

BLG 231E - Digital Circuits

Assignment 4

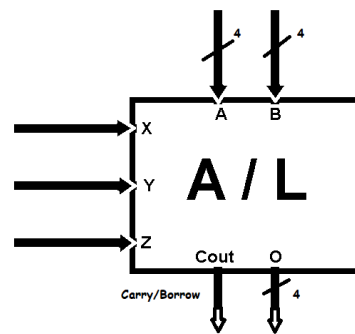
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1. The combinational circuit ARITHMETIC/LOGIC (A/L) performs the following operations depending on the value of the control inputs X, Y, and Z.

X	Y	Z	Result (O)	Cout
0	0	0	$B - A$	Borrow
0	0	1	$A + B$	Carry
0	1	0	$A - 5$	Borrow
0	1	1	Φ	Φ
1	0	0	$A \cdot B$	Φ
1	0	1	Φ	Φ
1	1	0	$A \oplus B$	Φ
1	1	1	Φ	Φ

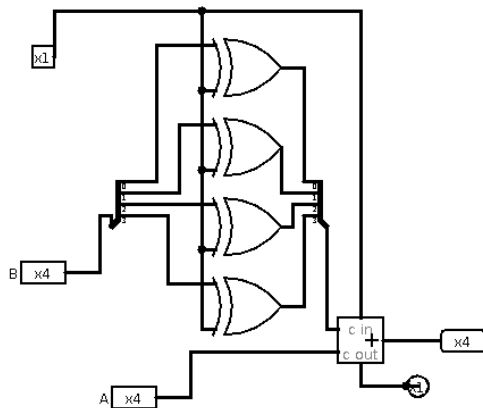


Design and draw this circuit using ONLY the standard components and logic gates given below

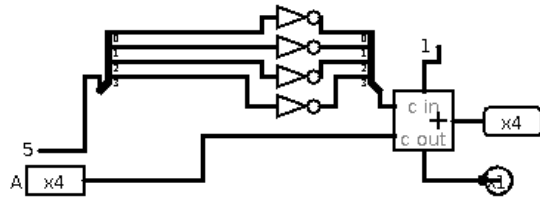
1) $B-A$ and $B+A$; I shoved both of them in the circuit below.

If x_1 is "0" it execute $B+A$.

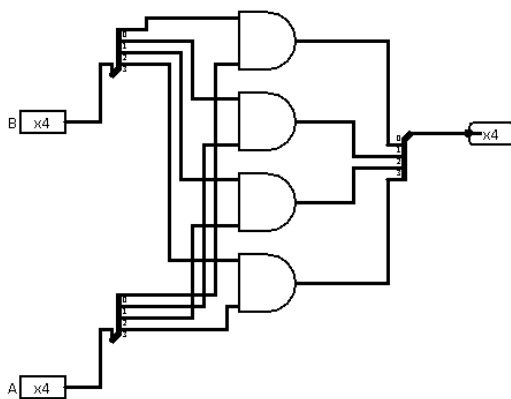
If x_1 is "1" it execute $B-A$.



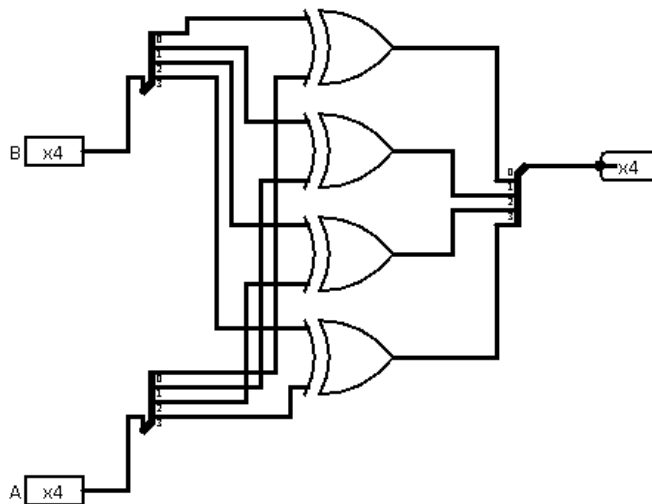
2) This circuit Show (A-5) and x1 shows the Cout.



