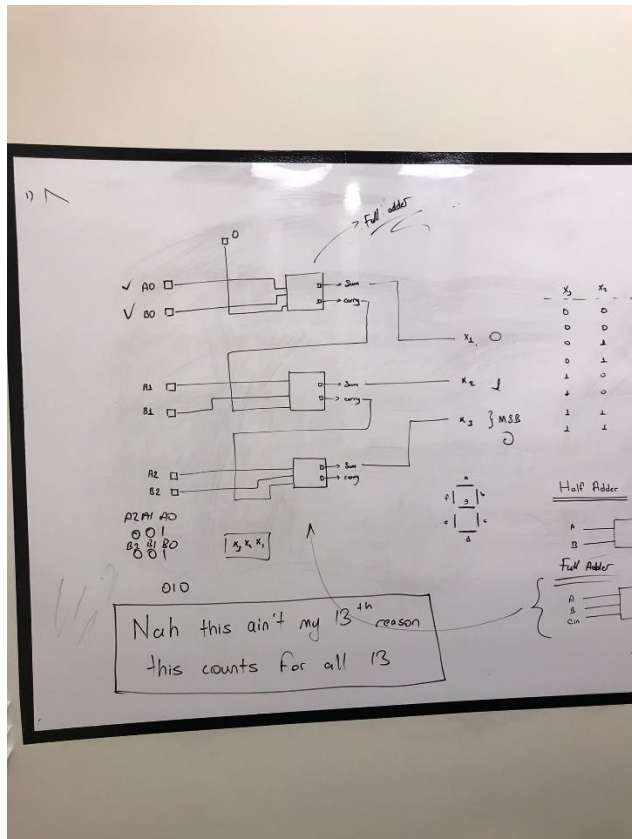


## CS303 LAB #2 Report

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At first, I designed the circuit and then made a truth table.



$x_3$	$x_2$	$x_1$	1	a	b	c	d	e	f	g	led
0	0	0	0	1	1	1	1	1	0	0	0
0	0	1	1	0	1	1	0	0	0	0	0
0	1	0	2	1	1	0	1	1	0	0	0
0	1	1	3	1	1	1	0	0	1	0	0
1	0	0	-4	0	1	1	0	0	1	1	1
1	0	1	-3	1	1	1	0	0	1	1	1
1	1	0	-2	1	1	0	1	1	0	1	1
1	1	1	-1	0	1	1	0	0	0	0	1

MSB

Half Adder

Full Adder

Sum (A ⊕ B)

Cout (A · B)

Full Adder

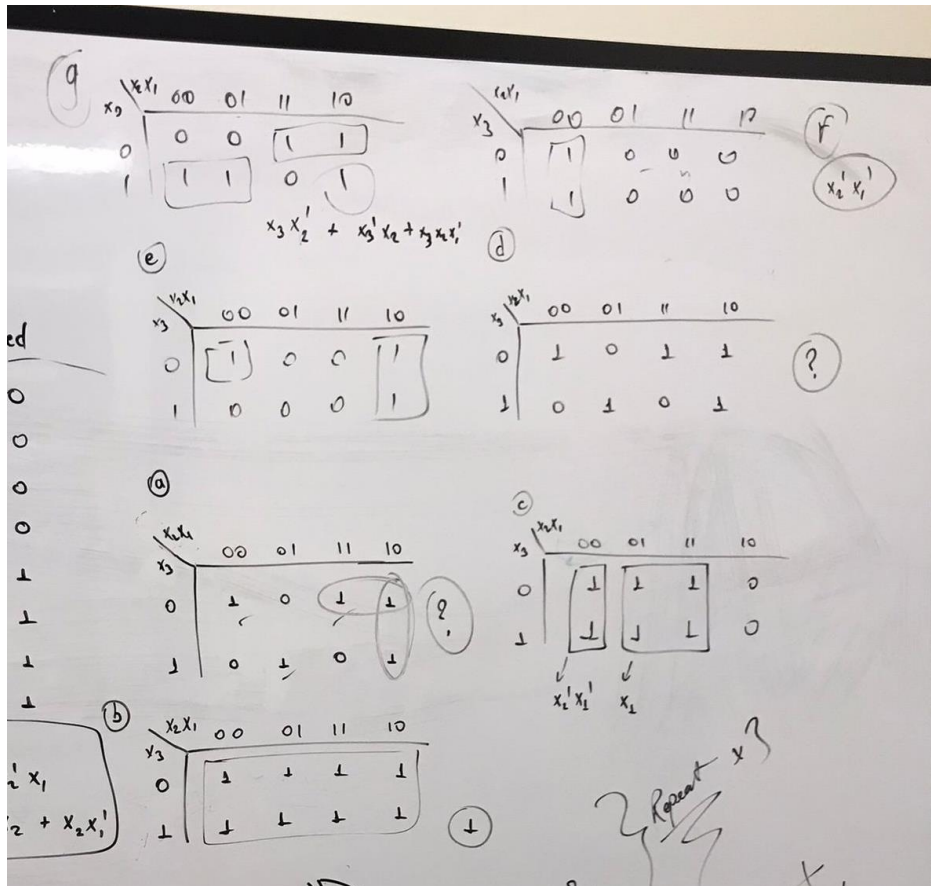
Sum (A ⊕ B ⊕ Cin)

