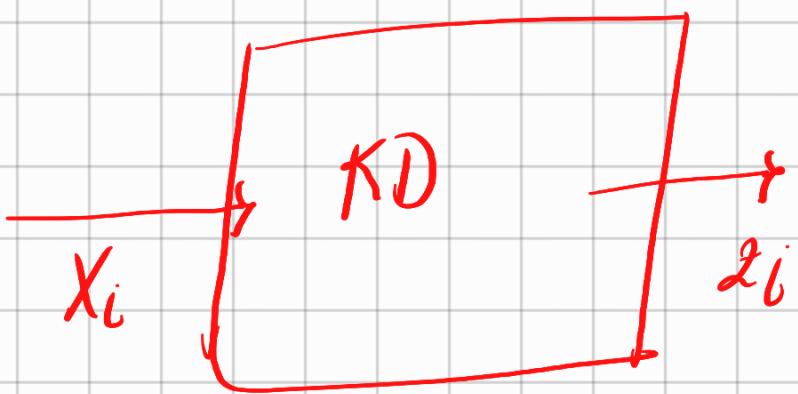


Kombinezonal Devreler

Kombinezonal tümlesik devreler



Medium
JCALE
interpretation
(orta ölçeteli
entepli devre-
leri)

Bunlar
hzur
devrelerdir

1-Aritmetik toplama ve çıkarma
devreleri

sayı ve tam toplayıcılar

→ yori ve tam gürmeler
→ yori ve tam gürmeler
→ toplama ve gürme devreleri

2- Multiplexer (Jedinciler)
MUX

3- Demultiplexer (Dopitular)
DEM

4- Kod Gözüçüler (Decoderler)

5- Kodlayıcılar (Encoderler)

6- ALU (Arithmetic logic unit)

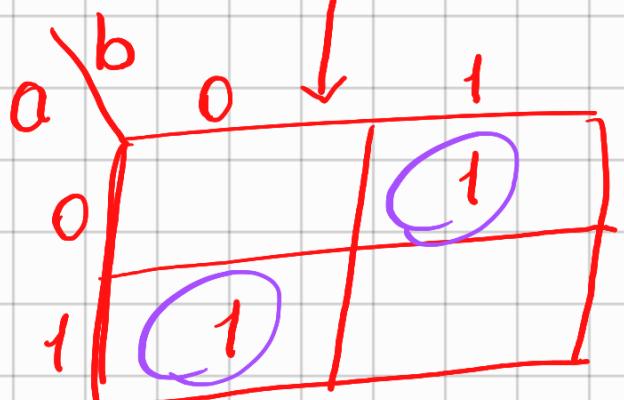
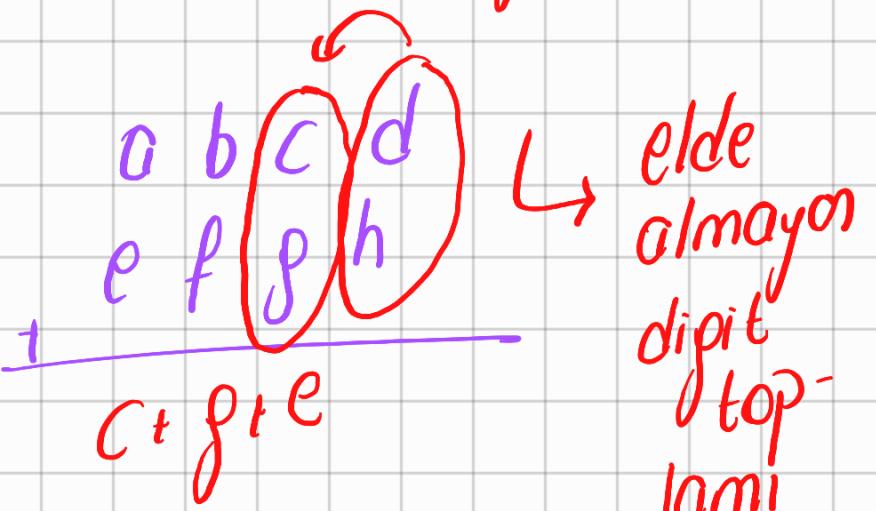
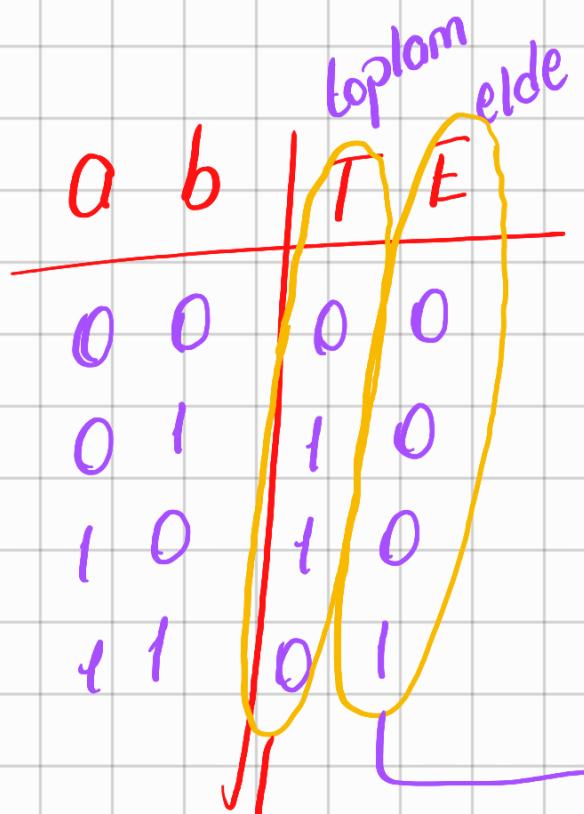
6- ALU (Arithmetic logic unit)

