

1) 4 adet 4x1 Mux ve 4 JK FF gereklidir.

a) JK flip flopunda girişin tersini almak için J ve K ucuna 1 vermeliyiz.

b) 2'ye tümleyen bulmak için durum tablosu çıkaralım.

q_3	q_2	q_1	q_0	Q_3	Q_2	Q_1	Q_0	J_3	K_3	J_2	K_2	J_1	K_1	J_0	K_0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	1	1	0	1	0	1	0	0	0
0	0	1	0	1	1	1	0	1	0	1	0	0	0	0	0
0	0	1	1	1	1	0	1	1	0	1	0	0	1	0	0
0	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0
0	1	0	1	1	0	1	1	1	0	0	1	1	0	0	0
0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0
0	1	1	1	1	0	0	1	1	0	0	1	0	1	0	0
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	0	1	1	1	0	1	1	0	1	0	0	0
1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0
1	0	1	1	0	1	0	1	0	1	1	0	0	1	0	0
1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0
1	1	0	1	0	0	1	1	0	1	0	1	1	0	0	0
1	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0
1	1	1	1	0	0	0	1	0	1	0	1	0	1	0	0

q_3, q_2, q_1, q_0 'a bağlı $J_2, K_3, J_2, K_2, J_1, K_1, J_0$ ve K_0 giriş fonksiyonları oluşturmamız lazım.

$$J_3 = q_0 + q_1 + q_2$$

q_3, q_2	q_1, q_0	00	01	11	10
00	0	1	1	1	1
01	1	1	1	1	1
11	0	0	0	0	0
10	0	0	0	0	0

$$K_3 = q_0 + q_1 + q_2$$

q_3, q_2	q_1, q_0	00	01	11	10
00	0	0	0	0	0
01	0	0	0	0	0
11	1	1	1	1	1
10	0	1	1	1	1

$$J_2 = q_0 + q_1$$

q_3, q_2	q_1, q_0	00	01	11	10
00	0	1	1	1	1
01	0	0	0	0	0
11	0	0	0	0	0
10	0	1	1	1	1

$$K_2 = q_0 + q_1$$

q_3, q_2	q_1, q_0	00	01	11	10
00	0	0	0	0	0
01	0	1	1	1	1
11	0	1	1	1	1
10	0	0	0	0	0

$$J_1 = q_0$$

$q_3 q_2$ \ $q_1 q_0$	00	01	11	10
00	0	1	0	0
01	0	1	0	0
11	0	1	0	0
10	0	1	0	0

$$J_0 = 0$$

$q_3 q_2$ \ $q_1 q_0$	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$$K_1 = q_0$$

$q_3 q_2$ \ $q_1 q_0$	00	01	11	10
00	0	0	1	0
01	0	0	1	0
11	0	0	1	0
10	0	0	1	0

$$K_0 = 0$$

$q_3 q_2$ \ $q_1 q_0$	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

C) Paralel yükleme için

D_i	q	Q	J	K
0	0	0	0	0
0	1	0	1	0
1	0	1	0	1
1	1	1	0	0

$$J = D_i \oplus q$$

$$K = D_i \oplus q$$

D) Azaltmada durum tablosu çıkarılır.

q_3	q_2	q_1	q_0	Q_3	Q_2	Q_1	Q_0	J_3	K_3	J_2	K_2	J_1	K_1	J_0	K_0
0	0	0	0	1	1	1	1	1	0	1	0	1	0	1	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0
0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1
0	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0
0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1
0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	1
0	1	1	1	0	1	1	1	0	0	0	0	0	1	0	1
1	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
1	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1
1	0	1	0	0	0	1	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	1	0
1	1	0	1	1	0	0	1	0	0	0	0	0	0	1	0
1	1	1	0	1	0	1	0	0	0	0	0	0	0	1	0
1	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0
1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0

