

# 1 NOT Gates

Investigate switching potentials, what does the gate count as a logical 1? A logical 0?

Investigate what happens when you link several NOT gates together in a chain? In a loop? How does this change if you have an even or odd number of gates?

# 2 NAND Gates

Test the truth table by applying a square wave at one input and holding the other input at a logical 0, and then a logical 1. Then apply a ramp wave to both inputs and see what happens.

For the following set up, what is the maximum  $I_{out}$  for which  $V_{out}$  is still a high?

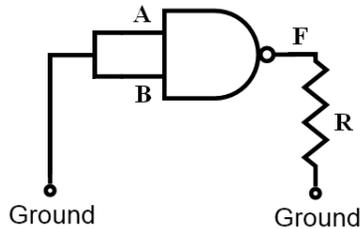


Figure 1: NAND gate with both inputs and output grounded

For the following set up, what is maximum  $I_s$  such that  $V_{out}$  is still low?

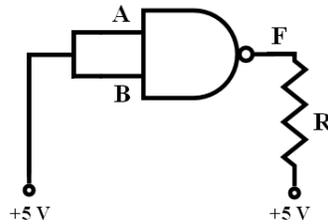


Figure 2: NAND gate with +5 V applied at each end of the circuit

For the following set up, what is the minimum  $I_{in}$  such that  $V_A$  stays high?

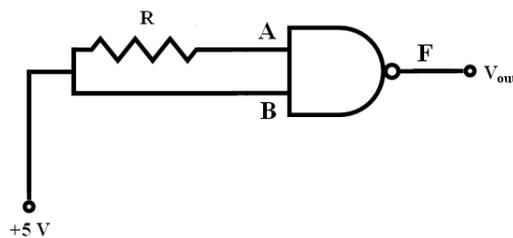


Figure 3: NAND gate with R before A

What happens when you leave an input to a NAND gate floating (not connected to anything) while the other is held high/low? Using the truth table, what would you say the gate interprets a floating input as?

Create an XOR gate out of NAND gates.