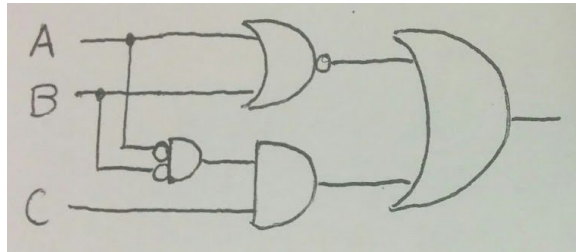


### Digital Logic (Part 1)

1. For the following circuit:



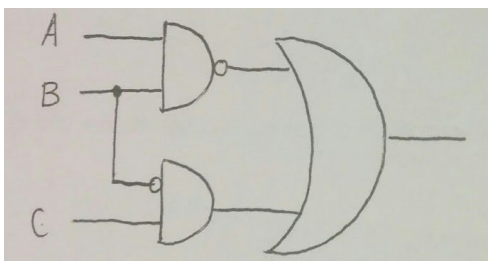
a. Write out its truth table:

Are there any shortcuts?

b. What is the equivalent, unsimplified boolean expression?

c. Simplify or shorten your answer in part c step-by-step using boolean algebra laws, and write the laws you used next to each step.

Extra practice: (repeat #1 for this circuit)



2. For the boolean expression:  $(A'A + (BC')')' + B$

a. Draw the unsimplified circuit:

What was your thought process in implementing this circuit?

b. Write out its truth table:

c. Simplify or shorten the expression step-by-step using boolean algebra laws, and write the corresponding laws next to each step:

Extra practice:  $(A + ABC')B$   
(repeat #2 for this expression)

3. What are the different levels of abstraction in the hardware/software interface?  
(Hint: the rainbow)