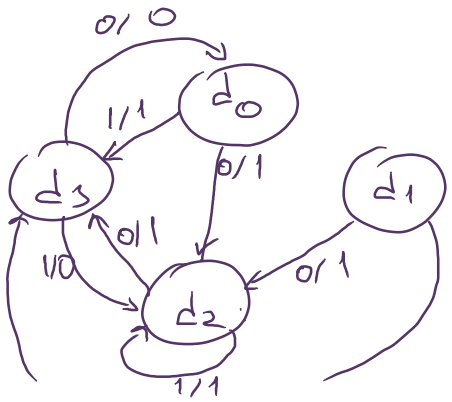
$D_1 = x+z = x+(\overline{Q_1}\,Q_0)$

$z = \overline{Q_1}\,Q_0$

Sinirsel Durum	t: Q_1	t: Q_0	FF girişleri: $x=0$ D_1	$x=0$ D_0	$x=1$ D_1	$x=1$ D_0	$x=0$: Q_1^+	$x=0$: Q_0^+	$x=1$: Q_1^+	$x=1$: Q_0^+	Çıkış z
d_0	0	0	1	0	1	1	1	0	1	1	1
d_1	0	1	1	0	1	1	1	0	1	1	1
d_2	1	0	1	0	1	1	1	0	1	1	1
d_3	1	1	0	0	1	0	0	0	1	0	0

$Q_1^{t} = D_1(t+1)$

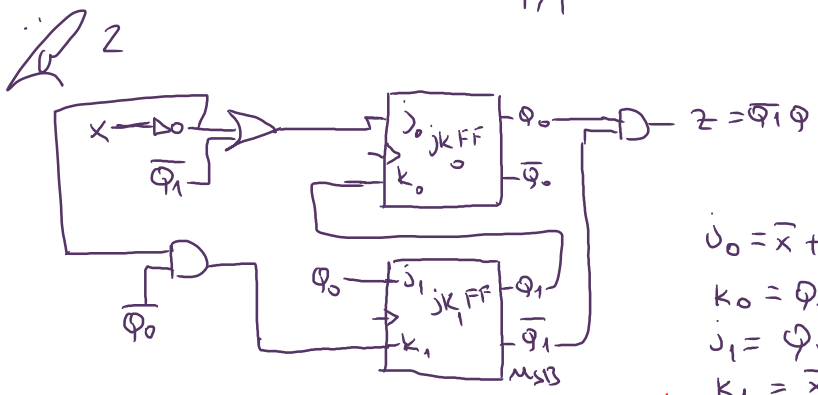
y	Y: x=0	Y: x=1	z
d_0	d_2	d_3	1
d_1	d_2	d_3	1
d_2	d_3	d_2	1
d_3	d_0	d_2	0



1/1

1/1

2



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

$K_0 = Q_1$

$J_1 = Q_0$

$K_1 = \bar{x} \cdot \bar{Q}_0$

$Z = \bar{Q}_1 Q_0$

durumlar	y(t)		FF girişleri x=0				FF girişleri x=1				x=0		x=1		Y
	Q_1	Q_0	J_1 K_1	J_0 K_0			J_1 K_1	J_0 K_0			Q_1^+	Q_0^+	Q_1^+	Q_0^+	Z
d_0	0	0	0 1	1 0			0 0	1 0			0	1	0	1	0
d_1	0	1	1 0	1 0			1 0	1 0			1	1	1	1	1
d_2	1	0	0 1	1 1			0 0	0 1			0	1	1	0	0
d_3	1	1	1 0	1 1			1 0	0 1			1	0	1	0	0

y	x_0	x_1	Z
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