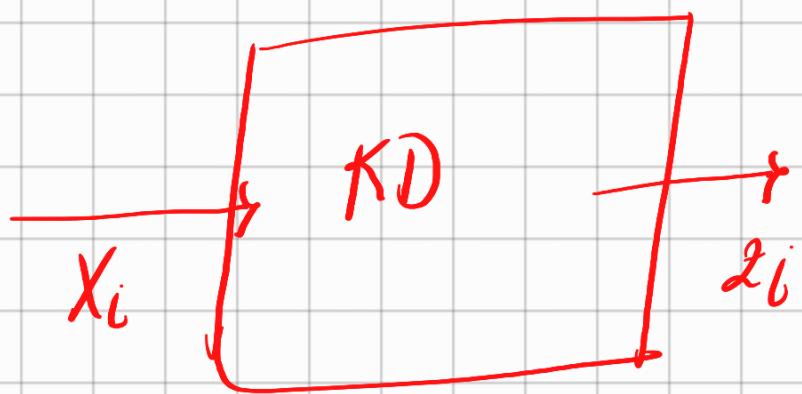


Kombinezonal Devreler

Kombinezonal tümlesik devreler



Medium
JCALE
interpretation
(orta ölçetli
interpretasyon devre-
leri)

Bunlar
hzur
devrelerdir

1-Aritmetik toplama ve çıkarma
devreleri

sayı ve tam toplayıcılar

→ yarılıcılardan
→ yarılıcılardan
→ toplama ve çıkarma devreleri

2- Multiplexer (Jedinciler)
MUX

3- Demultiplexer (Dopitcular)
DEM

4- Kod Gözüçüler (Decoderler)

5- Kodlayıcılar (Encoderler)

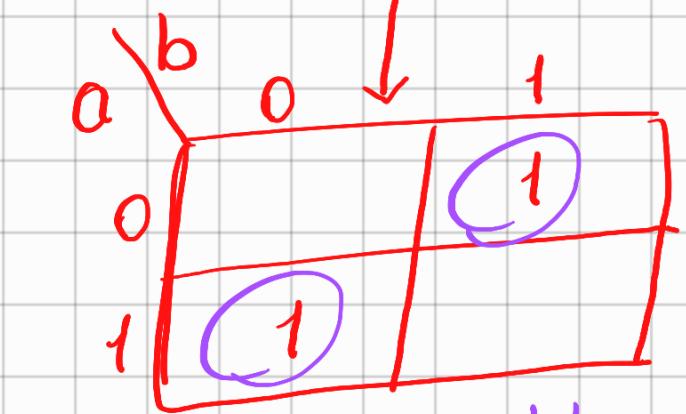
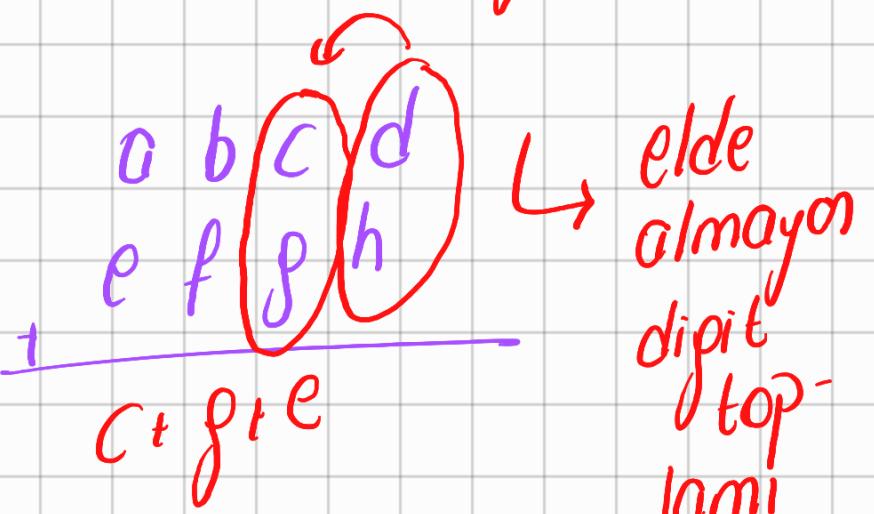
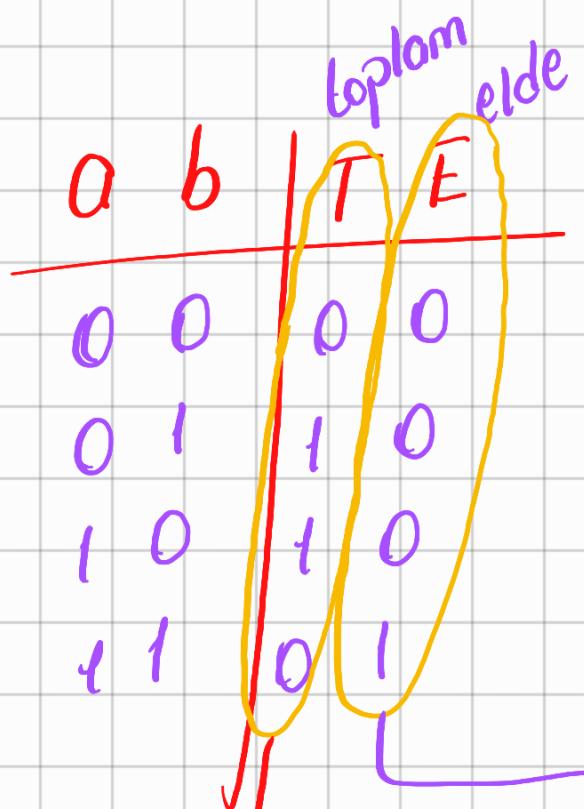
6- ALU (Arithmetic logic unit)

