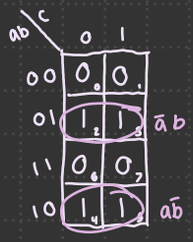
Title : Gianna Galard hw #3 Date : / /

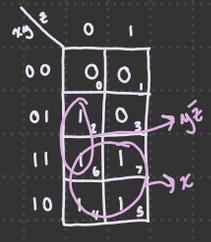
#1

a) $F = \Sigma(2,3,4,5)$



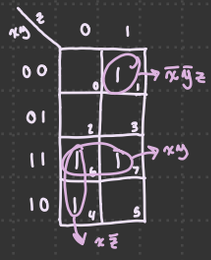
$F = \bar{a}b + a\bar{b}$

b) $F = \Sigma(2,4,5,6,7)$



$F = x + y\bar{z}$

c) $F = xyz + \bar{x}\bar{y}z + x\bar{y}\bar{z} + xy\bar{z}$
$111 + 001 + 100 + 110$



$F = \bar{x}\bar{y}z + xy + x\bar{z}$

d) $F = AB\bar{C} + BC + A$

$A = AB + A\bar{B} = A(B + \bar{B}) = A$

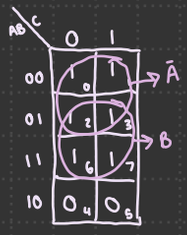
$\bar{A} = \bar{A}B + \bar{A}\bar{B} = \bar{A}(B + \bar{B})$

$F = AB\bar{C} + ABC + \bar{A}BC + \bar{A}B + \bar{A}\bar{B}$

$F = AB\bar{C} + ABC + \bar{A}BC + \bar{A}BC + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}$

$110 + 111 + 011 + 011 + 010 + 001 + 000$

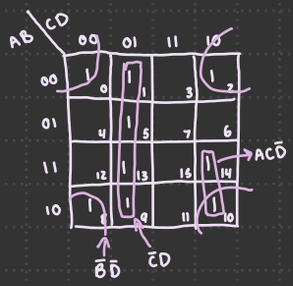
$6 \quad 7 \quad 3 \quad 3 \quad 2 \quad 1 \quad 0$



$F = \bar{A} + B$

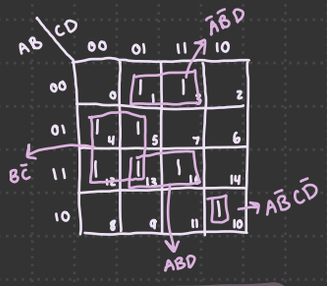
#2

a) $F = \Sigma(0,1,2,5,8,9,10,13,14)$



$F = \bar{B}\bar{D} + AC\bar{D} + C\bar{D}$

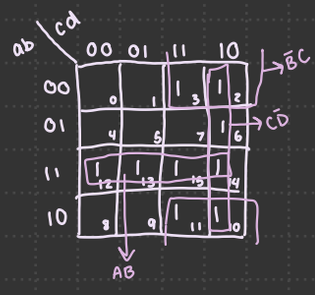
b) $F = \Sigma(1,3,4,5,10,12,13,15)$



$f = B\bar{C} + \bar{A}\bar{B}D + ABD + A\bar{B}C\bar{D}$

c) $f = acd + ab + c\bar{d} + \bar{a}\bar{b}cd$

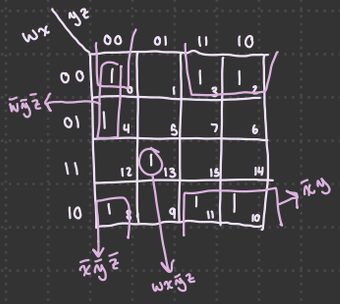
#	a	b	c	d	
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	1
3	0	0	1	1	1
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	1
7	0	1	1	1	
8	1	0	0	0	1
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	1
15	1	1	1	1	1



$f = ab + \bar{b}c + c\bar{d}$

d) $f = \bar{x}\bar{z} + wx\bar{y}z + \bar{w}\bar{y}\bar{z} + \bar{x}y$

#	w	x	y	z	
0	0	0	0	0	1
1	0	0	0	1	
2	0	0	1	0	1
3	0	0	1	1	1
4	0	1	0	0	1
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	1
9	1	0	0	1	
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	
13	1	1	0	1	1
14	1	1	1	0	
15	1	1	1	1	



$f = \bar{w}\bar{y}\bar{z} + \bar{x}\bar{y}\bar{z} + wx\bar{y}z + \bar{x}y$

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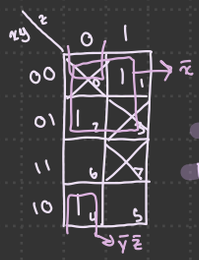
#3

a) $F=\Sigma(1,2,4)$ (001, 010, 100) $D=\Sigma(0,3,7)$

$F=\bar{x}\bar{y}z+\bar{x}y\bar{z}+x\bar{y}\bar{z}$

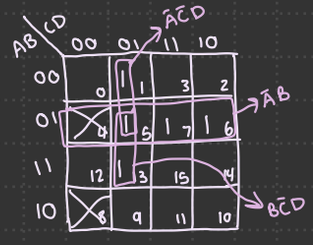


$F=\bar{x}+\bar{y}\bar{z}$

$F=\Sigma(0,1,2,3,4)$

b) $F=\Sigma(1,5,6,7,13)$ (0001, 0101, 0110, 0111, 1101) $d=\Sigma(8,4)$

$F=\bar{A}\bar{B}\bar{C}D+\bar{A}B\bar{C}D+\bar{A}BC\bar{D}+\bar{A}BCD+AB\bar{C}D$



