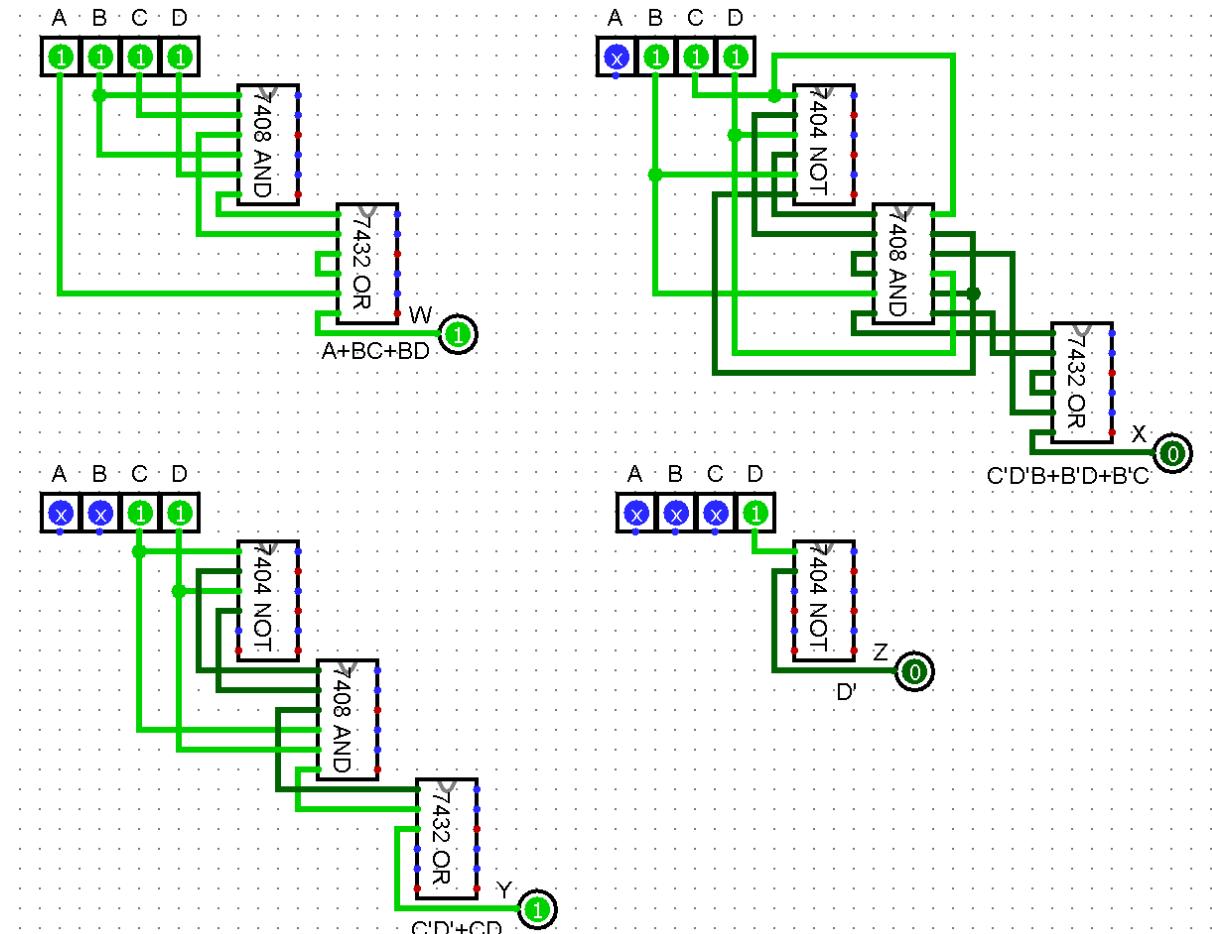
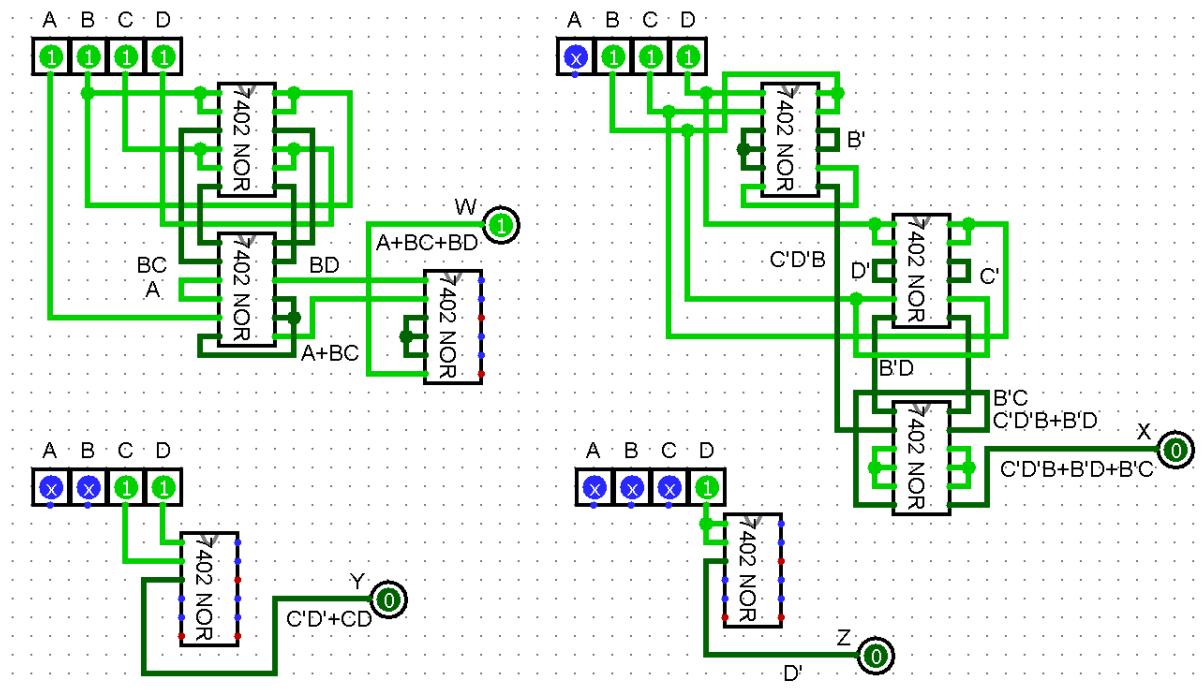


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 Lab-4

3-extend w x y z Basic



3-extend w x y z NOR



Truth table, K-map, Boolean Algebra, simplification, discussion.

AB				CD				ω	x	y	z
0	0	0	0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	0	1	0	0
0	0	0	0	0	1	0	0	0	1	0	1
0	0	0	0	1	0	0	0	0	1	0	0
0	0	0	0	1	0	1	0	0	1	1	0
0	0	1	0	0	0	1	0	0	1	0	0
0	0	1	0	0	1	0	0	1	0	0	0
0	1	0	0	0	1	1	0	1	0	0	0
0	1	0	0	1	0	0	1	0	1	1	0
0	1	0	0	1	1	0	1	0	0	0	1
0	1	1	0	0	0	0	1	0	0	1	0
1	0	0	0	0	0	0	1	0	0	1	0
1	0	0	0	0	1	0	1	0	0	1	1
1	0	0	0	1	0	0	1	1	0	0	0
1	0	0	1	0	0	0	X	X	X	X	X
1	0	1	0	0	0	0	X	X	X	X	X
1	1	0	0	0	0	1	X	X	X	X	X
1	1	0	0	1	0	1	X	X	X	X	X
1	1	1	0	0	0	0	X	X	X	X	X
1	1	1	0	1	0	0	X	X	X	X	X
1	1	1	1	1	1	0	X	X	X	X	X
AB				ω				F _{for}			
00	00	01	11	10							
00	00	01	00	00							
01	00	01	11	11							
11	X	X	X	X							
10	1	1	X	X							