7- 7 segment display

1- Aritmetik toplama / çıkarma devreleri

1A) yarılıcı toplayıcı (half adder)

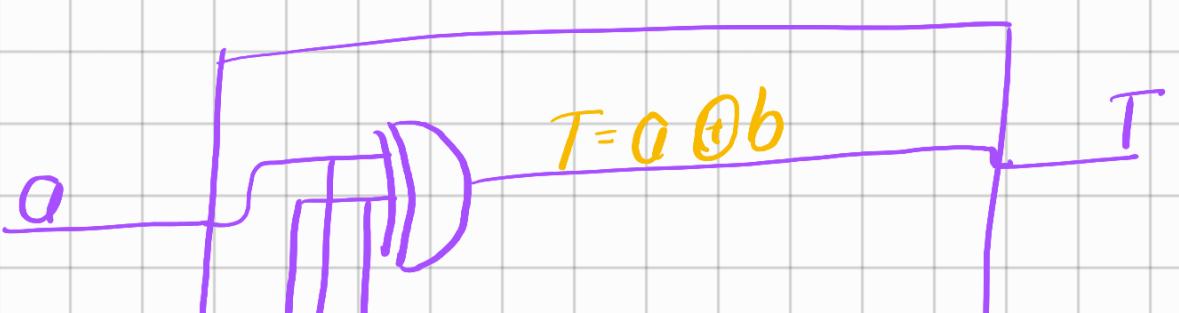
→ tek digitlik sayıda
no yapabiliyor

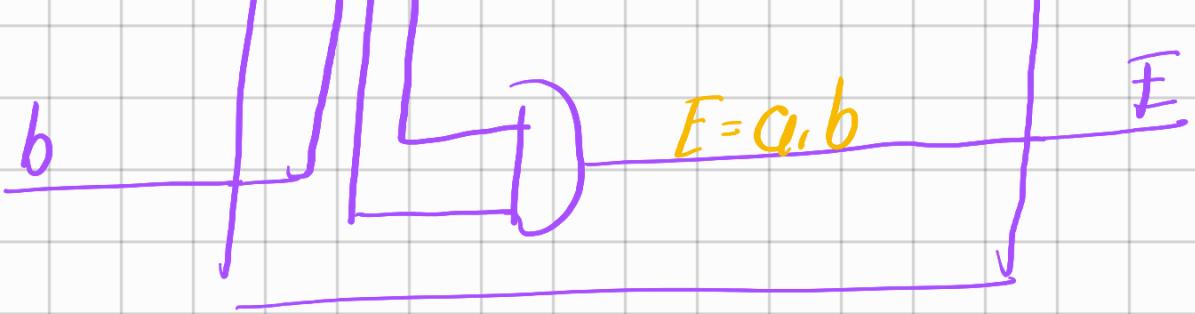


XOR

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

$$T = a \oplus b$$





1-B) Tam toplayıcı (full adder) → hem eldeyi olur hem de toplamı 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) (E)

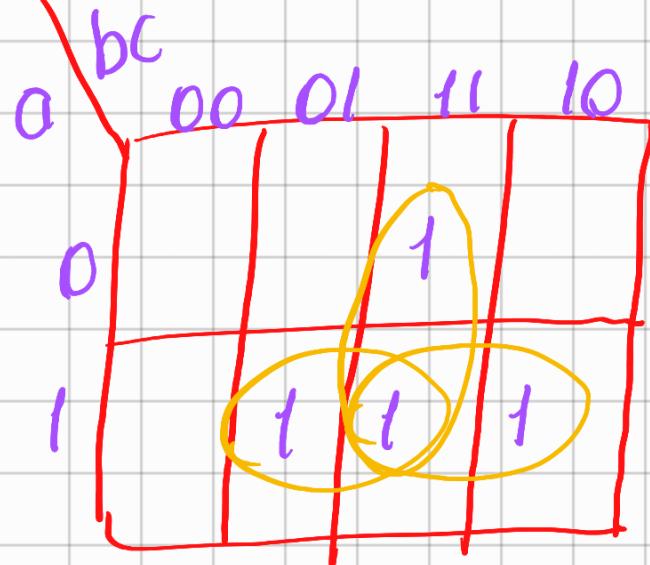
E_p \ ab
00 01 11 10



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

E

$$\rightarrow a + b + E_g$$



yani full adder
yapıcaz da
Şimdi yapalım
2 fonk 2 yarına
bölüşeceğiz

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

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

2 Kapılı XOR

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

