Ertuğrul KANTAR
05190000086
Soluşul

Ödev 6

1) a-)

	A	B	C	F
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	0
7	1	1	1	0

A \ B	0	1	3	2
0	1	1	0	1
4	1	0	0	0

C

(0,1) 'den → A'B'
(0,4) 'ten → B'C'
(0,2) 'den → A'C'

$F = A'B' + A'C' + B'C'$

b-)

	A	B	C	F	G	E
0	0	0	0	0	0	1
1	0	0	1	0	1	0
2	0	1	0	0	1	1
3	0	1	1	1	0	0
4	1	0	0	0	1	1
5	1	0	1	1	0	0
6	1	1	0	1	0	0
7	1	1	1	1	1	0

F

A \ B	0	1	3	2
0	0	0	1	0
4	0	1	1	1

C

G

A \ B	0	1	3	2
0	0	1	0	1
4	1	0	1	0

C

E

A \ B	0	1	3	2
0	1	0	0	1
4	1	0	0	1

C

F: (5,7) 'den → AC
(6,7) 'den → AB
(3,7) 'den → BC
} $F = AB + AC + BC$

G: (1) 'den → A'B'C
(2) 'den → A'BC'
(4) 'ten → AB'C'
(7) 'den → ABC
} $G = A'B'C + A'BC' + AB'C' + ABC$

E: (0,4,2,6) 'dan → C' ; $E = C'$

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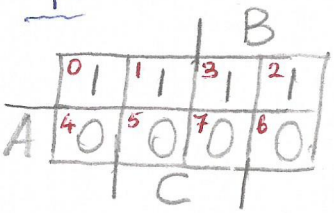
Ertuğrul

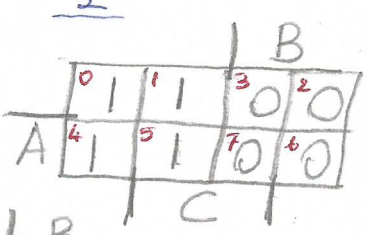
c-)

	A	B	C	F	E	G
0-	0	0	0	1	1	1
1-	0	0	1	1	1	0
2-	0	1	0	1	0	1
3-	0	1	1	1	0	0
4-	1	0	0	0	1	1
5-	1	0	1	0	1	0
6-	1	1	0	0	0	1
7-	1	1	1	0	0	0

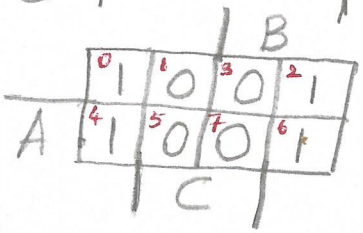
F



E



G



F: (0,1,3,2)'den → A'
E: (0,1,4,5)'den → B'
G: (0,2,4,6)'dan → C'

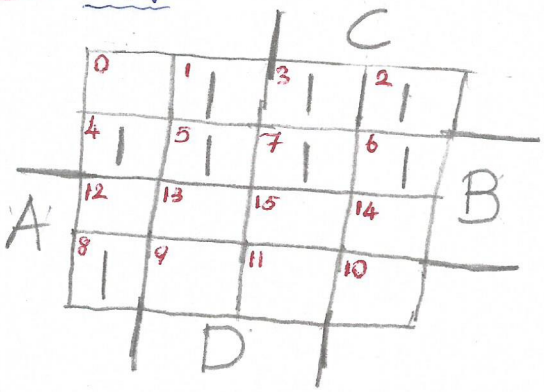
F=A'
E=B'
G=C'

d-)

	A	B	C	D	W	X	Y	Z
0-	0	0	0	0	0	0	0	0
1-	0	0	0	1	1	1	1	1
2-	0	0	1	0	1	1	1	0
3-	0	0	1	1	1	1	0	1
4-	0	1	0	0	1	1	0	1
5-	0	1	0	1	1	0	1	0
6-	0	1	1	0	1	0	1	1
7-	0	1	1	1	1	0	1	0
8-	1	0	0	0	1	0	0	1
9-	1	0	0	1	0	1	0	0
10-	1	0	1	0	0	1	1	1
11-	1	0	1	1	0	1	1	0
12-	1	1	0	0	0	1	0	1
13-	1	1	0	1	0	1	0	0
14-	1	1	1	0	0	0	1	1
15-	1	1	1	1	0	0	1	0

Hocam burada "1000"in 2's comp.i yine "1000" oluyor 4 bitte. Ne yapacağımı bilemedim, öyle bıraktım.