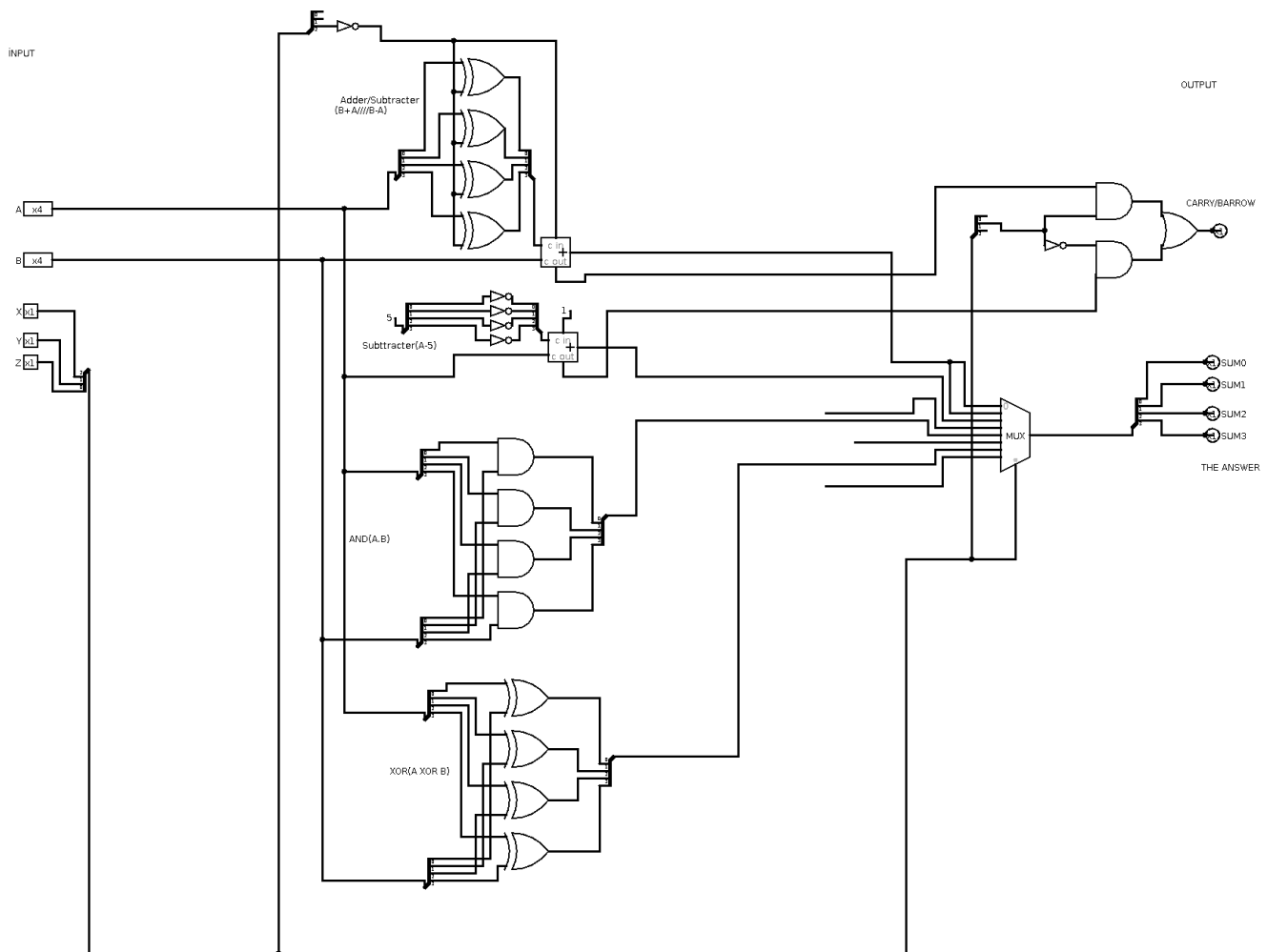
3) This circuit is for (A.B) : There is also with 2 input 4 bit and gate in the last image



4) This circuit is for (A xor B) : There is also with 2 input 4 bit xor gate in the last image



5) Lastly I combined all of the circuit in MUX. According to the truth table.



With 2 input AND and XOR gates.