3 Kapılı XOR

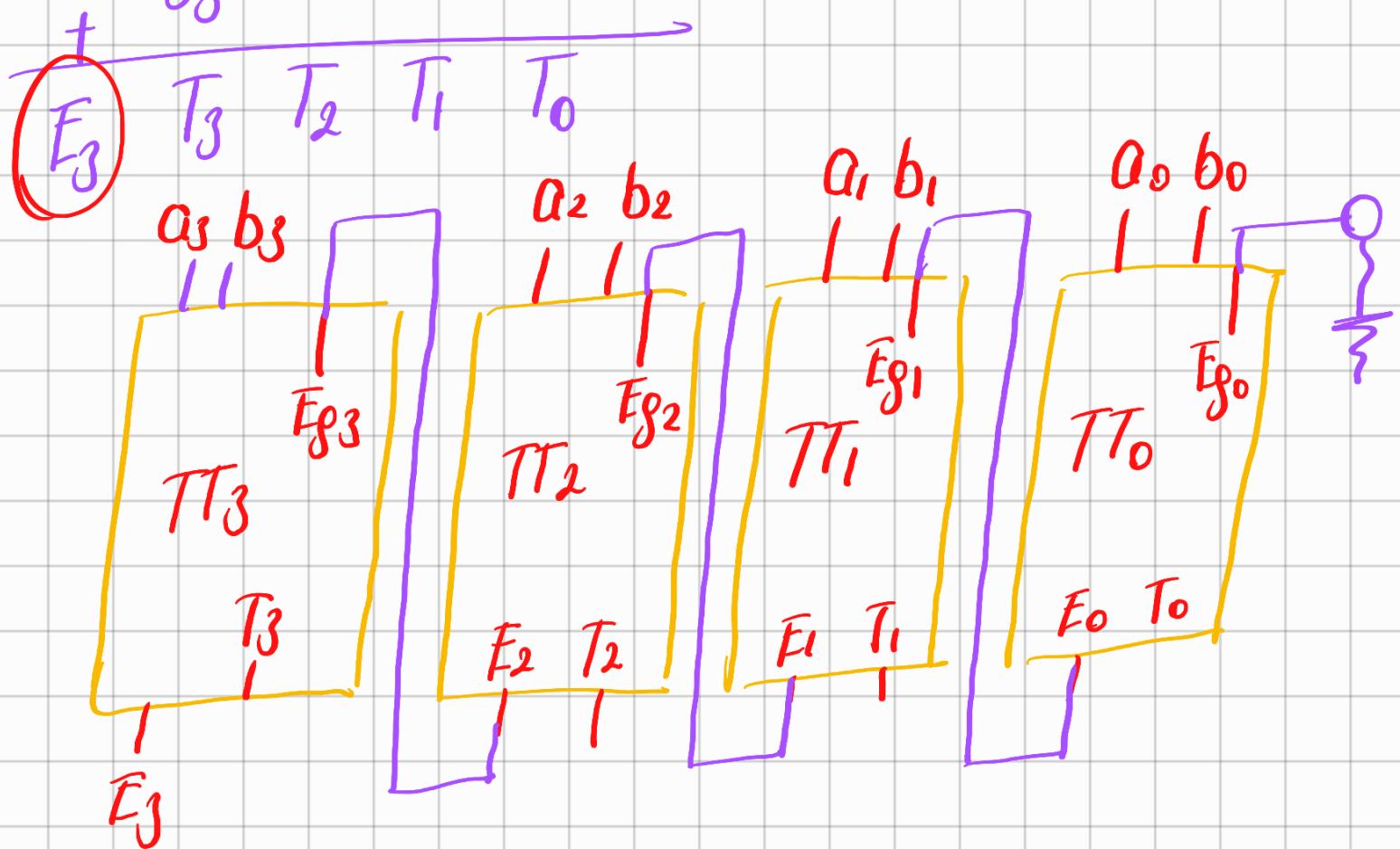
$$a'b'c + a'b'c' + abc + ab'c'$$

Burda bir Tey XOR

ÖR

4 bitlik 2 yayının toplamını
bulan bir paralel toplayıcı
derresinin

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



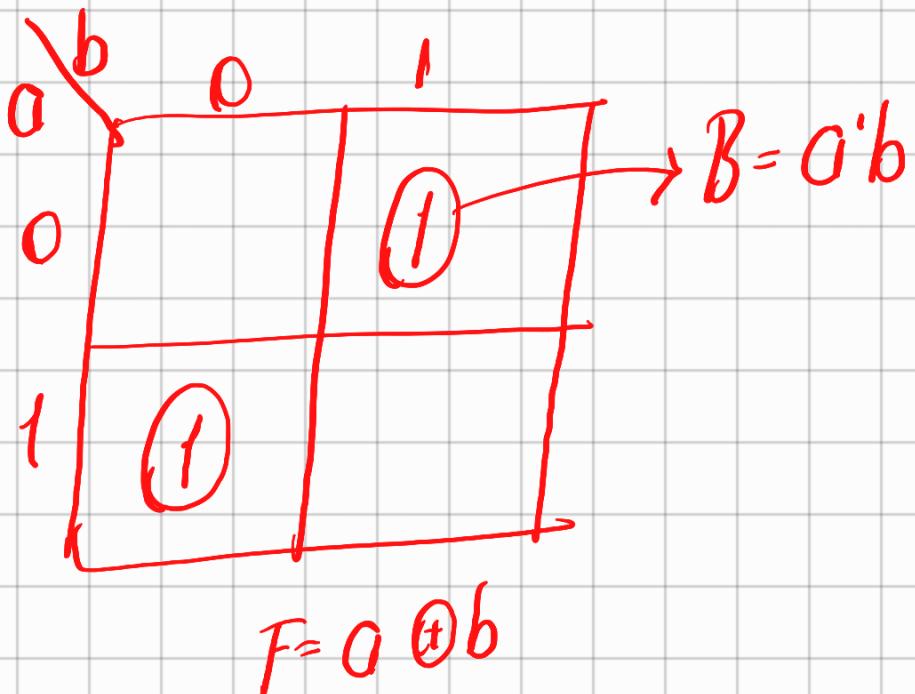
4 bitlik

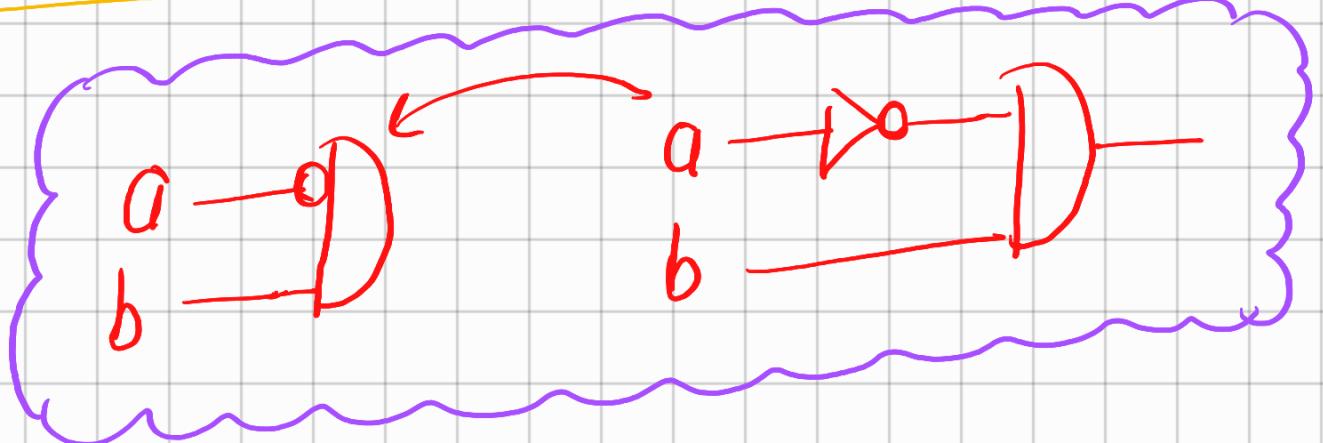
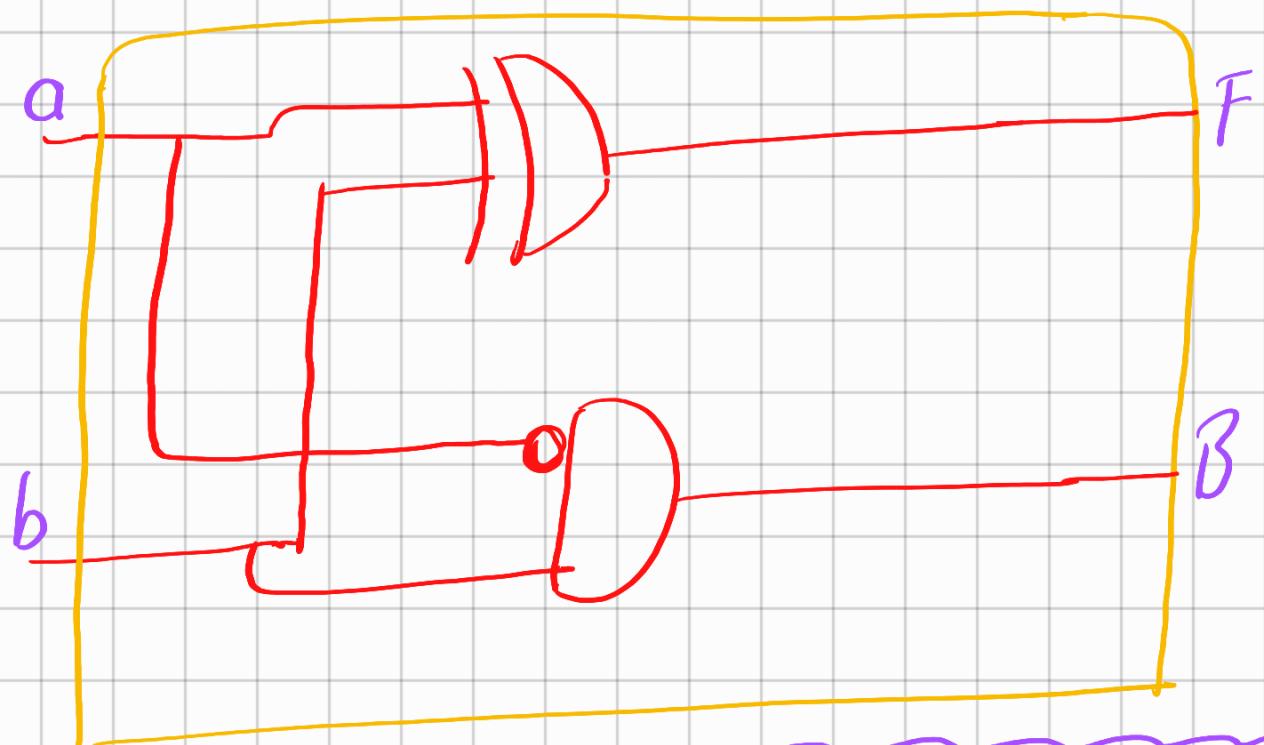
~~Paralel toplayıcı~~

2A) Yarı Gitörük (half subtracter)

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

$$\begin{array}{r} \text{B} \\ \overline{\text{ab}} \xrightarrow{+} \text{02} \\ \text{cd} \\ \hline \end{array}$$
$$= \frac{\text{F}}{\text{1}} = \frac{1}{1}$$
$$\begin{array}{r} \text{1} \\ \overline{\text{10}}^2 \\ \text{01} \\ \hline \text{1} \end{array}$$