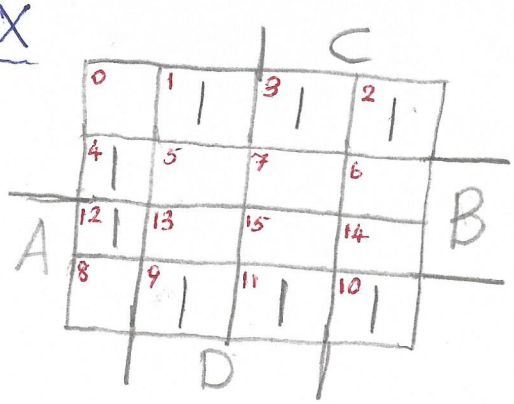
W



(1,3,5,7)'den → A'D
(2,3,6,7)'den → A'C
(4,5,6,7)'den → A'B
(8)'den → AB'C'D'

W = A'B + A'C + A'D + AB'C'D'

X



(3,2,11,10)'dan → B'C
(1,3,9,11)'den → B'D
(4,12)'den → BC'D'

X = B'C + B'D + BC'D'

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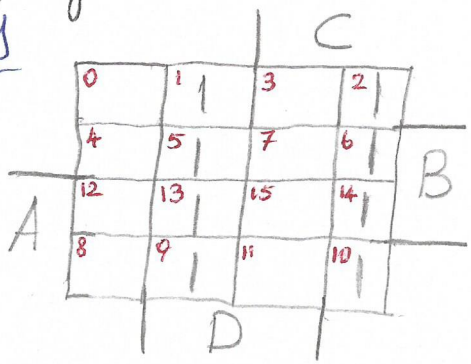
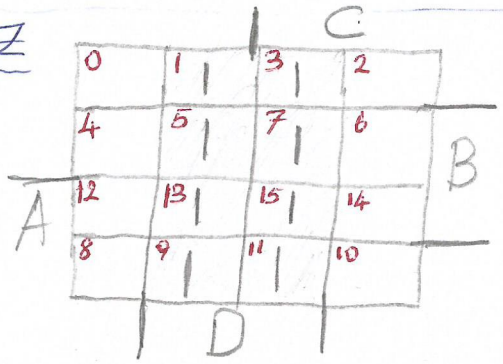
y



(1,5,9,13) → C'D
(2,6,10,14) → CD'
y = C'D + CD'

z



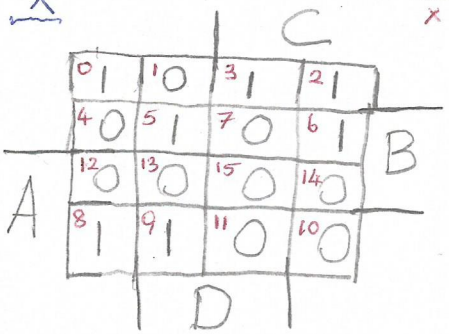
• Tarafı Alandan
z = D

e-)

	A	B	C	D	X
0-	0	0	0	0	1
1-	0	0	0	1	0
2-	0	0	1	0	1
3-	0	0	1	1	1
4-	0	1	0	0	1
5-	0	1	0	1	0
6-	0	1	1	0	1
7-	0	1	1	1	1
8-	1	0	0	0	1
9-	1	0	0	1	1
input > 10					0

'1' olduğu durumlar:

X



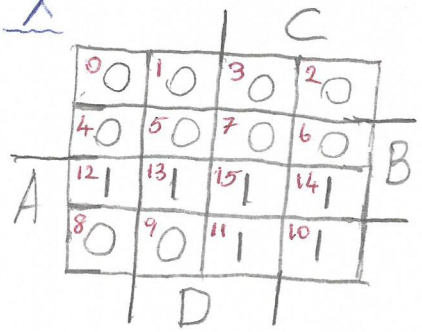
(0,2) → A'B'D'
(2,6) → A'CD'
(2,3) → A'B'C
(8,9) → AB'C'
(5) → A'BC'D

