

YILDIZ TEKNİK ÜNİVERSİTESİ
BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ



Ders: BLM2022 Bilgisayar Donanımı
ÖDEV-1 Raporu

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İÇİNDEKİLER

Soru – 1	3
Soru – 2	5

Soru 1

m_2 m_1 J k → Tamamlayıcılar Tablosu

D_1	q	q_1	J	k
0	0	0	0	X
0	1	0	0	1
1	0	1	1	X
1	1	1	1	0

D_1	q_0	q_1	q_2	q_3
0	X	X	X	1
1	X	X	0	X

D_1	q_0	q_1	q_2	q_3
0	0	0	X	X
1	X	1	X	X

q	q_1	J	k
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0

m_2 m_1 q_3 q_2 q_1 q_0 J k J_0 k_0 J_1 k_1 J_2 k_2 J_3 k_3

q_3	q_2	q_1	q_0	q_3	q_2	q_1	q_0	q_3	q_2	q_1	q_0	J_0	k_0	J_1	k_1	J_2	k_2	J_3	k_3
0	0	0	0	1	1	1	1	1	X	1	X	1	X	1	X	1	X	1	X
0	0	0	1	0	0	0	0	0	X	0	X	0	X	0	X	0	X	0	1
0	0	1	0	0	0	0	1	0	X	0	X	0	X	0	X	0	X	0	X
0	0	1	1	0	0	0	1	0	X	0	X	0	X	0	X	0	X	0	X
0	1	0	0	0	0	0	1	1	0	X	X	1	1	0	X	1	1	0	X
0	1	0	1	0	0	1	0	0	0	X	X	0	0	X	1	1	0	X	1
0	1	1	0	0	0	1	0	1	0	X	X	0	0	X	1	1	0	X	1
0	1	1	1	0	0	1	0	1	0	X	X	0	0	X	1	1	0	X	1
1	0	0	0	0	0	1	1	1	1	X	1	1	X	1	X	1	X	1	X
1	0	0	1	0	1	0	0	0	0	X	0	0	X	0	X	0	X	0	1
1	0	1	0	0	1	0	1	0	0	X	0	0	X	0	X	0	X	0	1
1	0	1	1	0	1	0	1	0	0	X	0	0	X	0	X	0	X	0	1
1	1	0	0	0	1	1	0	1	1	X	1	1	X	1	X	1	X	1	X
1	1	0	1	0	1	1	0	1	1	X	1	1	X	1	X	1	X	1	X
1	1	1	0	0	1	1	1	0	0	X	0	0	X	0	X	0	X	0	1
1	1	1	1	0	1	1	1	0	0	X	0	0	X	0	X	0	X	0	1
1	1	1	1	1	1	1	1	0	X	0	X	0	X	0	X	0	X	0	1

