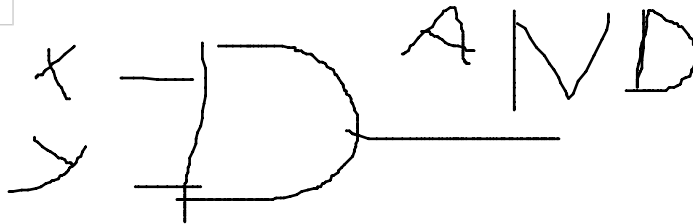
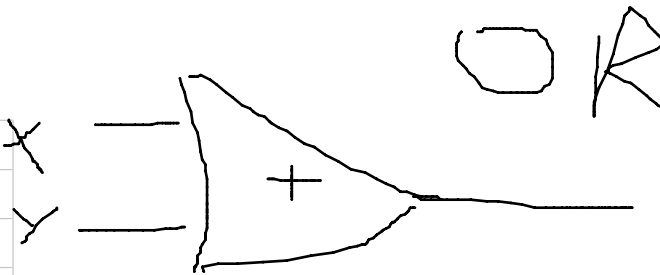


Day 1 (Jan 22nd)

Tuesday, January 21, 2020 10:31 PM

Digital Logic

X	Y	OR	AND
0	0	0	0
0	1	1	0
1	0	1	0
1	1	1	1



X	Y	Z	F	G
0	0	0	1	1
0	0	1	1	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	0	1
1	1	0	0	0
1	1	1	1	0

Something to the ' is False

Method 1

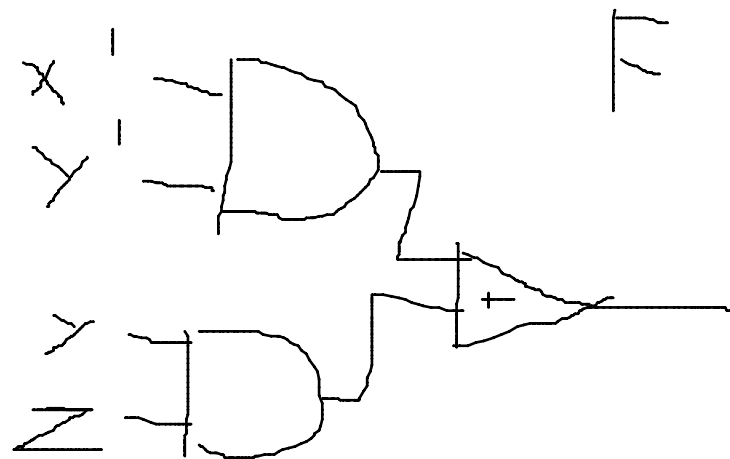
$$X' * Y' * Z' + X' * Y' * Z + X' * Y * Z + X * Y * Z$$

Becomes

$X' * Y' + Y * Z$ <- AND-OR Function (Simplest one) because you and something together then you or the results

Triangle without any symbol is a buffer, which means the input is the output

Because the first two statements are true no matter the case of Z and the second two are true no matter the case of X



(The Simpler it is the better the performance is)

Steps are as Follows:

1. Write Down Table
2. Write Statements that evaluate to true
3. Simplify by removing totality values
4. Draw Diagram

Method 2

Karnaugh(Pronounced Cranel)

Map

	(y,z=00)	(01)	Y (11)	Y (10)
F (x=0)	1 (0)	1 (1)	1 (3)	0 (2)
X (x=1)	0 (4)	0 (5)	1 (7)	0 (6)
		Z	Z	

Note: grouping can wrap sides of Map. Additionally you can reuse a cell

Group together 1s in powers of 2

So Column (Y*Z)

And Row (X'*Y')

$$F = Y*Z + X'*Y'$$

For F' group 0s

$$F' = X*Y' + Y*Z'$$

For G

			Y	Y
G	1	1	0	1
X	1	1	0	0
		Z	Z	

Group of 4 becomes Y' (because X and Z total)

Group Y*Z' with X'*Z'

$$G = Y' + X'*Z'$$

$$G' = Y*Z + X*Y$$

$$F = \Sigma (0,2,3,5,6,7,8,10,14,15)$$

That tells where the 1s are located in the truth table

A	B	C	D	F

			C	C	
	1 (0)	0 (1)	1 (3)	1 (2)	
	0 (4)	1 (5)	1 (7)	1 (6)	B
A	0 (12)	0 (13)	1 (15)	1 (14)	B
A	1 (8)	0 (9)	0(11)	1 (10)	
		D	D		

Check Corners First (All four corners in this are 1s) (Wrap around rule)

That becomes B'D' (Because they are the only variables that they all are in)

(Don't grab the 6 1s because its not a power of 2)

Grab 5 and 7 Which is An A'B'D

Grab Cells 3,2,7,6 A'C

Grab Cells 7,6,15,14 B*C

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

Grabs Cells = 9, 11

Grab Cells 4,12

Use braces for when you have multiple options to include isolated cell

{

 Grab Cells 12,13

 Grab Cells 13,9

}

Grab 9, 1

F' =