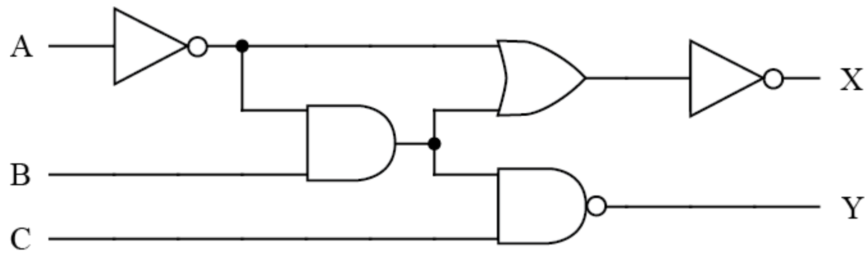
Ex:



Complete the truth table, below, for the logic circuit above. (Note that you must fill in some missing input values in the table, too.)

A	B	C	X	Y
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1				
1		0		
	1	1		

SOL'N: First, we fill in the input values (in red), which correspond to counting up in binary. Second, we look for simple cases where the output values may be determined. If C = 0, for example, Y must be one (green values) because of the NAND gate. If A = 0, the input of the OR gate will be 1 and X will be 0 (orange). If A = 0 and C = 1, the output of the AND gate = B, and the output of the NAND gate = B-not (brown values). If A = 1, the output of the AND gate will be 0, and both inputs of the OR gate will be 0, so the output of the OR gate will be 1 and X will be 0 (blue). If A = 1 and the output of the AND gate is 0, the output of the NAND gate is Y = 1 (purple).

A	B	C	X	Y
0	0	0	0	1
0	0	1	0	1
0	1	0	0	1
0	1	1	0	0
1	0	0	1	1
1	0	1	1	1
1	1	0	1	1
1	1	1	1	1