7- 7 segment display

1- Aritmetik toplama / gürme devreleri

1A) yori toplayıcı (half adder)

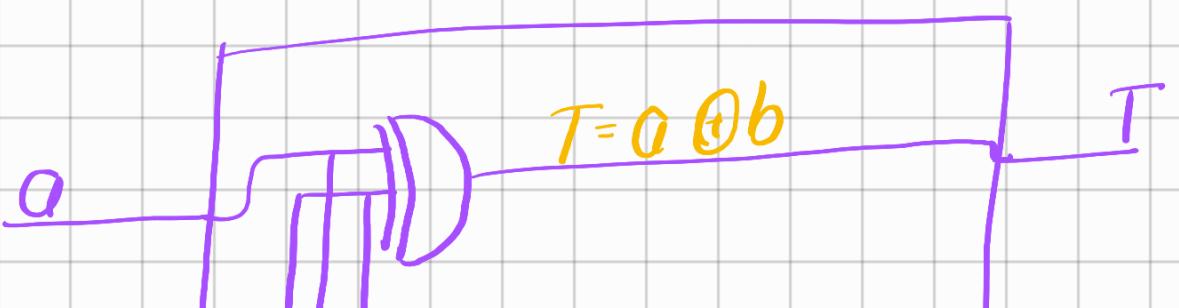
→ tek digitlik sayıda
no yapabiliyor

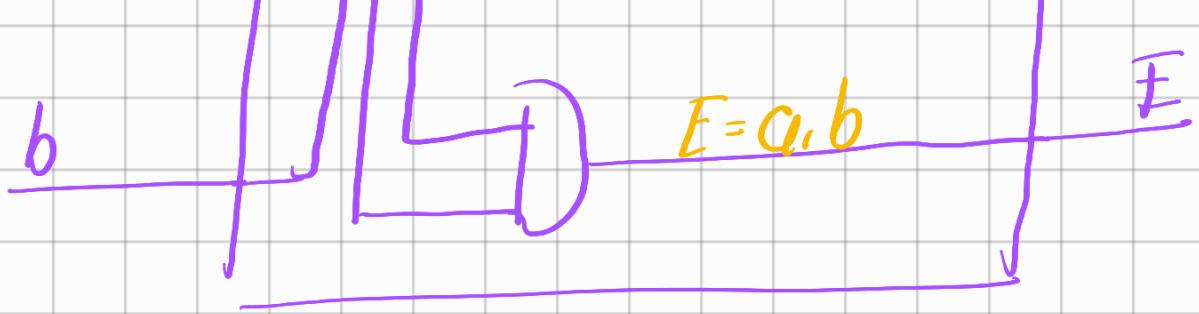


XOR

$$T = a'b + b'a$$

$$T = a \oplus b$$



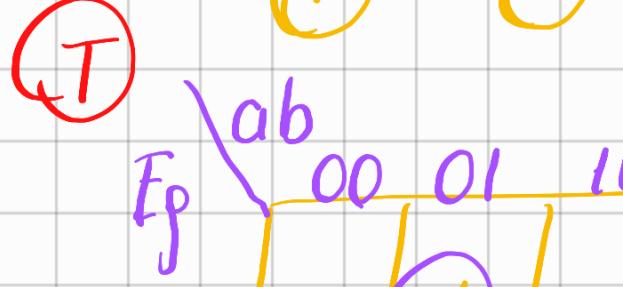


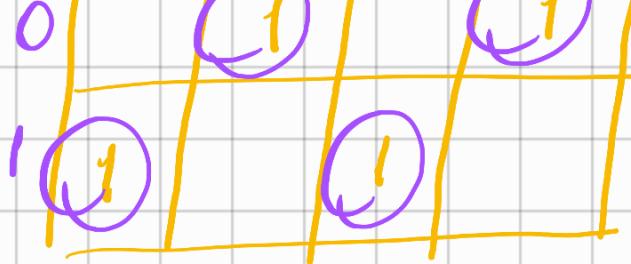
1-B) Tam topolojia (full adder) \rightarrow hem eldeyi olur hem de toplojia-yi yapar