Cout (A · B + A · Cin + B · Cin)

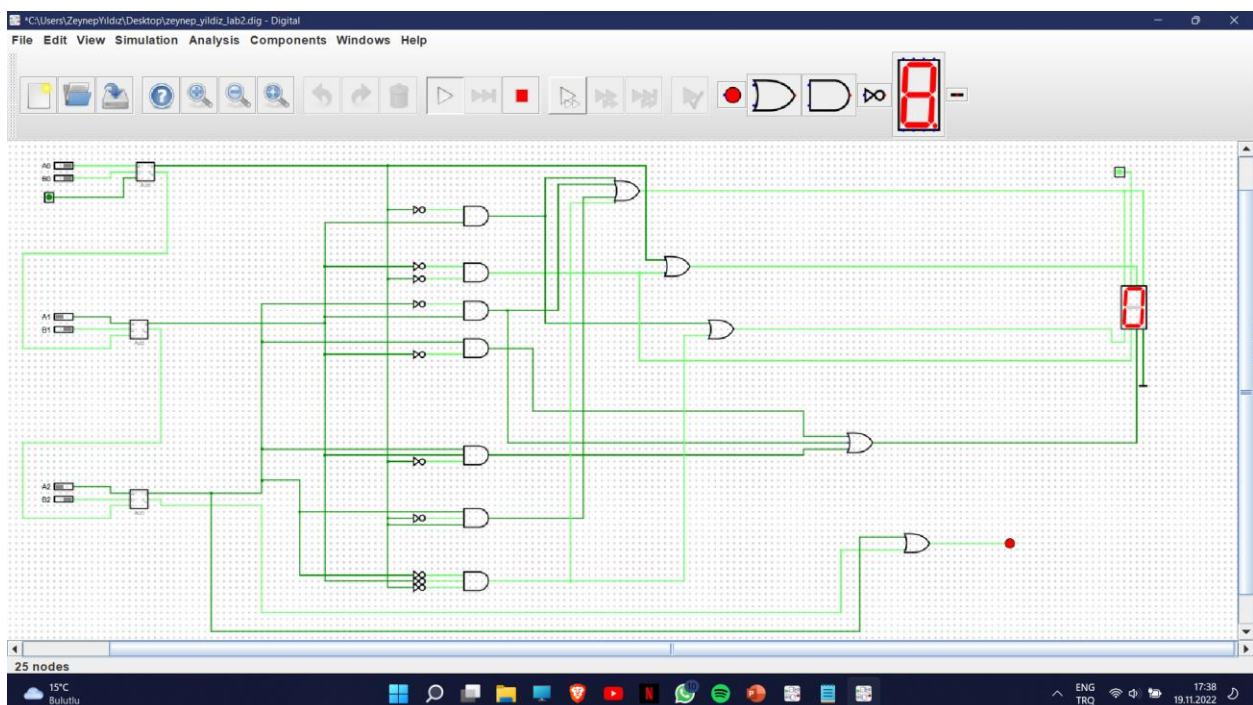
Handwritten notes and equations:

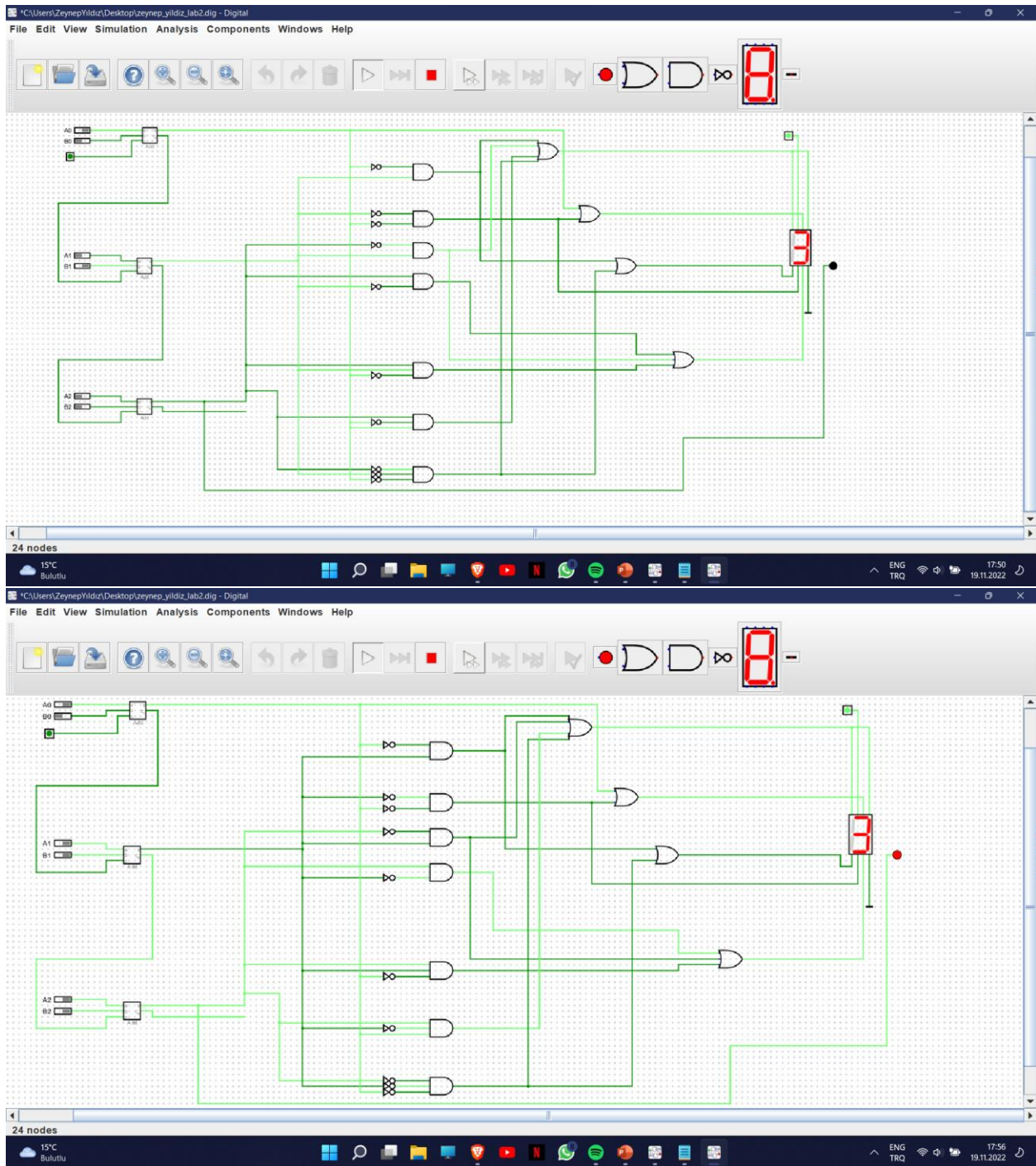
- $a \Rightarrow ?$
- $b \Rightarrow 1$
- $c \Rightarrow x_2' x_1' + x_1$
- $d \Rightarrow ?$
- $e \Rightarrow x_3' x_2' x_1' + x_2 x_1'$
- $f \Rightarrow x_1' x_1'$
- $g \Rightarrow x_3' x_2' + x_2 x_1' + x_3 x_1'$
- $led \Rightarrow x_3' x_2' x_1' + x_2 x_1' + x_3 x_1'$

And then I make K-maps for each of the sides (a,b,c,d,e,f,g) of seven-segment display.



And after creating all the functions I inserted them in digital software





These are some examples.