Christopher Cenci

Etude 2

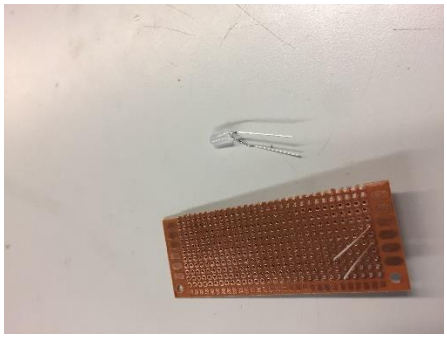
Steps One through 10 of adding the Attiny85 library

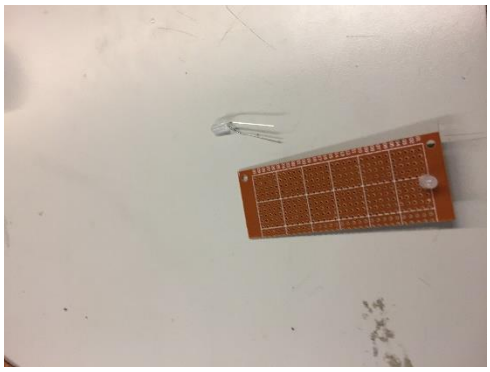
These steps were simple, I followed the instructions and the sketch compiled successfully.

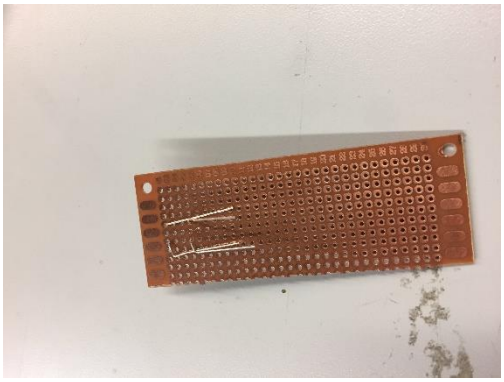
While creating the actual Perceptron, I initially looked at the reference perceptron to aid me in my soldering. I planned my board out and started soldering the pieces. Upon completion, I realized that I misconnected two LED's, which resulted in me starting over. The images are of my first attempt Perceptron.

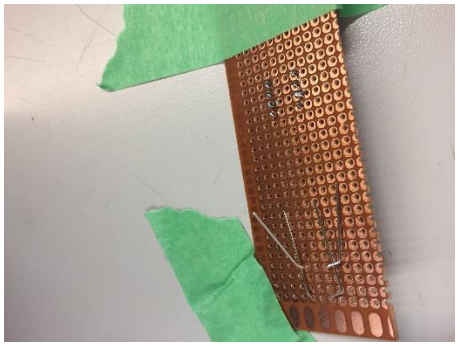
In my first approach, I did not really have a plan, which led me to have spatial issues which resulted in me confusing the connectors and having to restart. In my first build I started from both sides and worked towards the middle, I soldered everything first then worked on connecting them.

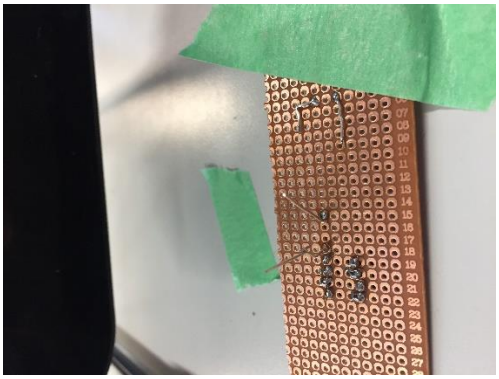
In my second approach, I knew my mistakes and had a more concrete plan. I did not photograph each step, as I figured that it was similar to the first build. In my second approach, I started by setting up the LEDs, resistor, connector, button then battery, in that order. I miscalculated the space again in my circuit board, but I had the connected the LEDs to the Attiny properly. I will work on space in the next build.