$E_p \oplus b$ | toplam elde

0 0 0	0	0
0 0 1	1	0
0 1 0	1	0
0 1 1	0	1

1 0 0	1	0
1 0 1	0	1
1 1 0	0	1
1 1 1	1	1

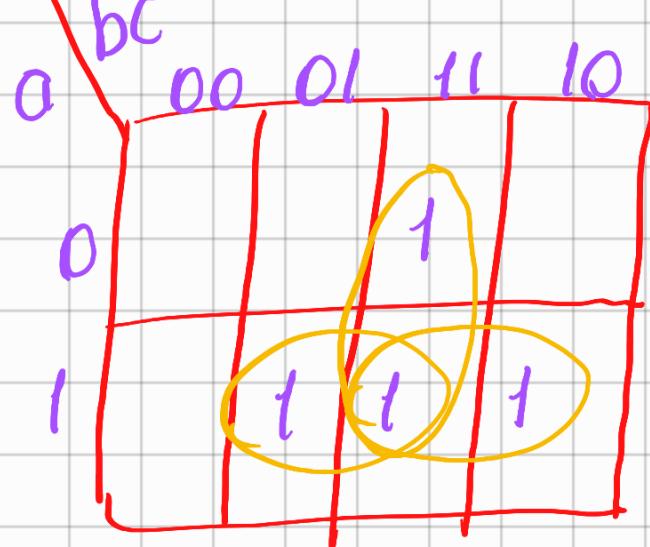




$$T \rightarrow T = E_g \cdot a' \cdot b' + \bar{E}_g \cdot a' \cdot b' + E_g \cdot a \cdot b + \bar{E}_g \cdot a \cdot b'$$

E

$$\rightarrow a \oplus b \oplus E_g$$



yani full adder
yapıcaz da
Şimdi yapalım
2 fonk. 1. yonca
bok 1. 2.