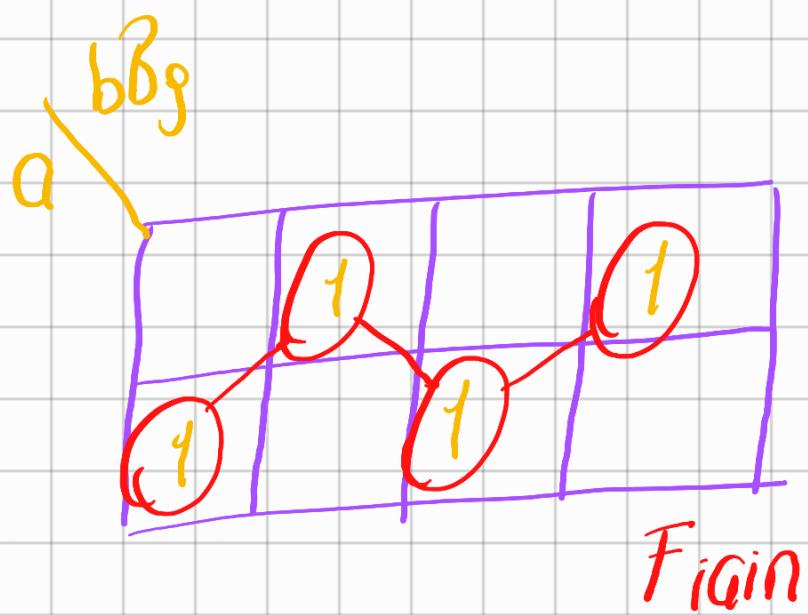




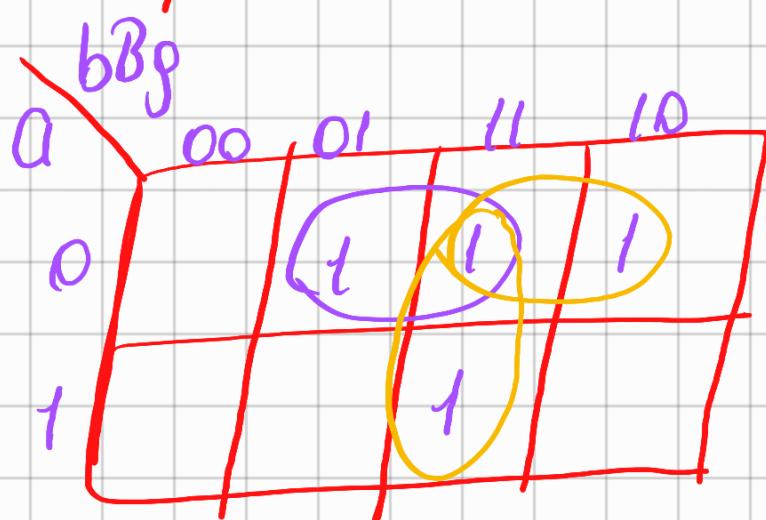
2B) Tom Gitaria (full subtracter)