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

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

$$J_3 = \overline{q_2} \cdot \overline{q_1} \cdot \overline{q_0}$$

$$k_3 = \overline{q_2} \cdot \overline{q_1} \cdot \overline{q_0}$$

②

j_2, q_2, q_0

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

k_2

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

$$\Rightarrow \frac{j_2, k_2, 10}{\overline{q_1} \cdot \overline{q_0}}$$

j_1, q_1, q_0

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

k_1, q_1, q_0

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

$$\Rightarrow \frac{j_1, k_1}{\overline{q_0}}$$

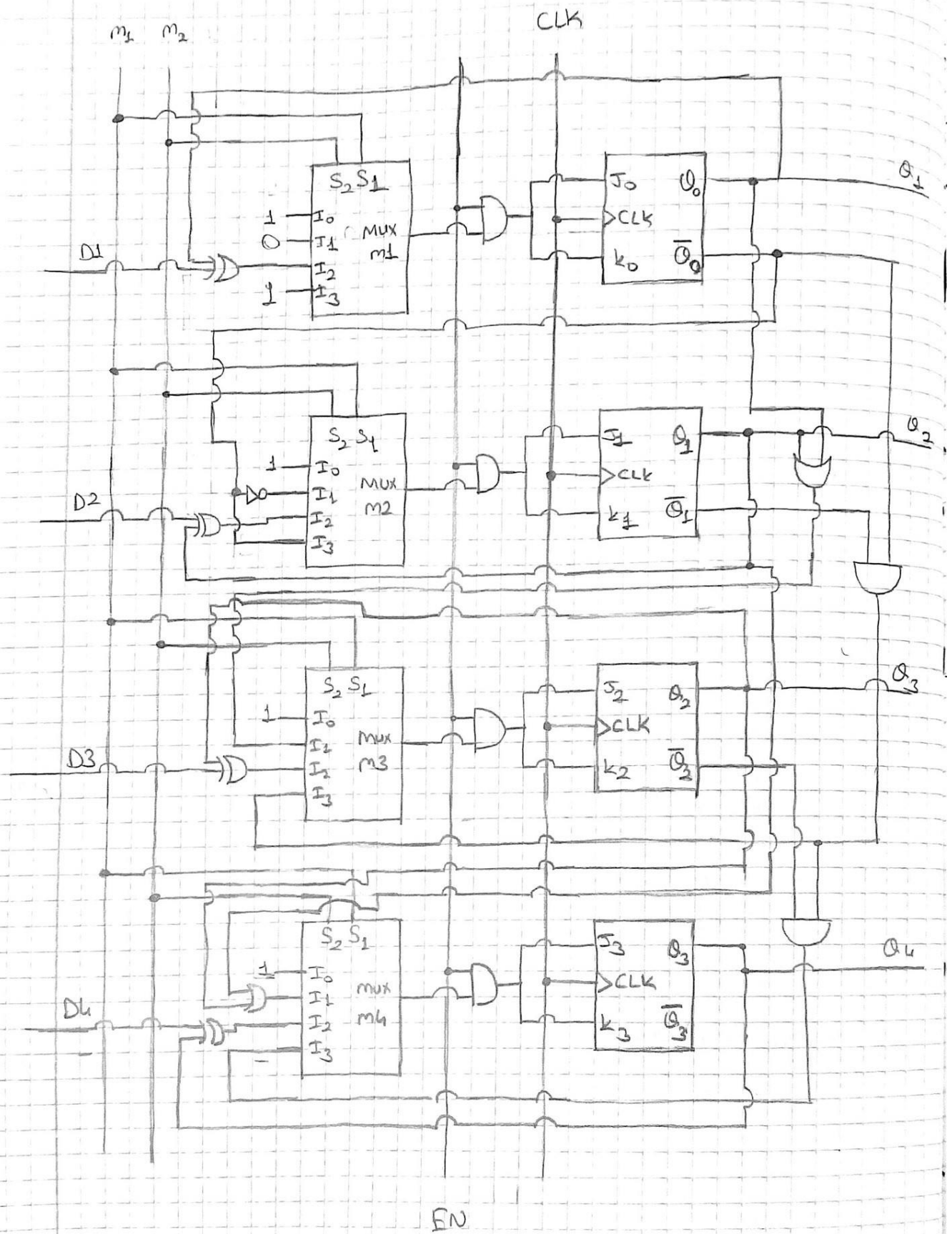
j_0

1	x	x	1
1	x	x	1
1	x	x	1
1	x	x	1

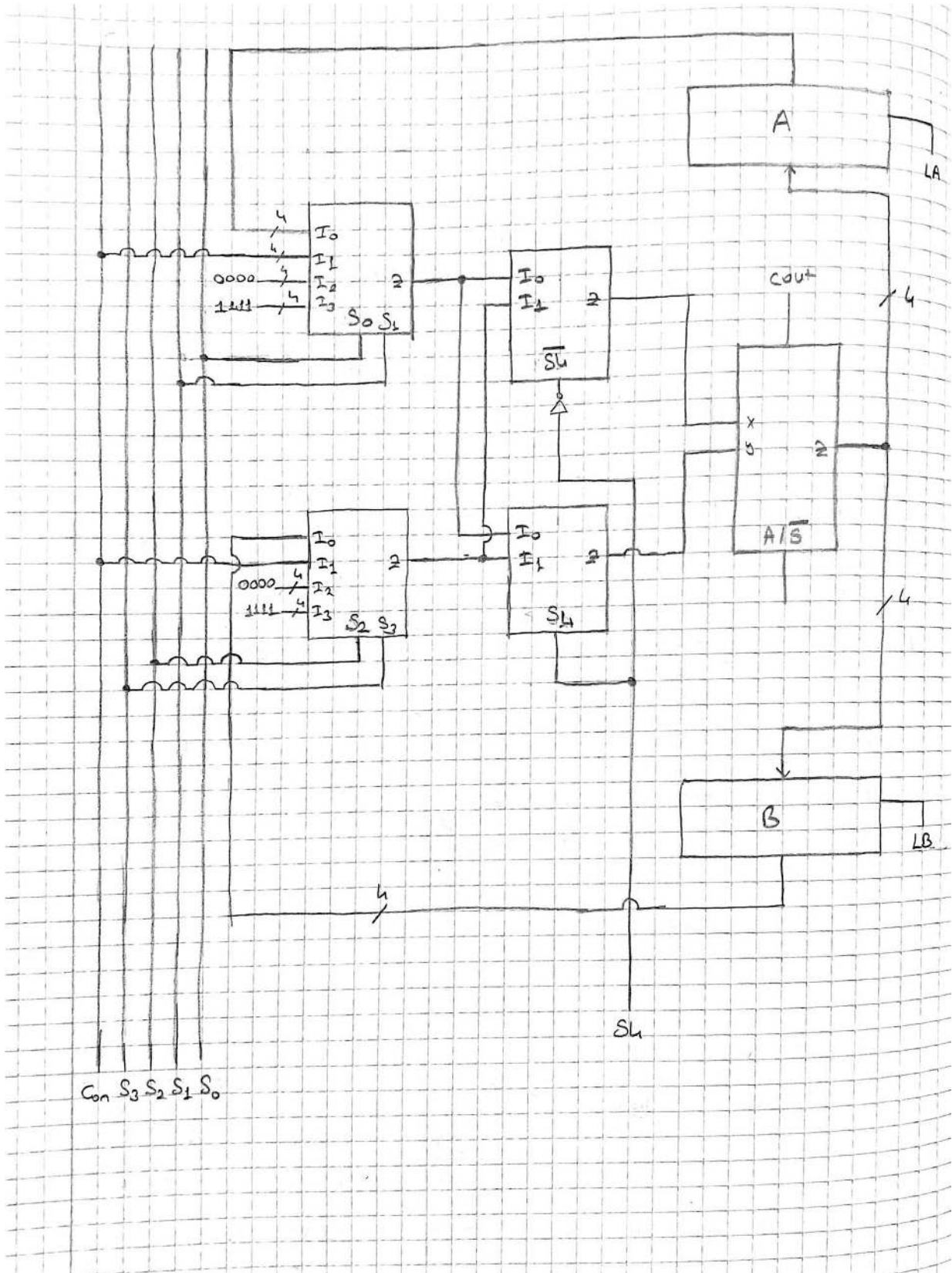
k_0

x	1	1	x
x	1	1	x
x	1	1	x
x	1	1	x

$$\Rightarrow \frac{j_0, k_0}{01}$$



Soru 2



Kontrol İşareti:

Not: Adder/Subtractor'ın (x-y) yaptığı varsayılıyor.