$$E = a \cdot b + E_g (a + b)$$

$$C = \underbrace{E_g}_{}$$

2 Kapılı XOR

$$\rightarrow a' \cdot b + b' \cdot a$$

3 Kapılı XOR

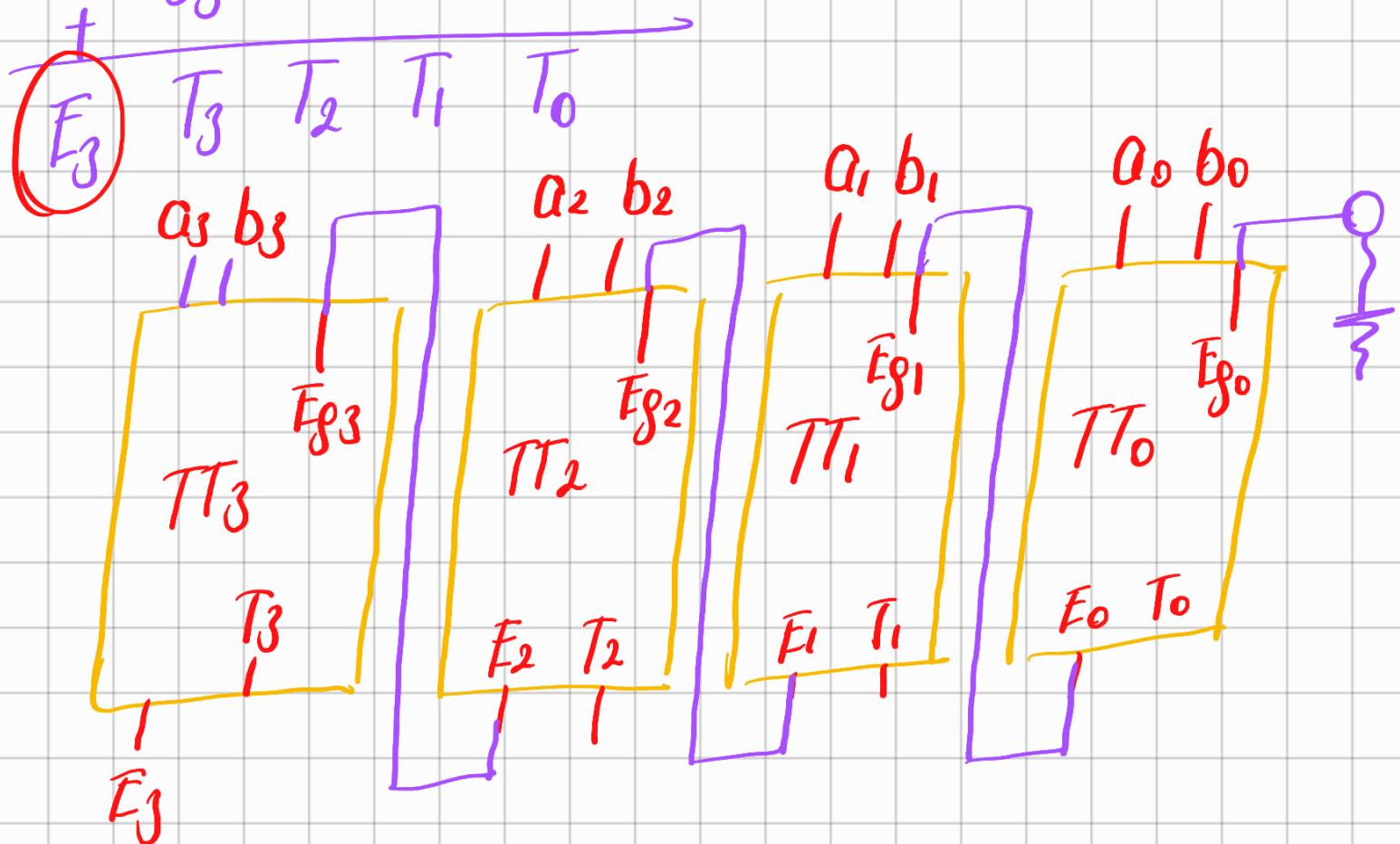
$$a'b'c + a'b'c' + abc + ab'c'$$

Burda bir Tey XOR

ÖR

4 bitlik 2 yayının toplamını