X = A'B'D + A'CD' + A'B'C + AB'C' + A'BC'D

f-)

	A	B	C	D	X
	10 > input				0
10-	1	0	1	0	1
11-	1	0	1	1	1
12-	1	1	0	0	1
13-	1	1	0	1	1
14-	1	1	1	0	1
15-	1	1	1	1	1

X



(12,13,14,15) → AB
(10,11,14,15) → AC

X = AB + AC

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9-)

	A	B	C	D	K (BCD 2. basamak)	L (BCD 2. basamak)	M (BCD 2. basamak)	N (BCD 2. basamak)	W (BCD 1. basamak)	X (BCD 1. basamak)	Y (BCD 1. basamak)	Z (BCD 1. basamak)
0-	0	0	0	0	0	0	0	0	0	0	0	0
1-	0	0	0	1	0	0	0	0	0	0	1	1
2-	0	0	1	0	0	0	0	0	0	1	1	0
3-	0	0	1	1	0	0	0	0	1	0	0	1
4-	0	1	0	0	0	0	0	1	0	0	1	0
5-	0	1	0	1	0	0	0	1	0	1	0	1
6-	0	1	1	0	0	0	0	1	1	0	0	0
7-	0	1	1	1	0	0	1	0	0	0	0	1
8-	1	0	0	0	0	0	1	0	0	1	0	0
9-	1	0	0	1	0	0	1	0	0	1	1	1
input>10					X	X	X	X	X	X	X	X

K=0 L=0

*Kullanılmadıklar, Karnaugh da Ø ve X ler olacak. Doğal olarak Ø olacaklar.

M

A \ B \ C D	00	01	11	10
00	0	1	3	2
01	4	5	7	6
11	12 X	13 X	15 X	14 X
10	8 1	9 1	11 X	10 X

(8,9,10,11,12,13,14,15) → A
(7,15) → BCD
M = A + BCD

N

A \ B \ C D	00	01	11	10
00	0	1	3	2
01	4 1	5 1	7 0	6 1
11	12 X	13 X	15 X	14 X
10	8 0	9 0	11 X	10 X

(4,6,12,14) → BD'
(4,5,12,13) → BC'
N = BC' + BD'

W

A \ B \ C D	00	01	11	10
00	0	1	3 1	2
01	4	5	7	6
11	12 X	13 X	15 X	14 X
10	8	9	11 X	10 X

(3,11) → B'CD
(6,14) → BCD'
W = B'CD + BCD'

X

A \ B \ C D	00	01	11	10
00	0	1	3	2
01	4	5	7	6
11	12 X	13 X	15 X	14 X
10	8 1	9 1	11 X	10 X

(5,13) → BC'D
(2,10) → B'CD'
(8,9,10,11,12,13,14,15) → A
X = A + B'CD' + BC'D

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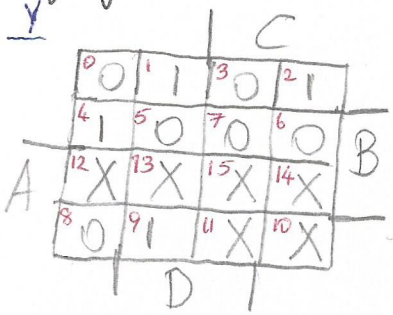
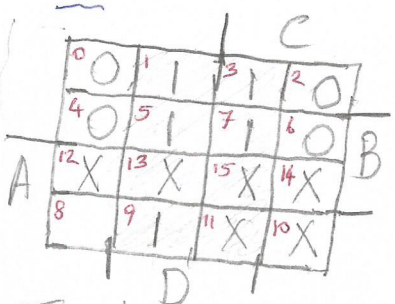
Y



$(1,9) \rightarrow B'C'D$
$(2,10) \rightarrow B'CD'$
$(4,12) \rightarrow BC'D'$
$Y = B'C'D + B'CD' + BC'D'$

