MEMORANDUM

TO: Dr. Christopher Peters
FROM: Yelnur Abilakim
DATE: 30-Sep-2021
SUBJECT: Drexel ECE 303 Lab 1: Introduction to Arduino

Summary
Two experiments were done in this lab to get acquainted with the basics of the Arduino. The first experiment required the use of the digitalWrite() command, and the second experiment required the use of the analogWrite() command. The results of the experiments demonstrated that the digitalWrite() command takes either the lowest or the highest value, while the analogWrite() command can take any value in between, including the lowest and the highest ones.

Introduction
The purpose of this lab was to get familiarized with a basic sketch construct, digital and analog writing to a pin, analog reading of a pin, and delay and LED operations. The lab consisted of two experiments:

1. Digital pin operation.
   The goal of this experiment was to build a circuit and write a program with the following features:
   - Turn the LED on and off via the digital pin.
   - Introduce a 1 second delay between the on and off operations.
2. Analog pin operation.
   The goal of this experiment was to build a circuit and write a program with the following features:
   - Take user input from the Serial Monitor, accepting integer values from 0 to 255.
   - Change the LED intensity by using the analogWrite() command and the integer value entered.
   - The LED intensity must not change until the user enters another integer.

Methods
Experimental apparatus used for this lab:

- Breadboard.
- Arduino MEGA 2560 connected to laptop via USB cable.
- 330 Ohm resistor.
- An LED.
- 2 jump wires.

The circuit used for both experiment of the lab is shown in Figure 1.

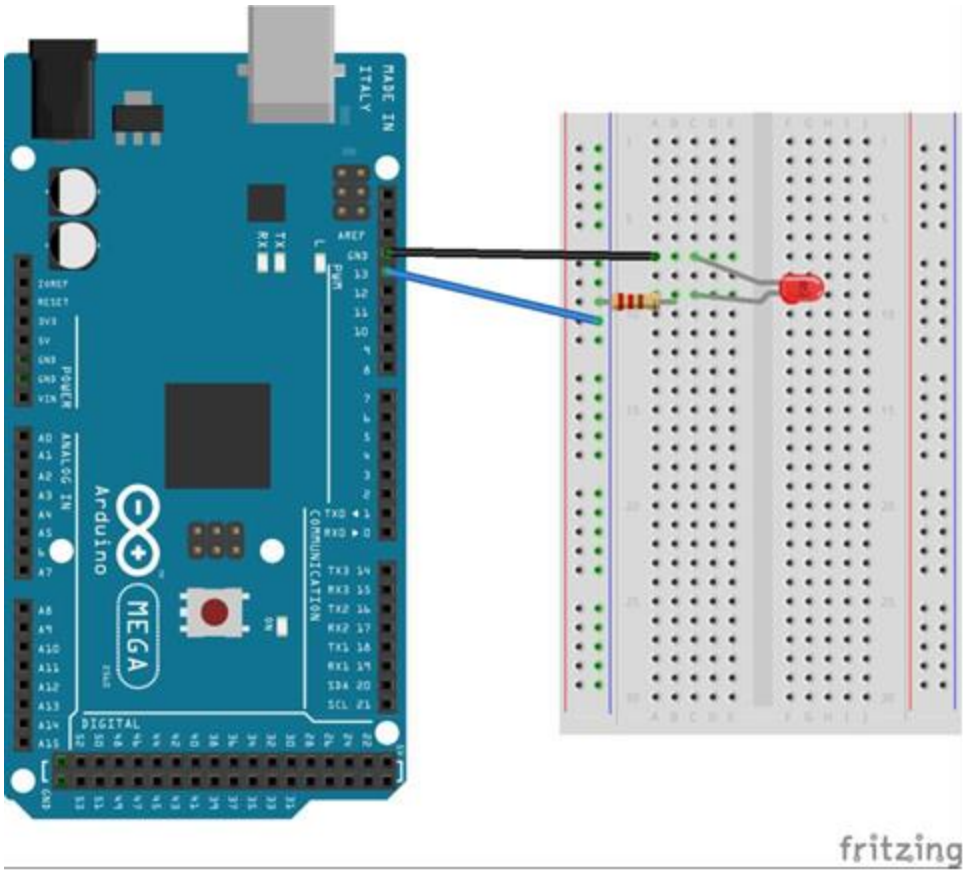

Figure 1. Basic LED circuit setup

The code for each experiment is attached as appendices.

Results

In experiment 1 (digital pin operation), the LED kept turning on and off with a 1 second delay, as expected.

In experiment 2 (analog pin operation), the LED's brightness corresponded to the value provided by the user, as expected.

Conclusions

When programming with Arduino, the analogWrite() command allows the use of values between 0 and 255, whereas the digitalWrite() command only allows the use of either 0 (low) or 255 (high).

Appendices

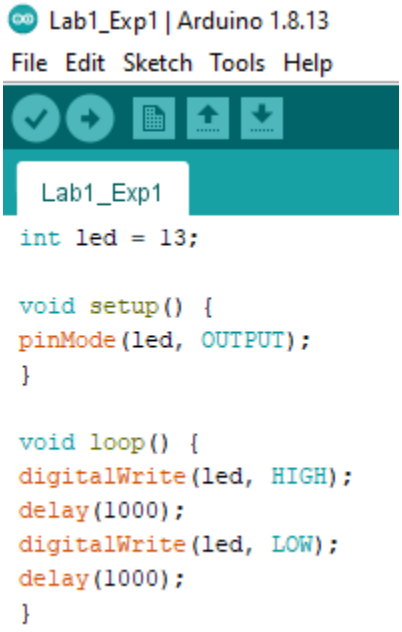

Figure 2. Code for Experiment 1

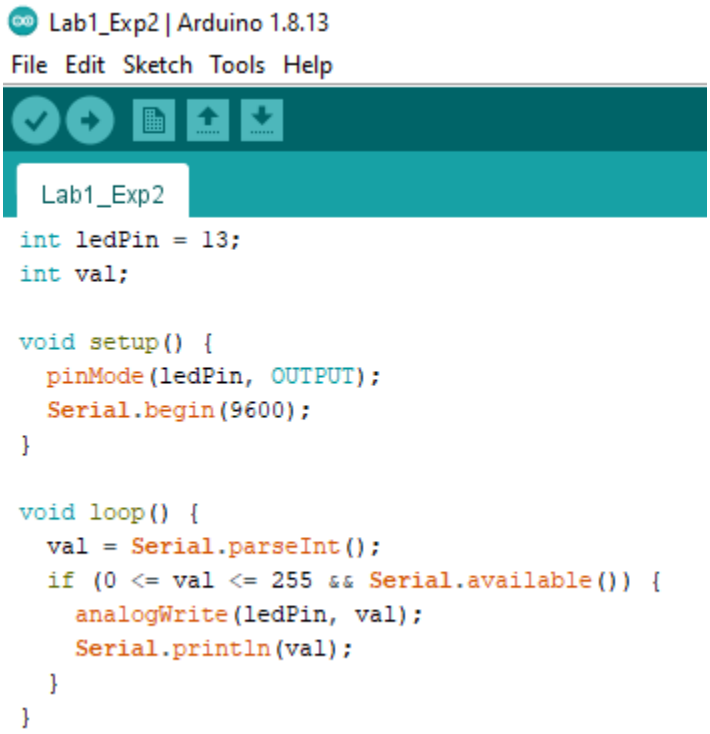

Figure 3. Code for Experiment 2