Introduction to Logic Gates

Special instructions:

- You will find it more convenient if you run 5 volts down the right side of your circuit boards and ground down the left.
- You can then use wires to attach inputs to +5 (true) or 0 (false).
- You can use the oscilloscope or the logic probe as a quick way of testing your circuit. Be sure to put the probe switches in the “pulse” and “TTL” positions. Connect the red lead to +5V and the black lead to ground. Touch the probe where you want to test.
- If you use an LED, be sure to place a roughly 200 ohm resistor in series to keep from blowing it.

1. Play around with various logic gates and confirm that they work as you expect. Be sure to confirm the behavior of a NAND (7400), NOR (7402), INVERTER (7404), and AND (7408) gate.
2. Construct the circuit for the binary adder we built with human beings in class. You may need to use NANDS, NORS, and NOTS to construct ANDS and ORS.

Binary adder discussed in class:

N.B. These are TTL devices, so you have to actively pull pins to ground in order to make them LO. When actually wiring in a diode, you should wire it in the following manner: