Lab 1

Introductory Experiment

This experiment is intended primarily to be an introduction to the ECE 385 laboratory and equipment.

Assignment

- Read Complete Experiment #1 description
- Read General Guide. You will need the information from the Data Sheets to correctly wire up your circuit.
- Pair up into **groups of two** in lab (or post your information in the Lab Partner Wanted page if you do not find a partner during your lab section). No groups of three or pairing with students outside of your section is allowed
- Bring home the grey TTL toolkit (you will need it for Lab 2), and leave the blue FPGA box in your locker (we don't need it until Lab 4). **Verify your lab kit is complete before accepting it.**
- Work on Lab 1 report (**individual report)** and Lab 2 pre-Lab (with your lab partner) after the lab section. Sample Lab report and **blank Layout sheet** can be found under the Resources page or here.
- Upload **individual lab report** on Compass 2G before 11:59 PM the day of your next lab session. For example, if your lab is Tuesday 8:00 AM, your Experiment 1 report is due on Compass by 11:59 PM next Tuesday.

Demo

- No Demo for Lab 1, but you will need oscilloscope traces from the lab to write your report.

FAQ

- **"What is the difference between the 7406 and 7404 inverter chips?"**
    - Notice that the 7406 has open-collector outputs, which requires the use of pull-up resistors (1 kOhm should be good enough). Practically though, using 7404 inverters for your LED will work as well, but it's just not good practice (in order to light up the LEDs, you need a large amount of current, whereas driving a logic gate input does not, since 1. a logic gate only cares about voltage level, and 2. having large amount of current going through will produce heat and waste energy. So, 7404 is designed to drive a logic gate input, while 7406+pull-up resistor is designed to drive an LED. The reason why you don't need them for the IO box LEDs is that they're built into the IO box already).

      The resistors are in the little brown bag in your took kit. Please use the 1kOhm (you use the Vcc for its voltage instead of current as in the case of the Vcc connected to the LED, therefore you want to use a large resistor to limit the current)