a	b	B_g	fark	Bog
			F	B
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1

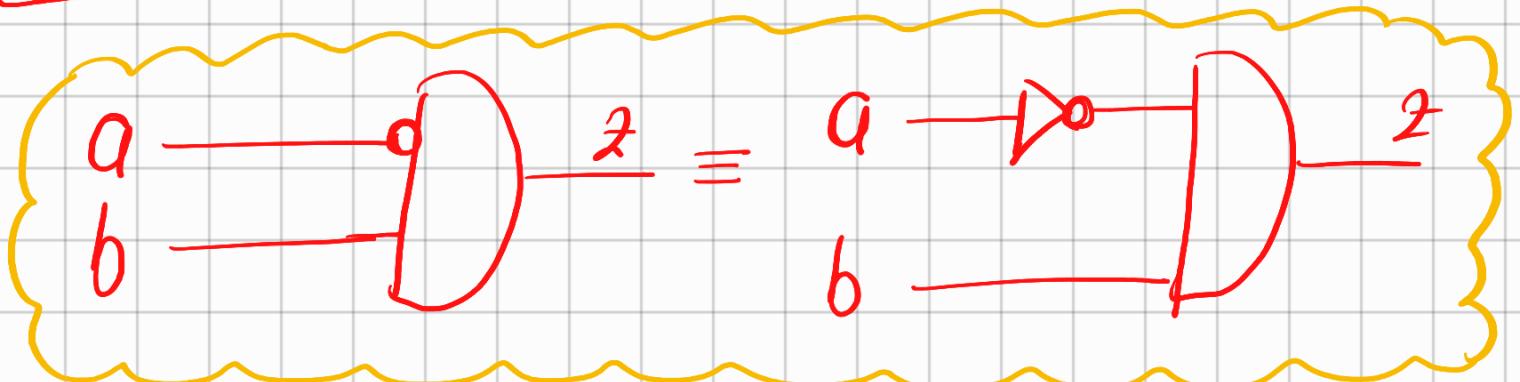
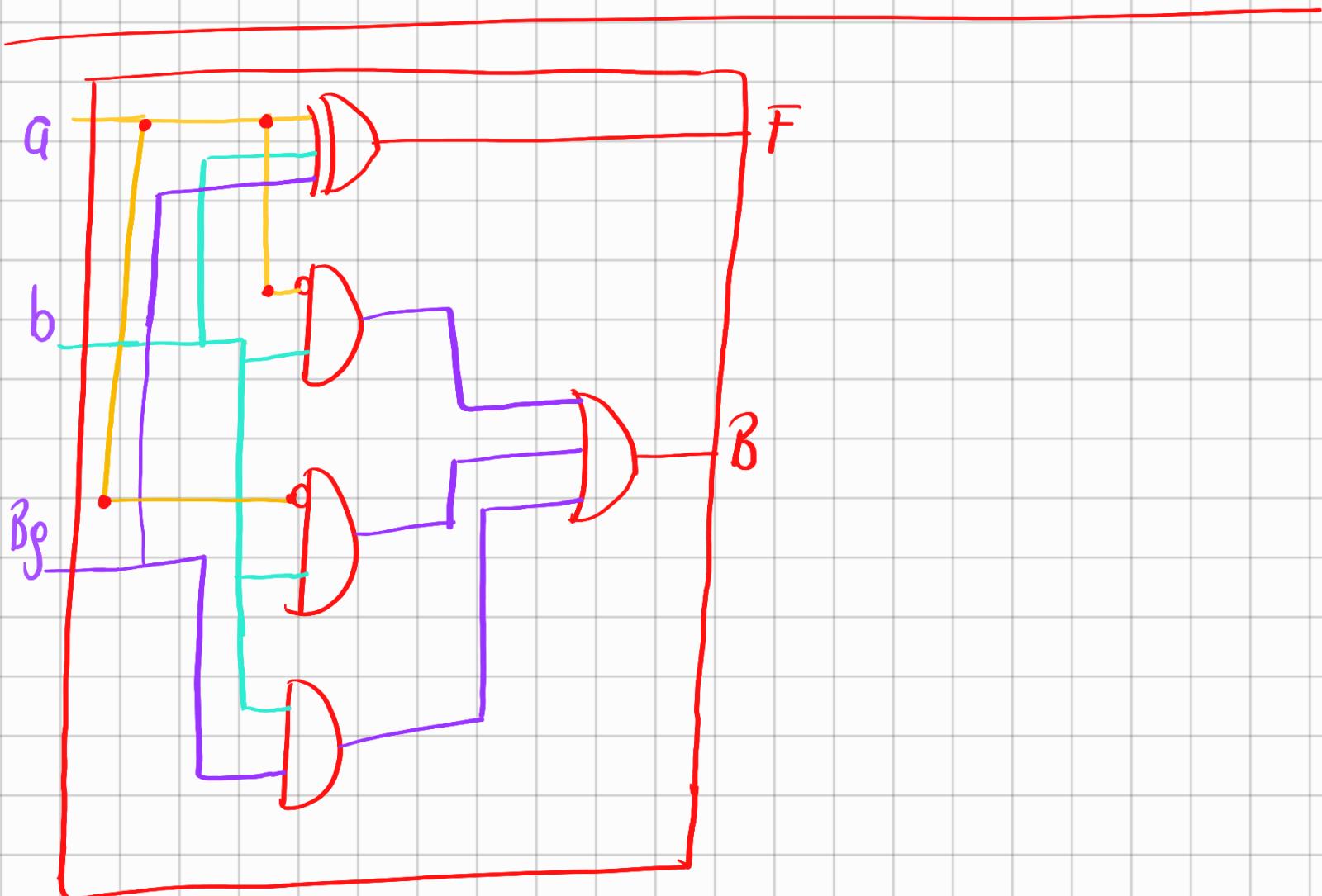
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1