bulan bir paralel toplayıcı
derresinin

$$\begin{matrix} a_3 & a_2 & a_1 & a_0 \\ b_3 & b_2 & b_1 & b_0 \end{matrix}$$



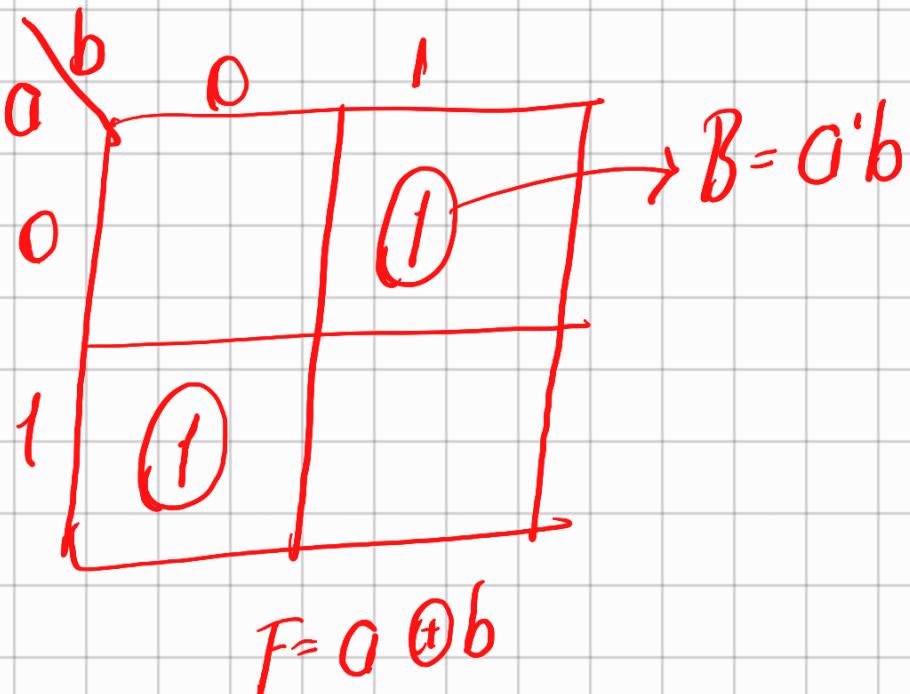
4 bitlik

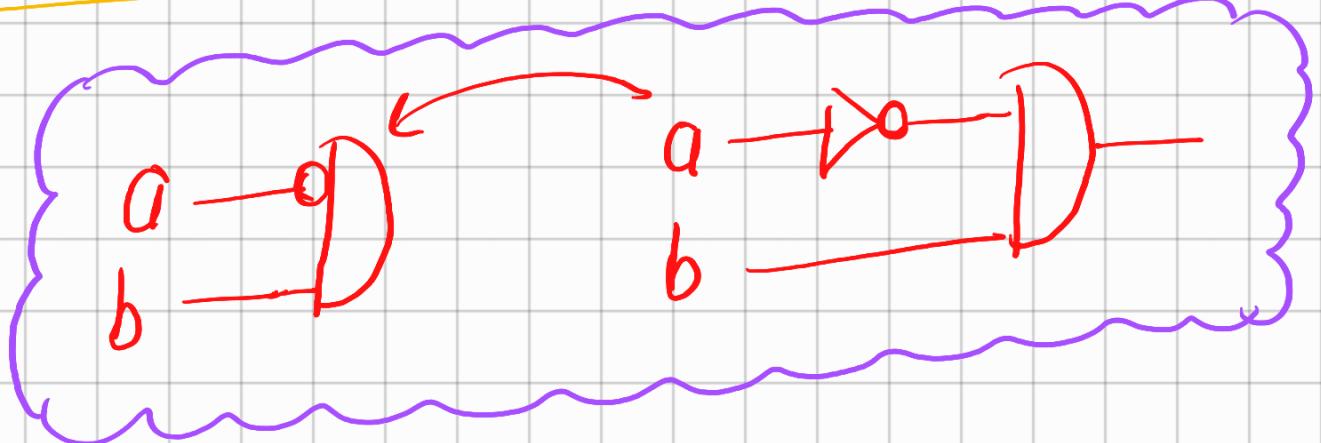
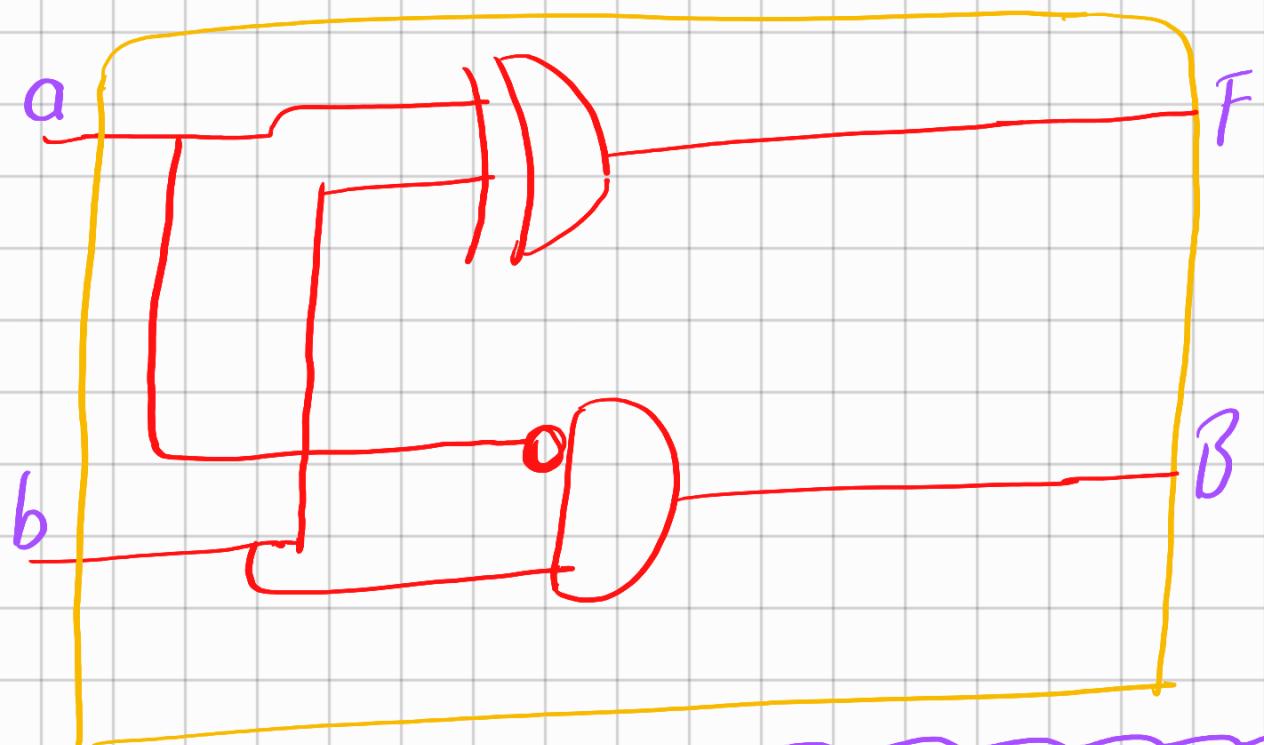
~~Paralel toplayıcı~~