Z

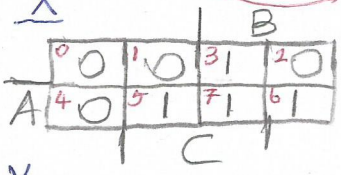


Tarafı Bölgeden $Z = D$

h-)

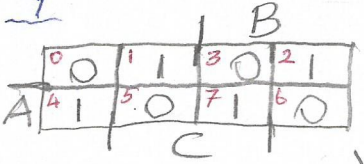
	A	B	C	X	Y
0-	0	0	0	0	0
1-	0	0	1	0	1
2-	0	1	0	0	1
3-	0	1	1	1	0
4-	1	0	0	0	1
5-	1	0	1	1	0
6-	1	1	0	1	0
7-	1	1	1	1	1

X



$(3,7) \rightarrow BC$
$(5,7) \rightarrow AC$
$(6,7) \rightarrow AB$
$X = AB + AC + BC$

Y

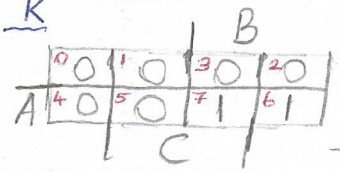


$(1) \rightarrow A'B'C \quad (2) \rightarrow A'BC'$
$(4) \rightarrow AB'C' \quad (7) \rightarrow ABC$
$Y = A'B'C + A'BC' + AB'C' + ABC$

i-)

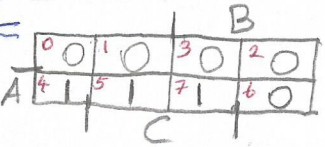
	A	B	C	K	L	M	N	X	Y
0-	0	0	0	0	0	0	0	0	0
1-	0	0	1	0	0	0	0	0	1
2-	0	1	0	0	0	0	1	0	0
3-	0	1	1	0	0	1	0	0	1
4-	1	0	0	0	1	0	0	0	0
5-	1	0	1	0	1	0	0	0	1
6-	1	1	0	1	0	0	1	0	0
7-	1	1	1	1	1	0	0	0	1

K



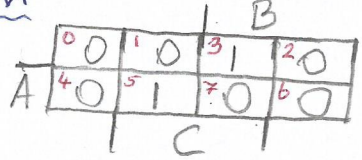
$(6,7) \rightarrow AB$
$K = AB$

L



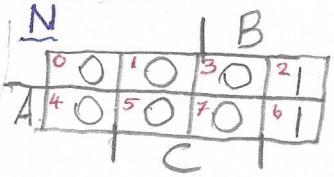
$(4,5) \rightarrow AB'$
$(5,7) \rightarrow AC$
$L = AB' + AC$

M



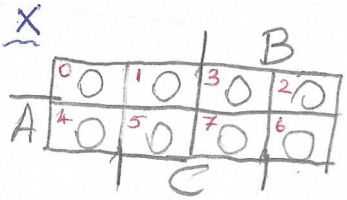
$(5) \rightarrow AB'C$
$(3) \rightarrow A'BC$
$M = AB'C + A'BC$

N



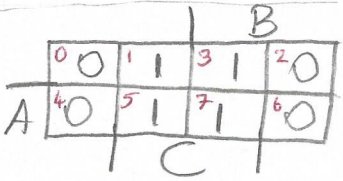
$(2,6) \rightarrow BC'$
$N = BC'$

X



$X = 0$

Y



$(1,3,5,7) \rightarrow C$
$Y = C$

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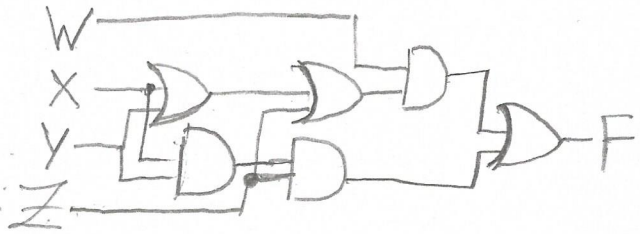
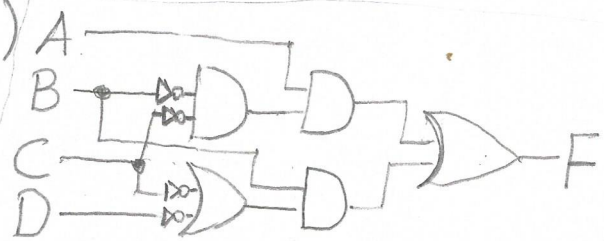
Ertuğrul