- $\text{tor} \leftarrow \text{con}$

$A \leftarrow \text{con} : S1=0, S0=1; S3=1, S2=0; S4=0; A/\bar{S}=1; LA=1, LB=0$

$B \leftarrow \text{con} : S1=0, S0=1; S3=1, S2=0; S4=0; A/\bar{S}=1; LA=0, LB=1$

- $\text{tor} \leftarrow \text{src}$

$B \leftarrow A : S1=0, S0=0; S3=1, S2=0; S4=0; A/\bar{S}=1; LA=0, LB=1$

$A \leftarrow B : S1=1, S0=0; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=1, LB=0$

$B \leftarrow B : S1=1, S0=0; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=0, LB=1$

$A \leftarrow A : S1=0, S0=0; S3=1, S2=0; S4=0; A/\bar{S}=1; LA=1, LB=0$

- $\text{tor} \leftarrow A+B$

$A \leftarrow A+B : S1=0, S0=0; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=1, LB=0$

$B \leftarrow A+B : S1=0, S0=0; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=0, LB=1$

- $\text{tor} \leftarrow A-B$

$A \leftarrow A-B : S1=0, S0=0; S3=0, S2=0; S4=1; A/\bar{S}=0; LA=1, LB=0$

$B \leftarrow A-B : S1=0, S0=0; S3=0, S2=0; S4=0; A/\bar{S}=0; LA=0, LB=1$

- $\text{tor} \leftarrow \text{src}+1 \quad (\text{con}=1)$

$A \leftarrow A+1 : S1=0, S0=0; S3=0, S2=1; S4=0; A/\bar{S}=1; LA=1, LB=0$

$A \leftarrow B+1 : S1=0, S0=1; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=1, LB=0$

$B \leftarrow B+1 : S1=0, S0=1; S3=0, S2=0; S4=0; A/\bar{S}=1; LA=0, LB=1$

$B \leftarrow A+1 : S1=0, S0=0; S3=0, S2=1; S4=0; A/\bar{S}=1; LA=0, LB=1$

- $\text{tor} \leftarrow \text{src}-1 \quad (\text{con}=1)$

$A \leftarrow A-1 : S1=0, S0=0; S3=0, S2=1; S4=0; A/\bar{S}=0; LA=1, LB=0$

$A \leftarrow B-1 : S1=0, S0=1; S3=0, S2=0; S4=1; A/\bar{S}=0; LA=1, LB=0$

$B \leftarrow B-1 : S1=0, S0=1; S3=0, S2=0; S4=1; A/\bar{S}=0; LA=0, LB=1$

$B \leftarrow A-1 : S1=0, S0=0; S3=0, S2=1; S4=0; A/\bar{S}=0; LA=0, LB=1$

$for \leftarrow \overline{src}$

$A \leftarrow \overline{A} : s1=0, s0=0; s3=1, s2=1; s4=0; A/\overline{s}=0; LA=1, LB=0$

$A \leftarrow \overline{B} : s1=1, s0=1; s3=0, s2=0; s4=0; A/\overline{s}=0; LA=1, LB=0$

$B \leftarrow \overline{B} : s1=1, s0=1; s3=0, s2=0; s4=0; A/\overline{s}=0; LA=0, LB=1$

$B \leftarrow \overline{A} : s1=0, s0=0; s3=1, s2=1; s4=0; A/\overline{s}=0; LA=0, LB=1$

$for \leftarrow \overline{src} + 1$

$A \leftarrow \overline{A} + 1 : s1=0, s0=0; s3=1, s2=0; s4=0; A/\overline{s}=0; LA=1, LB=0$

$A \leftarrow \overline{B} + 1 : s1=1, s0=0; s3=0, s2=0; s4=0; A/\overline{s}=0; LA=1, LB=0$

$B \leftarrow \overline{B} + 1 : s1=1, s0=0; s3=0, s2=0; s4=0; A/\overline{s}=0; LA=0, LB=1$

$B \leftarrow \overline{A} + 1 : s1=0, s0=0; s3=1, s2=0; s4=0; A/\overline{s}=0; LA=0, LB=1$