IEEE's Hands on Practical Electronics (HOPE)

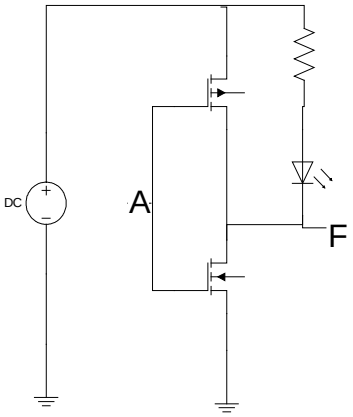
Week 9: CMOS, Intro to Digital Logic

Objective:

Learn how CMOS technology works by analyzing how a simple CMOS NOT gate behaves.

Hints/Tips:

The transistors only have three leads that are not connected to anything.
Remember to tie the drains together somehow either with a wire or directly insert it into the same column on the breadboard.

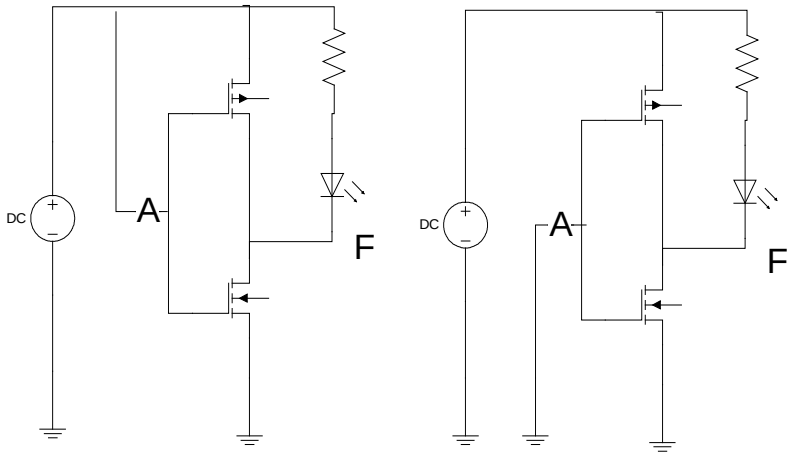


Materials:

1 breadboard
1 9V battery
1 pMOS transistor
1 nMOS transistor
2 1.1kΩ resistors
1 LED
as many wires as necessary

Directions:

Build the circuit shown on the right.
Connect A to V_{HIGH} and V_{LOW} and measure the voltage at F.
The LED should turn on when the input is HIGH, and be off when the input is LOW.



Questions:

1. What is the gate symbol of the circuit above?
2. Draw two cascaded NOT gates.
3. Build a cascaded not circuit and see if it works.