2A) Yarı Gitörük (half subtracter)

a	b	(fork)	F	Borg
0	0	0	0	0
0	1	1	1	0
1	0	1	0	1
1	1	0	0	0

$$\begin{array}{r} \text{B} \\ \overline{\text{ab}} \xrightarrow{t} 02 \\ \overline{\text{cd}} \\ = \overline{\text{F}} \\ \overline{1} \end{array}$$
$$\begin{array}{r} \text{B} \\ \overline{\text{ab}} \xrightarrow{t} 02 \\ \overline{\text{cd}} \\ = \overline{\text{F}} \\ \overline{1} \end{array}$$
$$\begin{array}{r} \text{B} \\ \overline{\text{ab}} \xrightarrow{t} 02 \\ \overline{\text{cd}} \\ = \overline{\text{F}} \\ \overline{1} \end{array}$$
$$\begin{array}{r} \text{B} \\ \overline{\text{ab}} \xrightarrow{t} 02 \\ \overline{\text{cd}} \\ = \overline{\text{F}} \\ \overline{1} \end{array}$$

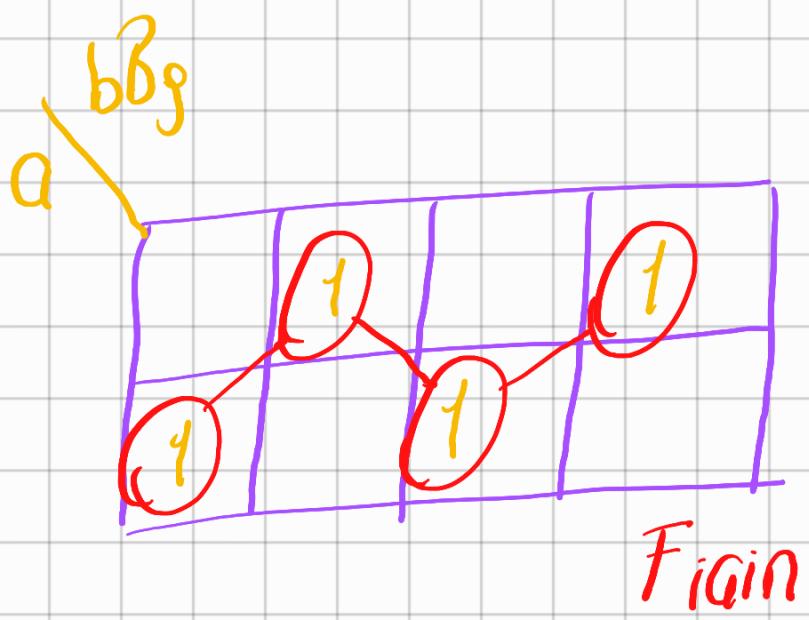




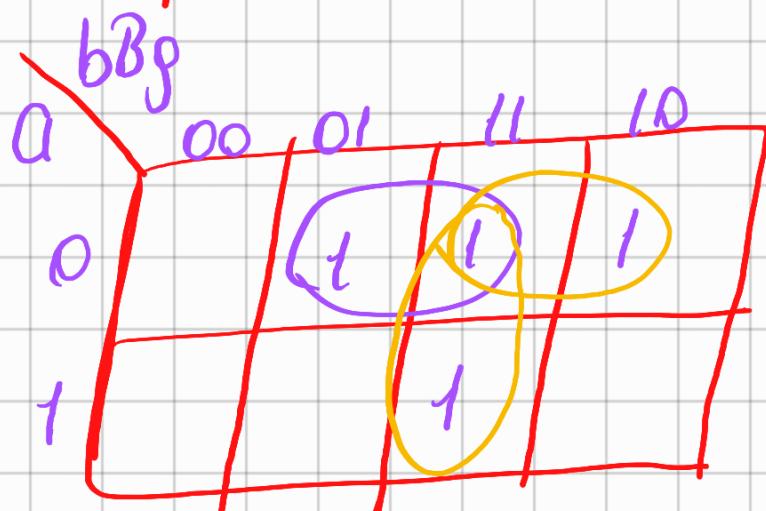
2B) Tom Gitaria (full subtracter)

