

Switches and Transistors

CS 350, Activity 9, Wed Feb 8, 2012

A. Why?

- On/off switches are natural to use with the voltages that represent binary data.
- Transistor circuits act as switches.

B. Outcomes

At the end of this activity you should:

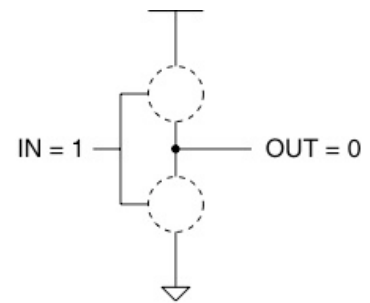
- Know what transistor switches do.
- Be able to read a simple voltage/current diagram.
- Be able to read a transistor-level diagram.

C. Questions

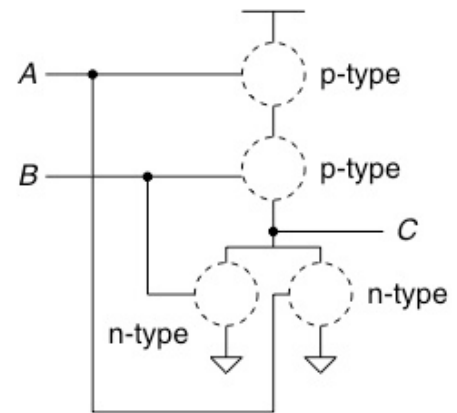
1. Exercise 3.2: Replace the missing parts in the circuit with either a wire or no wire to give the output OUT a logical value of 0 when the input IN is a logical 1.

2. Exercise 3.4: (a) Replace the missing parts with either a wire or no wire to give the output C a logical value of 1. (b) Describe a set of inputs that give the output C a logical value of 0. (c) Replace the missing parts with wires or no wires corresponding to that set of inputs.

Exercise 3.2

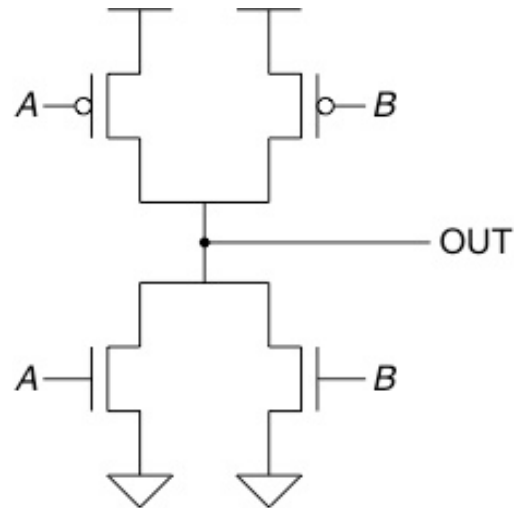


Exercise 3.4



3. From Exercise 3.7: The circuit shown has a major flaw. What is it? (Hint: When is the output connected to voltage? When is the output connected to ground?)

Exercise 3.7



4. From Exercise 3.5: Complete a truth table for the given transistor-level circuit. (Hint: When is the output connected to voltage? When is the output connected to ground?)

Exercise 3.5