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

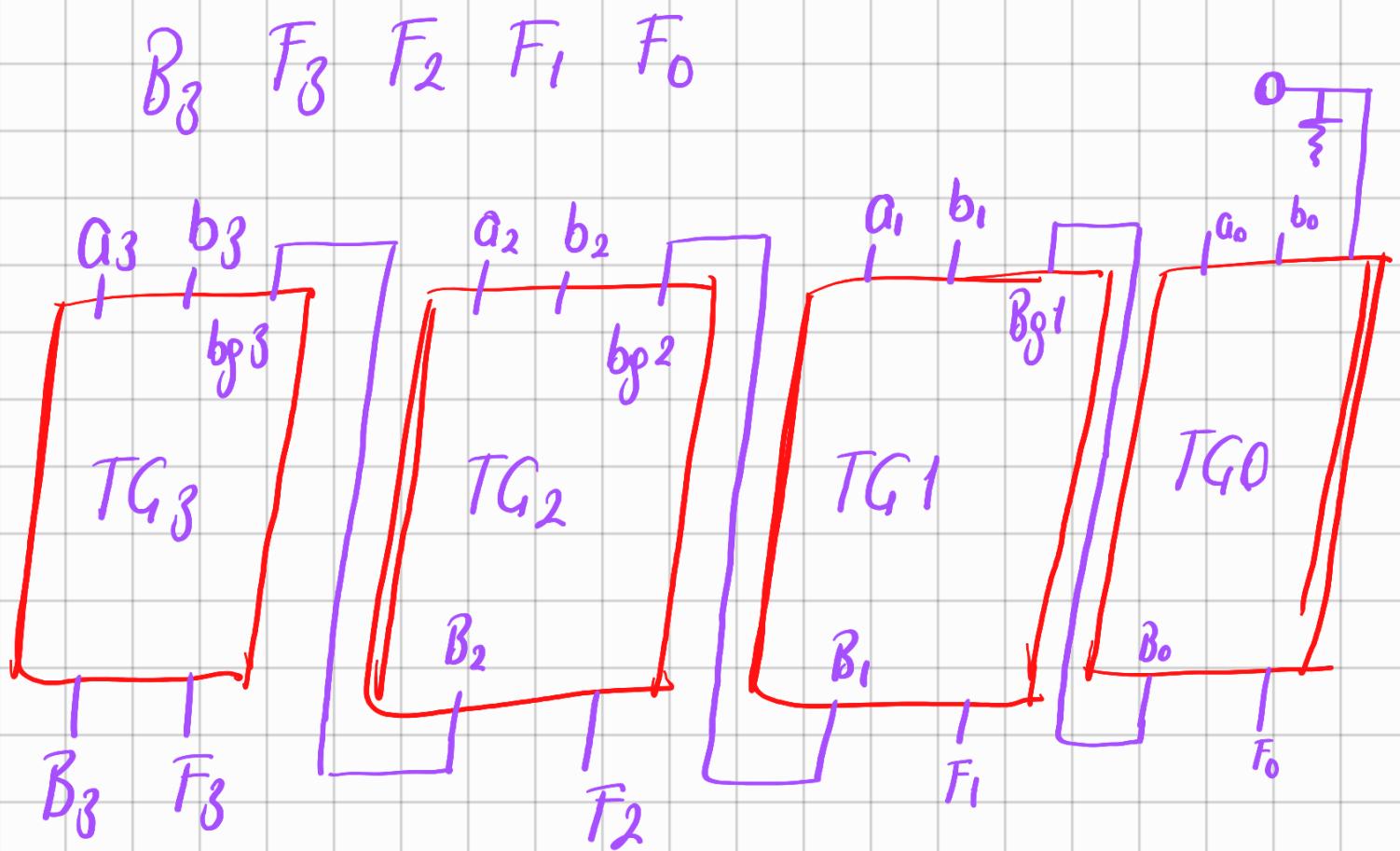


$$B = A'b + A'Bg + B'Bg + Bg(A' + b)$$



Örnek → 4 bitlik eklama

$a_3 \ a_2 \ a_1 \ a_0$
 $b_3 \ b_2 \ b_1 \ b_0$
 -
 $\underline{\quad}$



$$\begin{array}{r}
 00000 \\
 1111 \\
 \hline
 0001
 \end{array}
 \quad
 \begin{array}{r}
 11 \\
 22 \\
 \hline
 -89
 \end{array}$$

3) toplama ve çıkarma derresi
 (Adder/Subtractor)

$$\begin{array}{c} \underline{\quad a \ b \ c \ d \quad} \\ - \underline{\quad e \ f \ g \ h \quad} \end{array}$$

ter
derresi)

$$\begin{array}{c} \underline{\quad a \ b \ c \ d \quad} \\ + \underline{\quad (e \ f \ g \ h) \quad} \end{array}$$

iki tüm

$$\begin{array}{c} \underline{\quad e' \ f' \ g' \ h' \quad} \\ + \underline{\quad , \quad} \end{array}$$

ikiye tümleyen