$\Sigma f_{\omega} = A + A'B'C + A'BC'D$
 $= A + BC + A'BC'D'$
 $= A + B(C + C'D)$
 $= A + B(C + D)$
 $= A + BC + BD$

TRIZON VET

form x

		CD	00	01	11	10	
		AB	00	0	1	1	1
			01	1	0	0	0
			11	X	X	X	X
			10	0	1	X X	X

$$\begin{aligned}
 \sum f_x &= C'D'B + B'C'D \\
 &\quad + B'C \\
 &= C'D'B + B'C + B'D \\
 &= C'D'B + B'D + B'C
 \end{aligned}$$

form y

		CD	00	01	11	10	
		AB	00	1	0	0	0
			01	1	0	0	0
			11	X	X	X	X
			10	1	0	X X	X

$$\sum f_y = C'D + CD$$

for f_2

		CD				
		AB	00	01	11	10
C	00		1	0	0	1
	01		1	0	0	1
	11	X	X	X	X	X
	10	1	0	X	X	

$$\sum f_2 = D'$$

Discussion

$$\sum f_w = A + BC + BD$$

$$\sum f_u = C'D'B + B'D + B'e$$

$$\sum f_y = C'D' + eD$$

$$\sum f_z = D'$$

While creating circuit with basic gates It was quite easy as we got abundant amount of IC like

- 7480 AND
- 7432 OR
- 7404 NOT

And It won't Any trick or optimization

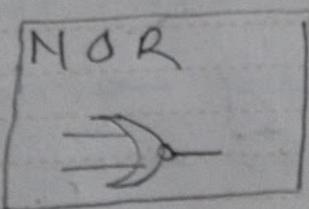
Required on that part

But an on part 2 where it
has to be implemented with NOR

Grater only things got complicated
really fast. You see NOR gate
are $\overline{A+B} = \overline{A} \cdot \overline{B}$.

without changing the equation
the only way was to create every
thing with NOR gate

which is complicated



A	B	$\overline{A+B}$
0	0	1
0	1	0
1	0	0
1	1	0

All basic gate with NOR

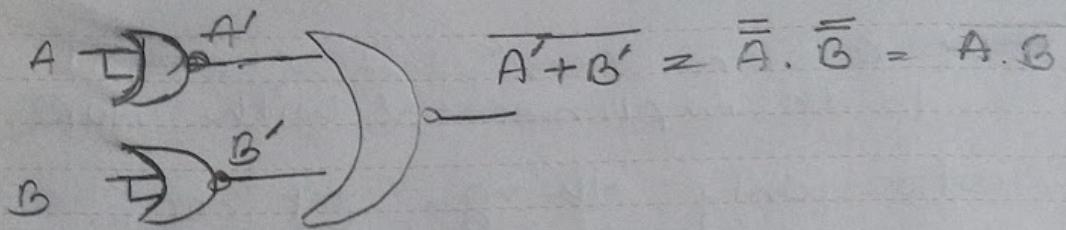
NOT

$$A \rightarrow \overline{A} = A'$$

OR

$$A \rightarrow \overline{\overline{A+B}} = \overline{A} + \overline{B} = A \cdot B$$

AND



Many optimization (Medicine)
 Optimization can be performed
 Due to spend more than 6w
 Solving this predictor problem

at Efx we used the fact
 to and something we need
 to negative it. So using this
 to our advantage we C'D'B
 could put it directly by
 Negating B only, this of course
 Didn't help as there was

Date

Page

Title

already same of C,D on
other part. But in all fairness
first time but but but well
made it more complicated.

Hope I learned something.

Hope I Did.

End.