

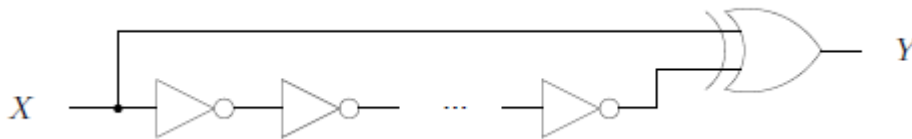
## EE 231 Prelab 0

## HCMOS Logic Family

In this lab you will get a hands-on experience designing simple logic circuits using standard integrated circuits (ICs). You will learn about timing and its effect on the circuit output.

**1.Prelab**

- 1.1. Write the truth table for an *inverter* gate.
- 1.2. Write the truth table for a 2-input *xor* gate.
- 1.3. Write the truth table for a 2-input *and* gate.
- 1.4. Write the truth table for the circuit shown in Figure 1. (Hint: What happens with an even number of inverters? How about odd?)



**Figure 1:** A simple circuit

2. For the following logic statement, create a K-map.
  - 2.1.  $f(x_1, x_2, x_3) = x_1 x_2 x_3 + x_1' x_2 x_3 + x_1 x_2 x_3' + x_1 x_2' x_3' + x_1' x_2' x_3'$
  - 2.2. Simplify the equation using the K-map technique.