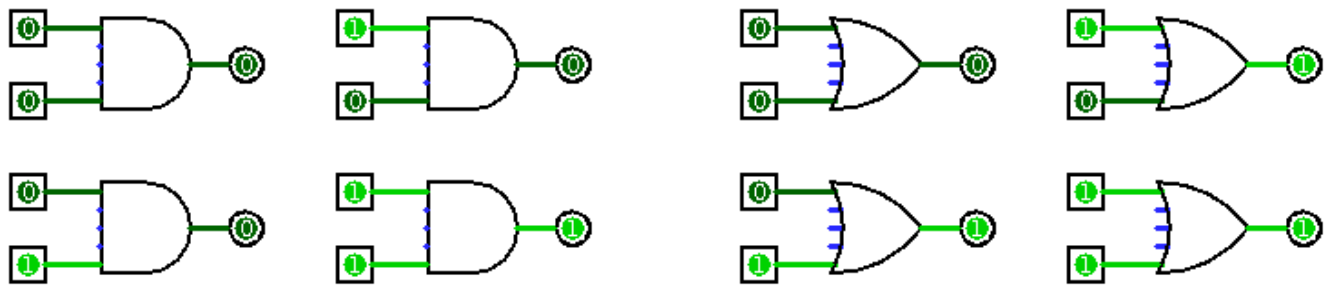


Model 1 Logic Gates

Complete the following tables based on the diagrams.

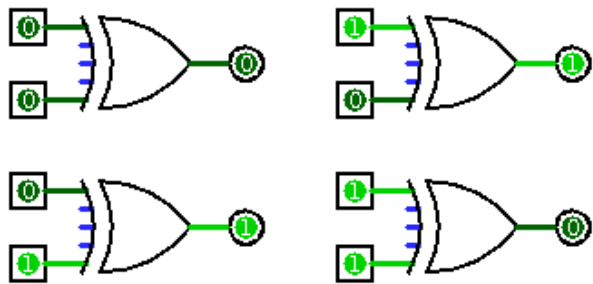


AND

Inputs	Output
0 0	0
0 1	0
1 0	0
1 1	1

OR

Inputs	Output
0 0	0
0 1	1
1 0	1
1 1	1



XOR

Inputs	Output
0 0	0
0 1	1
1 0	1
1 1	0



NOT

Input	Output
0	1
1	0

Questions (10 min)

Start time: _____

1. In the circuit diagrams, what does the color (brightness) of the the lines represent?

Dark green represents the value 0, and light green represents the value 1.

2. For each type of gate, describe the circumstances when it will output the value 1.

AND: when both inputs are 1

OR: when either input is 1

XOR: when only one input is 1

NOT: when the input is 0

3. As a team, define the following words as they are used in everyday English.

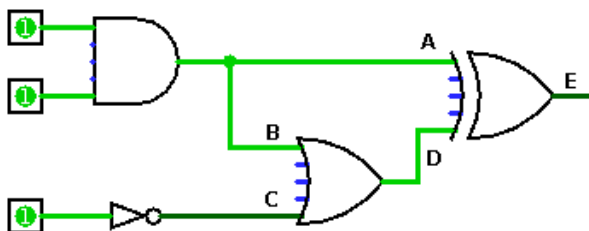
logic: making conclusions based on fundamental principles

gate: opening in a fence or wall that you can walk through

4. Based on your definitions, what do you think a “logic gate” represents?

A digital circuit that electricity flows through to compute a simple truth value. Composing gates together into a larger circuit makes it possible to compute more complex logic.

5. In the example circuit below, what are the values of A , B , C , D , and E ?



$A = 1$ $B = 1$ $C = 0$ $D = 1$ $E = 0$

6. How would A , B , C , D , and/or E change if the top input were zero?

All five values would be zero.