(2) ~ Devrelerin AND-OR ile çizimleri ~

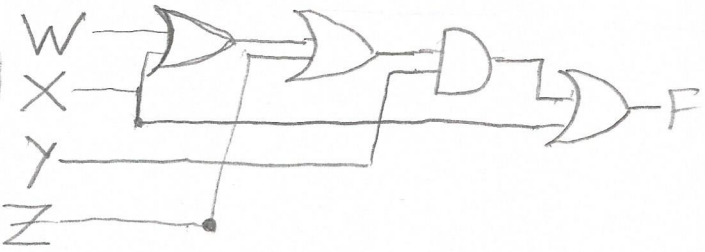
$F(W,X,Y,Z) = W(X+Y+Z)+XYZ \rightarrow$



$F=(A,B,C,D) = AB'C'+B(C'+D')$

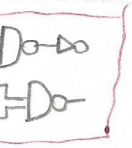


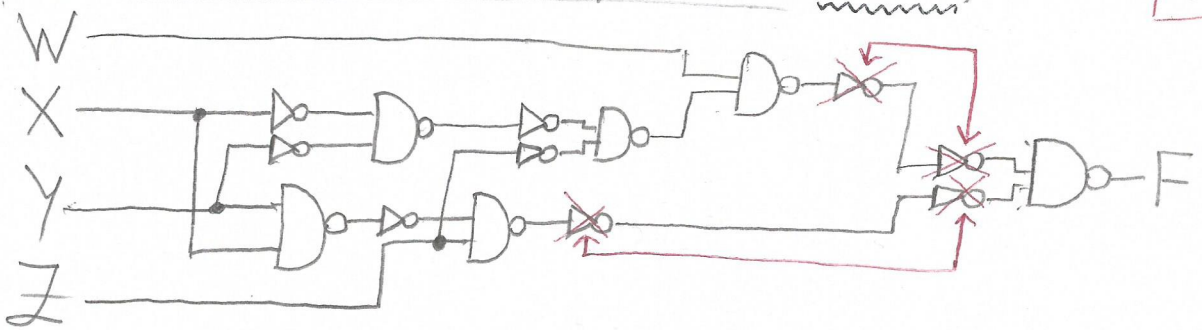
$F=(W,X,Y,Z) = X+Y(W+X+Z)$



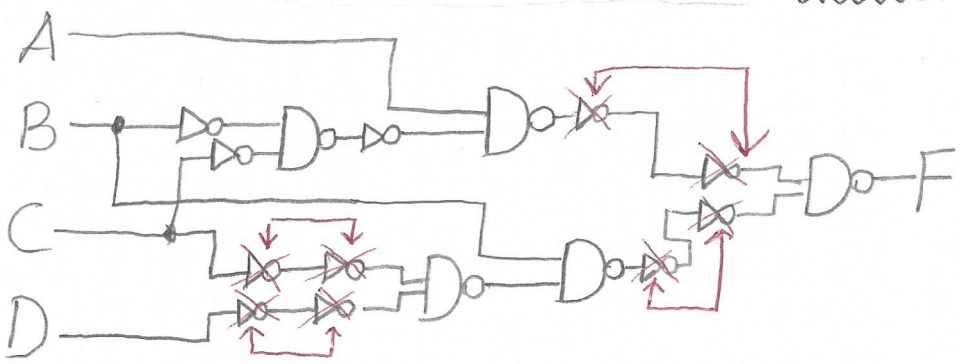
a-) *Birbirini gözüren NOT kapıların garpı aldım.