$$\bar{J}_3 = q_0' \cdot q_1' \cdot q_2'$$

$$K_3 = q_0' \cdot q_1' \cdot q_2'$$

00	00	01	11
00	1	0	0
01	0	0	0
11	0	0	0
10	0	0	0

$$\bar{J}_2 = q_0' \cdot q_1'$$

$$K_2 = q_0' \cdot q_1'$$

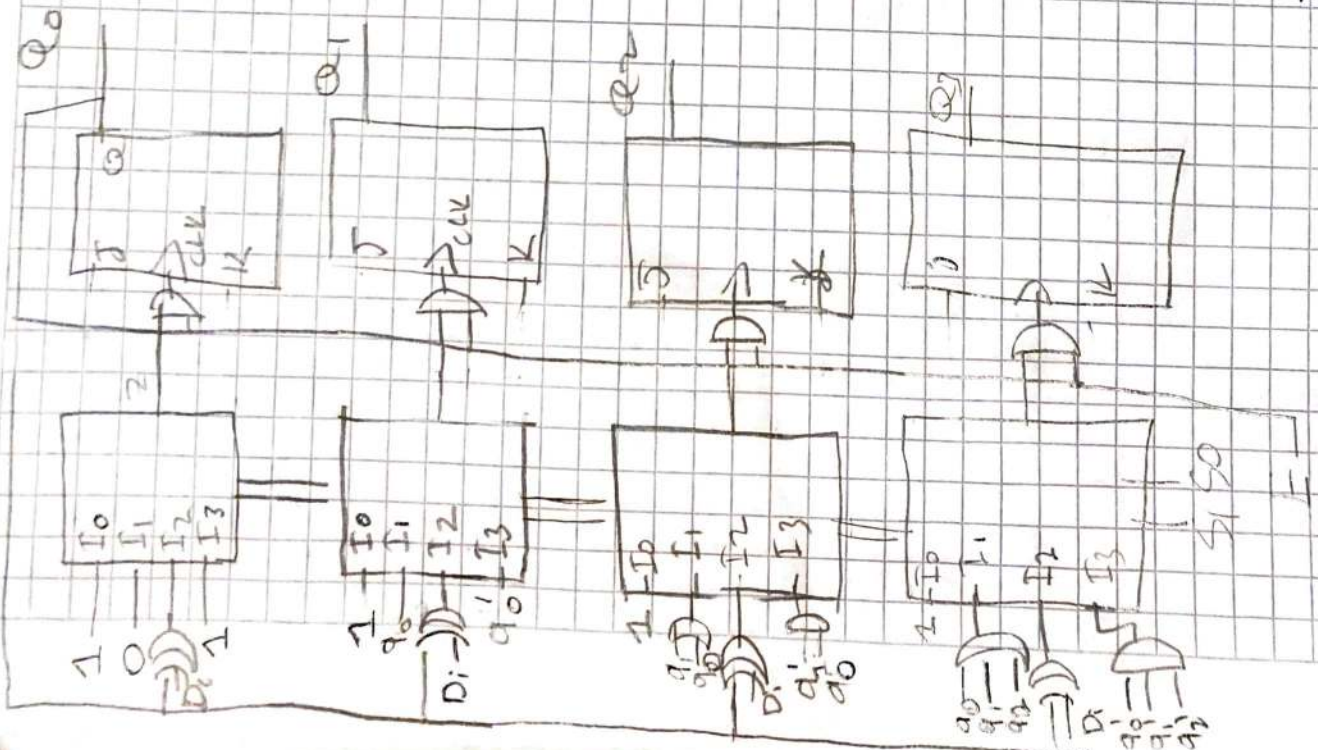
$$\bar{J}_1 = q_0'$$

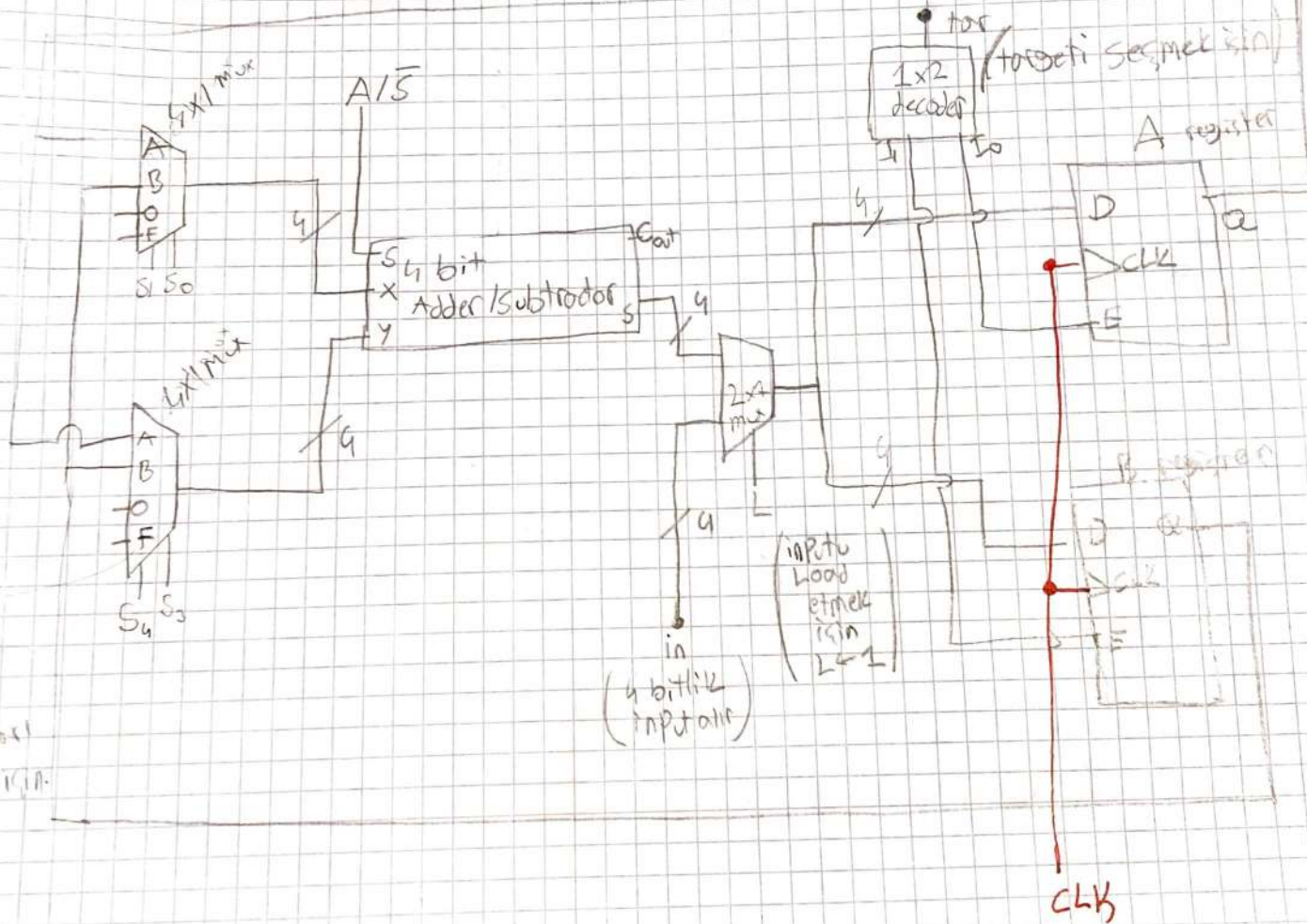
$$K_1 = q_0'$$

$$\bar{J}_0 = 1$$

$$K_0 = 1$$

Derneğin Son hali





~~target~~

tar ← con

input girilir L ucu 1 verilir ve tar ucuna istenilen registerin değeri verilir.

L=1, tar=0, \uparrow , $A/\bar{S}=\emptyset$

tar ← src

L=0, tar=0, $S_1S_0=0$, $S_4S_3=0$ (istenilen SRC seçilir)
 \uparrow

tar ← A+B

L=0, tar=0, $S_1S_0=00$, $S_4S_3=01$, $\underline{A/\bar{S}=1}$, \uparrow

tar ← A-B

L=0, tar=0, $S_1S_0=00$, $S_4S_3=01$, $\underline{A/\bar{S}=0}$

tar ← B-A

L=0, tar=0, $S_1S_0=01$, $S_4S_3=00$, $\underline{A/\bar{S}=0}$, \uparrow

tar ← SRC +1

L=0, tar=0, $S_1S_0=00$, $S_4S_3=10$, $\underline{A/\bar{S}=0}$, \uparrow
(SRC) (0)

tar ← SRC -1

L=0, tar=0, $S_1S_0=00$, $S_4S_3=11$, $\underline{A/\bar{S}=1}$, \uparrow
(SRC) (-1)

tar ← \overline{SRC}

L=0, tar=0, $S_1S_0=11$, $S_4S_3=01$, $\underline{A/\bar{S}=0}$, \uparrow
(-1) (SRC)

tar ← $\overline{SRC}+1$

L=0, tar=0, $\underline{S_1S_0=10}$, $\underline{S_4S_3=01}$, $\underline{A/\bar{S}=0}$, \uparrow
0 SRC