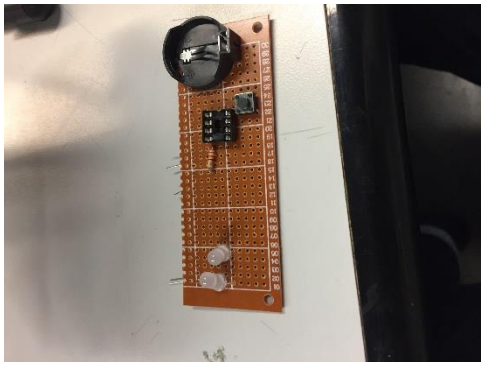
1. 

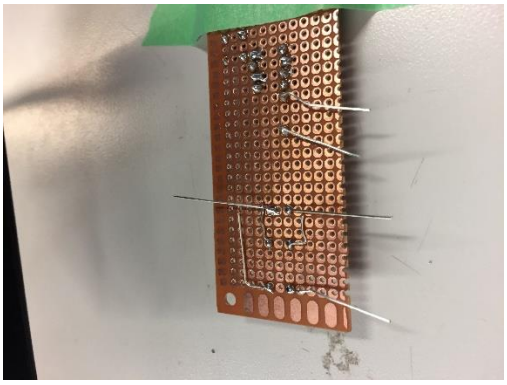
2. 

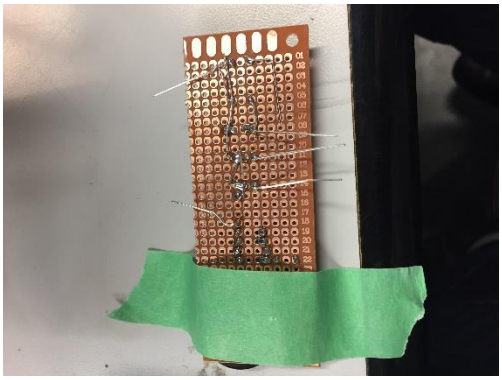
3. 

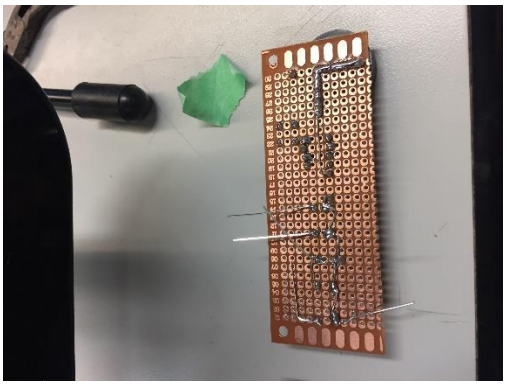
4. 

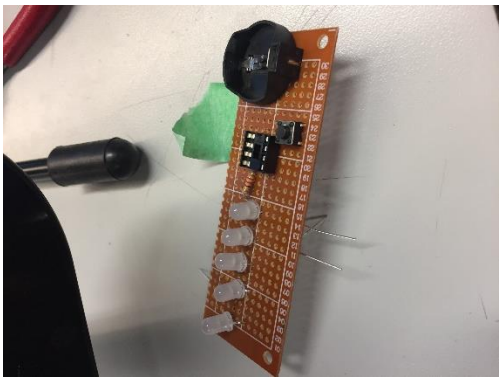
5. 

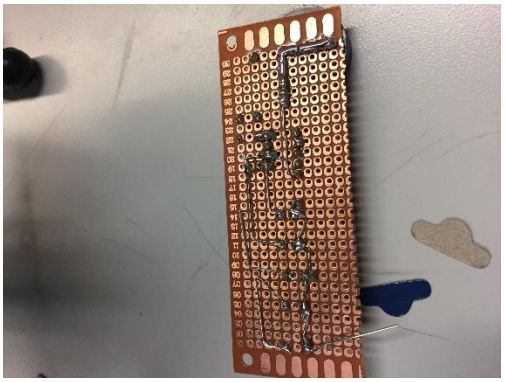
6. 