$F(W,X,Y,Z) = W(X+Y+Z)+XYZ$ (NAND)





$F=(A,BCD) = AB'C'+B(C'+D')$ (NAND)



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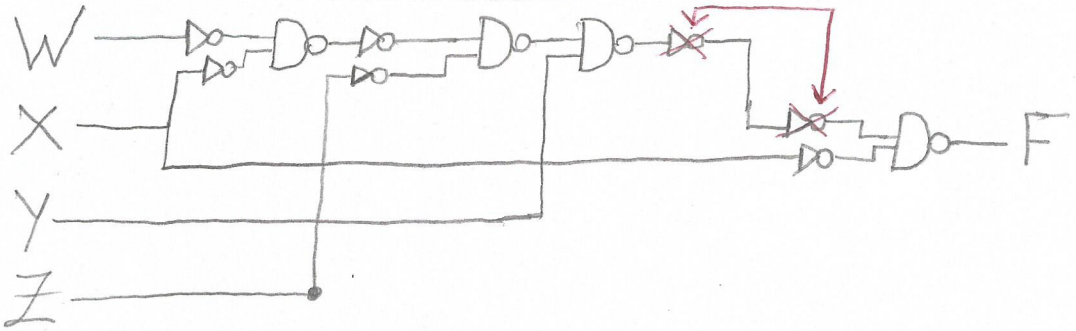
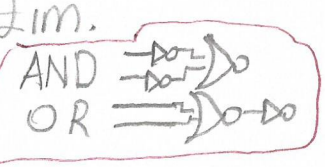
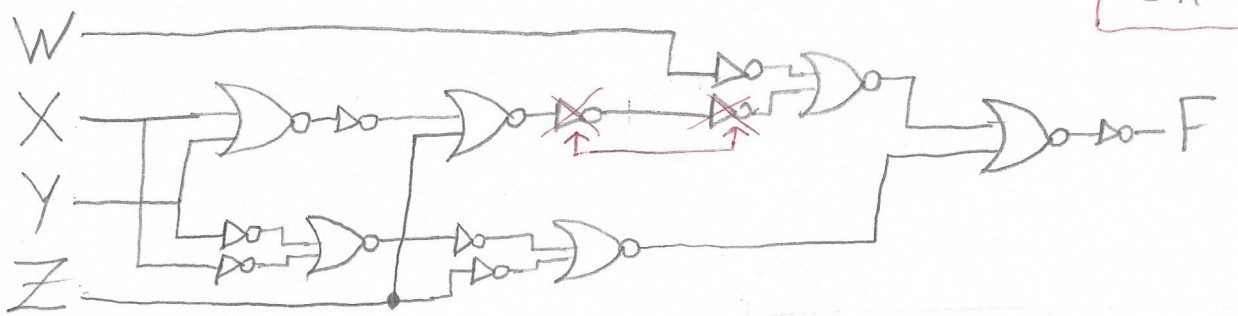
$F=(W,X,Y,Z)=X+Y(WXZ)$ (NAND)



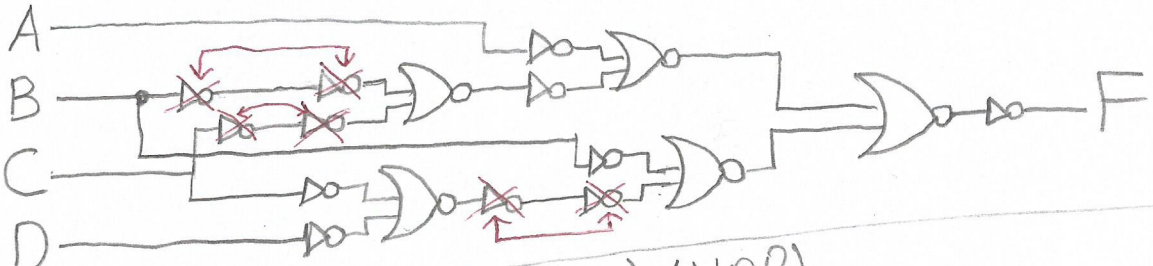
b-) *Yine birbirini gözüren NOT kapılarına çarpı attım.

$F(W,X,Y,Z)=W(X+Y+Z)+XYZ$ (NOR)





$F(A,B,C,D)=AB'C'+B(C'+D')$ (NOR)



$F(W,X,Y,Z)=X+Y(W+X+Z)$ (NOR)