**ELEC3848  
Labs 1 & 2 Reflection**

Labs 1 and 2 have made me familiarize myself with the basics of Arduino Uno. As an EE student, I have experience with microcontrollers and related implementations from the summer workshop.

Lab 1 deals with basic use of LED lights, with simple programming review. The main takeaway from this lab comes from implementing the push button to switch between LEDs. The two main methods are continuous polling, and interrupts.

The only difficulty we faced was that we initially connected one of the LEDs for Task 5 to a pin with no PWM support, so we couldn’t get it to fade and spent some time wondering whether it was a coding error. But we eventually figured out that we needed to use a pin with the tilde ( ~ ) symbol, and adjusted the pin assignment in our code accordingly – thanks to the reply of our TA.

One of the limitations of the Uno is that the external interrupt function ‘attachInterrupt()’ only works on 2 pins, though other Arduino boards might be more suitable if we wish to use this function on multiple pins. Moreover, having only 6 pins with PWM support might be a limitation for specific cases, if we needed analog-like outputs on more pins.

However, it would be interesting to work around those limitations to achieve the same result.

For lab 2, we got to work with sensor, OLED display, and try out the 3 timers on Uno: Timer0, Timer1, and Timer2. The lab required some calculation especially in finding the correct pre-scaler values and counter values to achieve the appropriate frequencies.

The mechanism on how the OLED and QTI worked were simple to understand and implement.

However, the difficulty faced was the lack black tape provided. And we also had a bit of difficulty in installing the libraries, but this was because we didn’t take the time to read the instructions provided in Moodle and went straight to programming.

The potential limitations might be the 8-bit counter limit for Timer0 and Timer2, and also a limited number of pre-scalers for Timer2 – If given that we needed a low enough frequency on all 3 timers simultaneously.