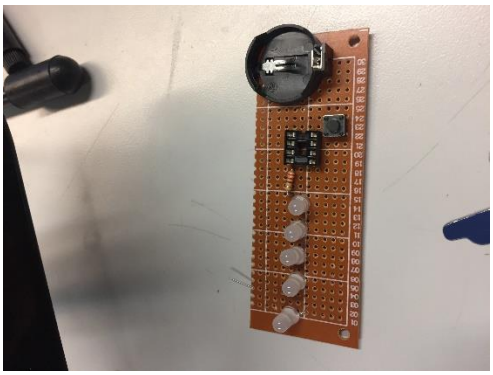
6. 

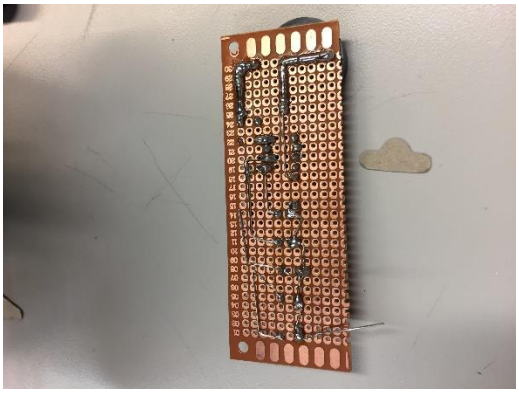
7. 

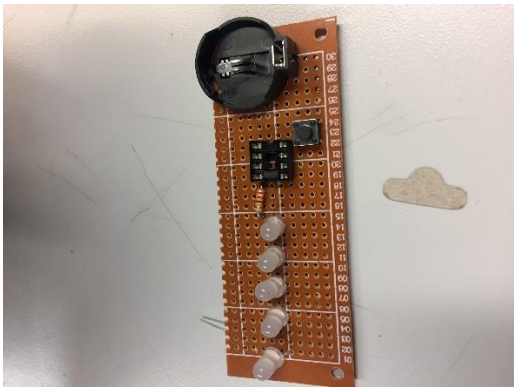
8. 

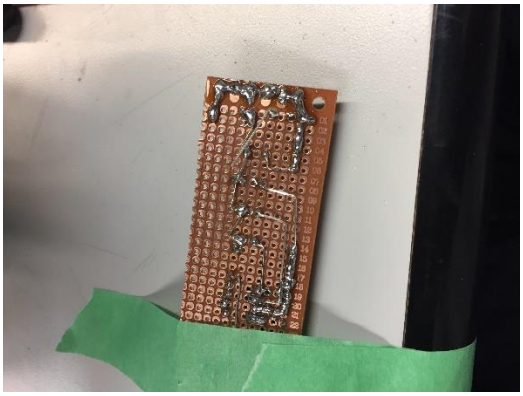
9. 

