Lab 0: Getting Started

# Ordering

The first step was to gather all the supplies needed for my labs. I ordered an Arduino Uno Ultimate Starter Kit from Vilros to get my feet wet. The kit contains an Uno, small breadboard, mount, as well as several parts for projects: resisters, potentiometers, sensors, buttons, and motors. Then I ordered a few items specific to my project: a MAX7219 Red LED matrix, ceramic capacitors from 1pf-100nf, electrolytic capacitors, a resistor kit, audio power operational amplifiers, general purpose operational amplifiers, a digital to analog converter, additional jumper wires, a large breadboard, 8Ohm speakers, pushbuttons, and 10K Ohm potentiometers. The LED matrix came as a do-it-yourself kit so I had to solder that together myself.

# Setup

After acquiring all the parts I needed I started by going through the example projects in the starter kit. I installed the Arduino software and setup my Github repository to store my libraries and sketches (https://github.com/edargelies/arduino\_eq). Next I setup an Arduino forums account to ask and answer any questions I had along the way.

# Introductory Labs

The first lab included the hardware and code to blink and LED. Next, I learned to control the blinking speed with a potentiometer. I moved on to controlling an RGB LED and toggling between colors. Then I learned about more analog inputs such as the photo resistor and push button. The photo resistor lab is included in my repository. It uses the photo resistor value to select the frequency for the tone function. It’s quite simple, but fun to play (<https://www.youtube.com/watch?v=4ShC2Cfv9uk> someone else demoing the lab).

Finally, after soldering my LED matrix together I loaded some example code on it to demonstrate its functionality. I’ve included a short video of the LED matrix with this submission.

# Takeaways

The Arduino library is very friendly to prototyping. The functions are well documented and easy to use. I can’t be sure how well the Arduino performs as many of these tasks are quite simplistic, but I hope it will perform well enough for my applications. It seems to be best suited for individual tasks such as polling on a sensor value and operating upon the result. I was able to find some good information on the Arduino forums, although hardly any useful information for my first Audio Filter lab.