a	b	B_g	fark	Bog
0	0	0	0	0
0	0	1	1	1
0	1	0	1	

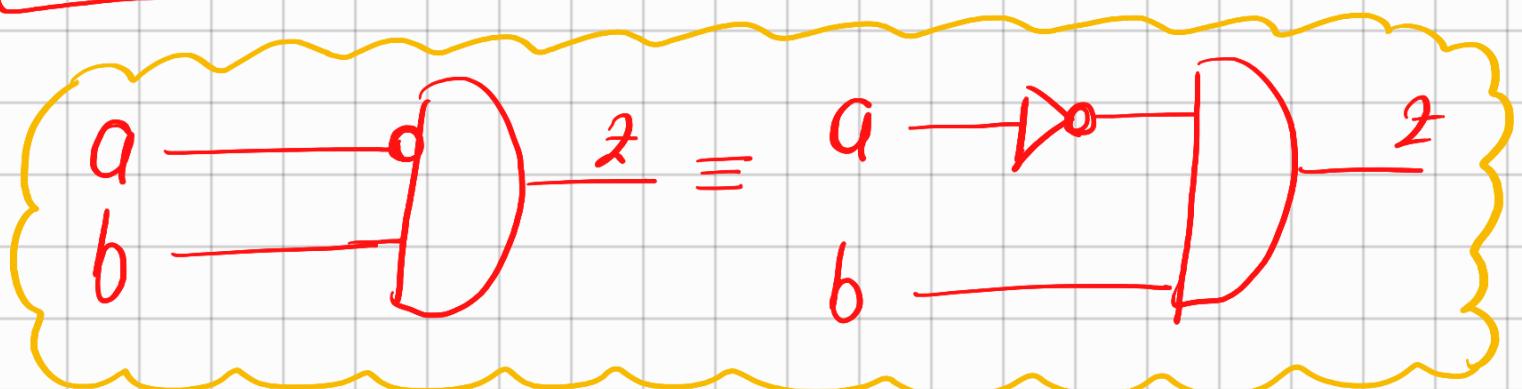
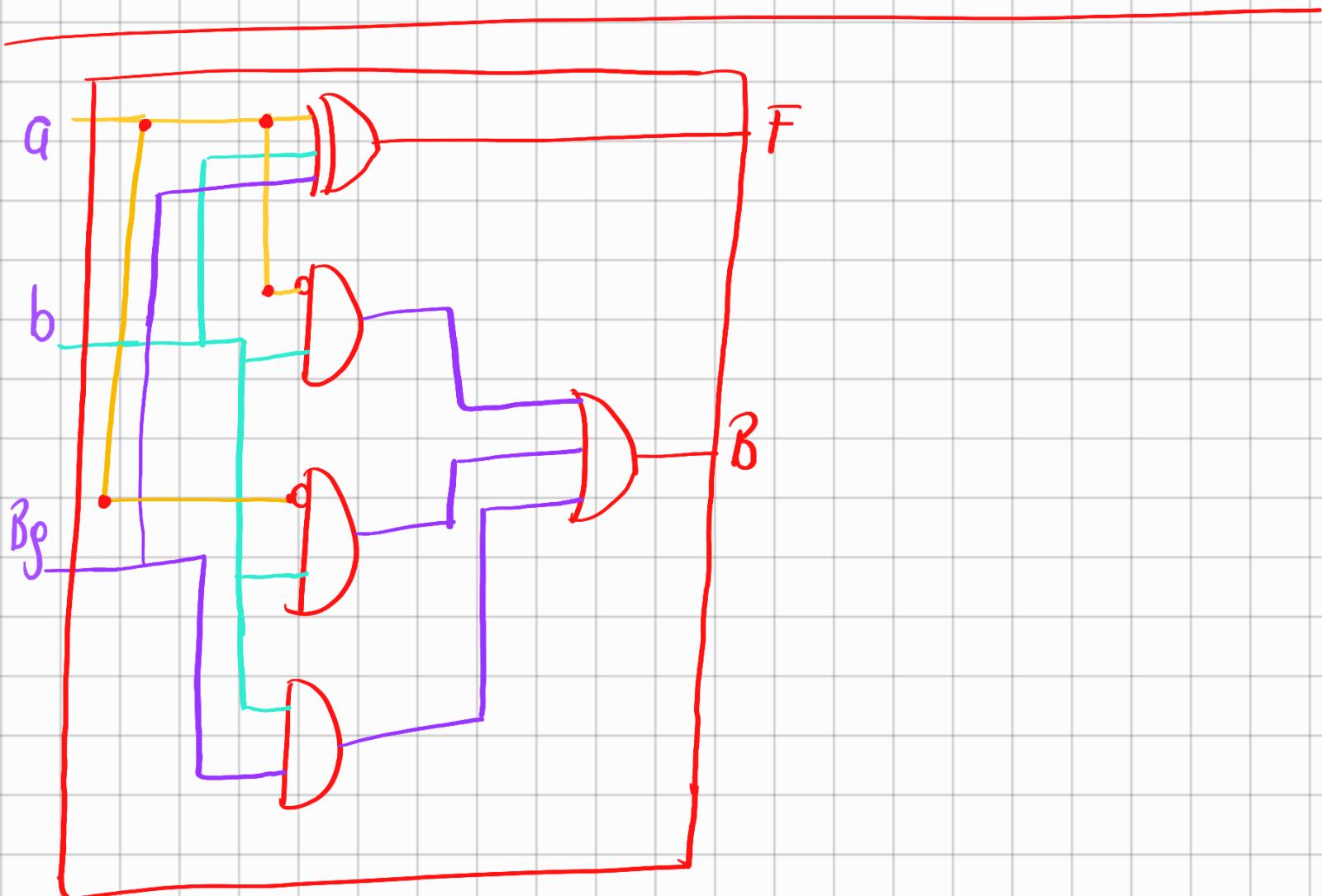
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1