$F=\bar{A}B+\bar{A}\bar{C}D+B\bar{C}D$

$F=\Sigma(1,4,5,6,7,13)$

#4 a) $F=\bar{A}\bar{B}+C\bar{D}+ABC+\bar{A}\bar{B}C\bar{D}+A\bar{B}CD$

apply DeMorgs Law → "Break the line change the sign"

$F=(A+B)\cdot(\bar{C}+D)\cdot(\bar{A}+\bar{B}+\bar{C})\cdot(A+B+\bar{C}+D)\cdot(\bar{A}+B+\bar{C}+\bar{D})$

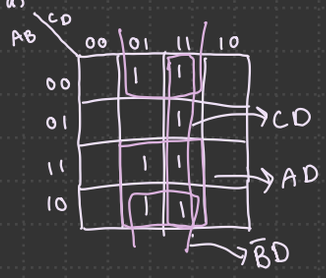
$\overline{F=((A\bar{C})+(\bar{A}BD)+(B\bar{C}))}$

$F=(\bar{B}+C)\cdot(A+\bar{B}+\bar{D})\cdot(\bar{B}+C)$

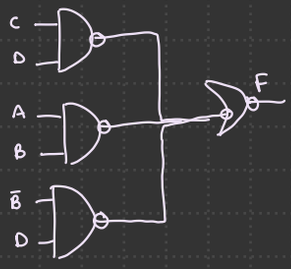
b) $F=\Pi(2,3,4,9,11)$ (0010, 0011, 0100, 1001, 1011, 1100, 1101, 0110, 0111)

$F=(A+B+\bar{C}+D)\cdot(A+B+\bar{C}+\bar{D})\cdot(A+\bar{B}+C+D)\cdot(\bar{A}+B+C+\bar{D})\ (\bar{A}+B+\bar{C}+\bar{D})$

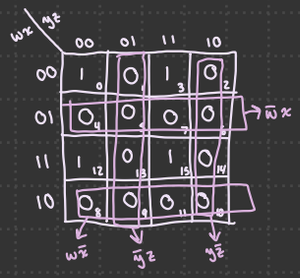
5) a)

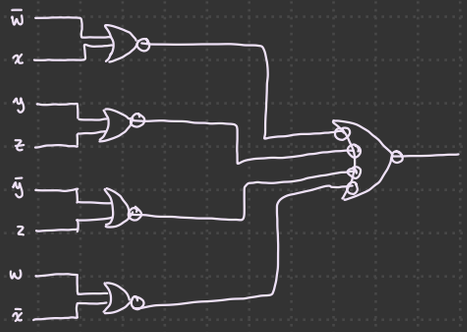


$F=CD+AD+\bar{B}D$ AND-OR NAND-NAND



b) $F=\Sigma(0,3,12,15)$ (0000, 0011, 1100, 1111)





$\bar{F}=w\bar{x}+\bar{y}z+y\bar{z}+\bar{w}x$

$\bar{\bar{F}}=F=\overline{(w\bar{x}+\bar{y}z+y\bar{z}+\bar{w}x)}$

$F=(\bar{w}x+y\bar{z}+\bar{y}z+w\bar{x})$

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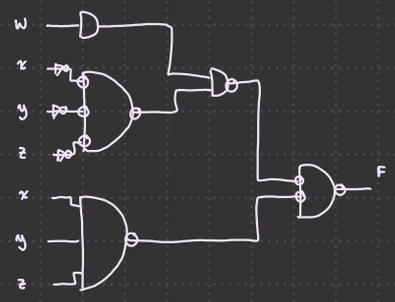
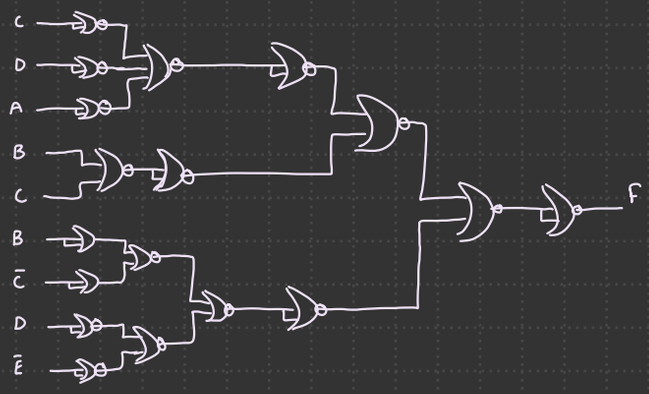
#6 a) $W(x+y+z)+xyz$



b) $CD(B+C)A+(B\bar{C}+D\bar{E})$



#7