$$F = a \oplus b \oplus c$$

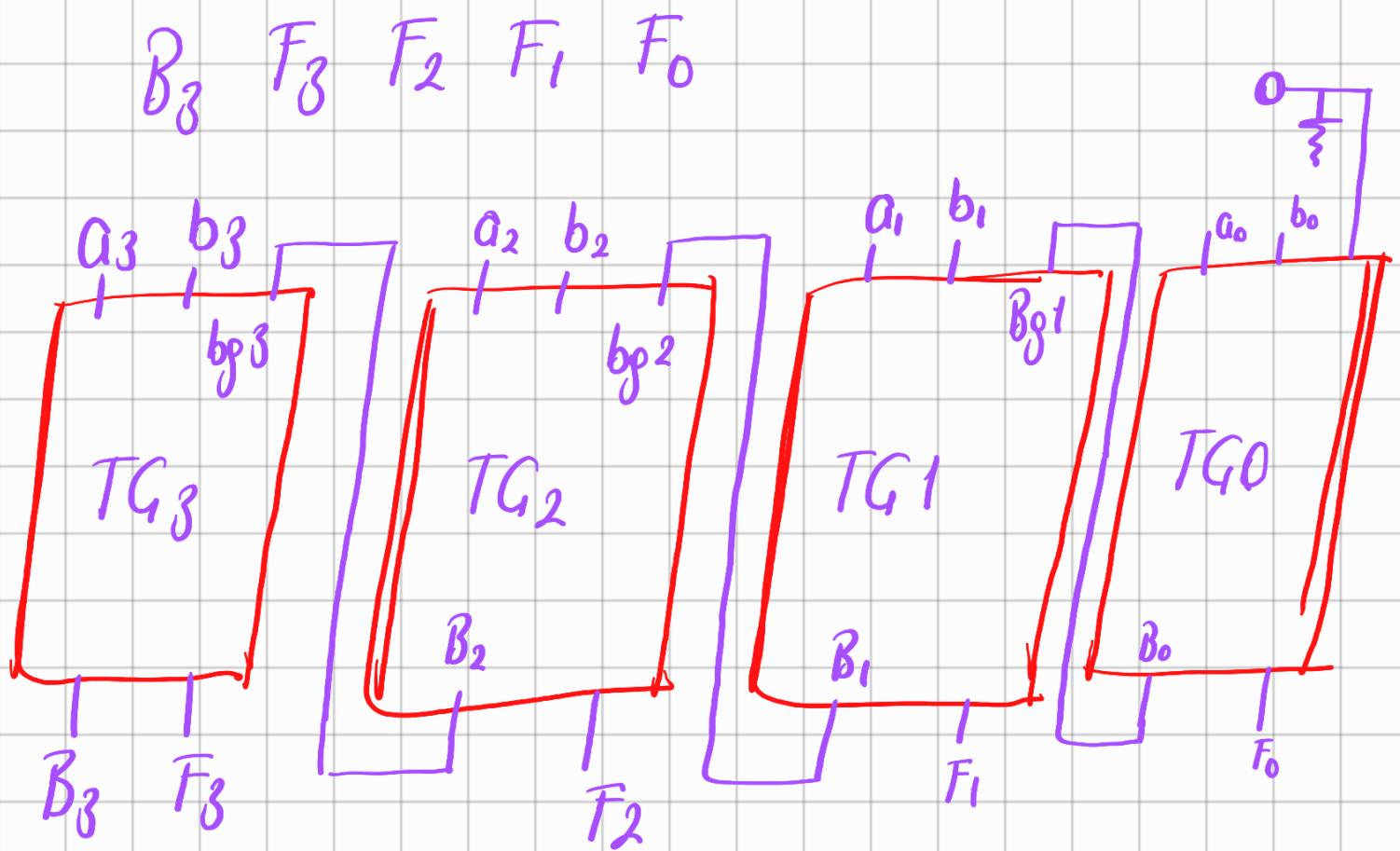


$$B = A'b + A'B_g + B B_g + B_g(A' + b)$$



Örnek → 4 bitlik çıkarma

$a_3 \ a_2 \ a_1 \ a_0$
 $b_3 \ b_2 \ b_1 \ b_0$
 -
 $a_3 \ a_2 \ a_1 \ a_0$
 $b_3 \ b_2 \ b_1 \ b_0$



$$\begin{array}{r}
 0000 \\
 1111 \\
 \hline
 0001
 \end{array}$$

$$\begin{array}{r}
 11 \\
 22 \\
 \hline
 -89
 \end{array}$$

3) toplama ve çıkarma derresi
(Adder/Subtractor)

a b c d
e f g h

(ter
derresi)

a b c d
(e f g h) iki tüm

e' f' g' h'



ikiye tümleyen