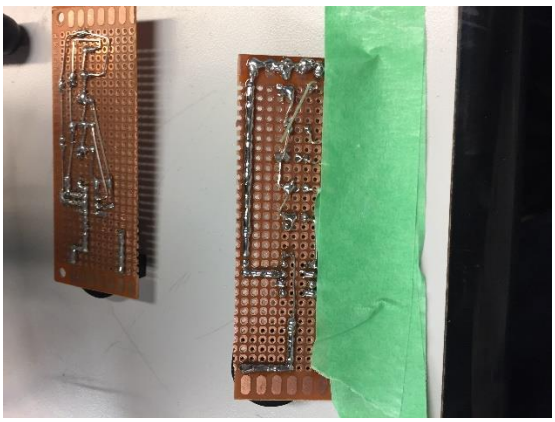




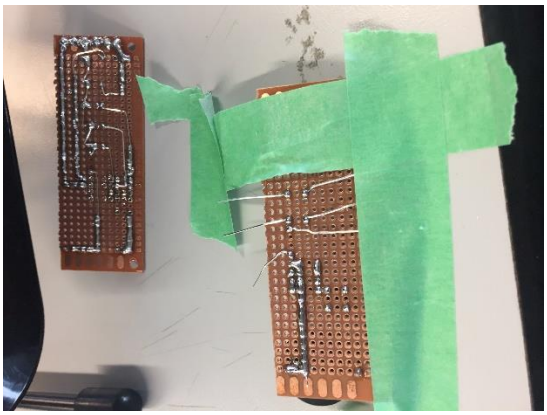


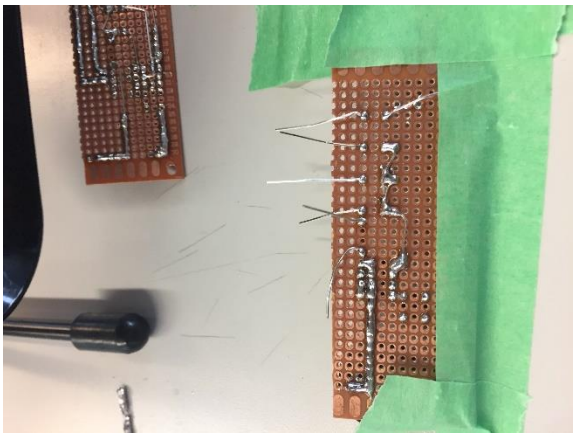


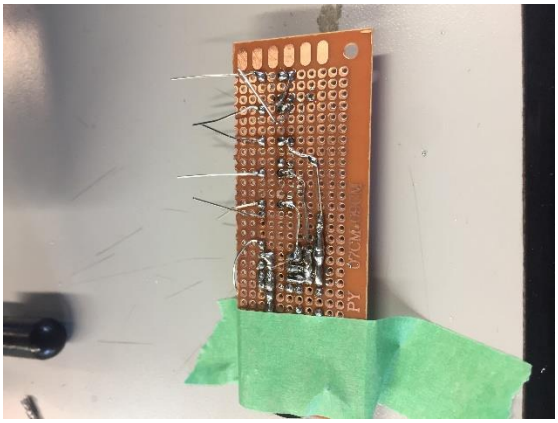


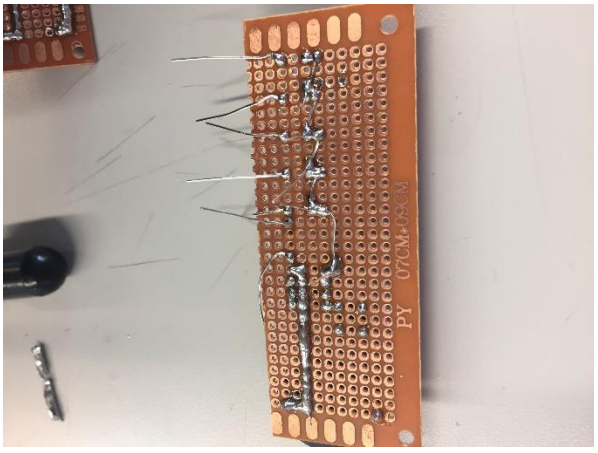


These photos are from the second attempt. I had miscalculated the amount of space I had, resulting in a tight fitted board.









Part Two

From what I am observing, the second circuit has a resistor connected to all LED's while the first circuit has one resistor for all LED's. In the built circuit, we have a current limit, but it may happen that the current in one LED may not be similar in another, this will result in one LED getting more current or one LED having less current. This will result in one LED being dimmer than the others. Furthermore, if there was more LED's, then the current would be much larger, resulting in one single resistor not being able to regulate all LED's effectively.

The circuit with multiple resistors will regulate each LED individually, which means that each LED will process the same amount of current through the resistor. If one LED has more current running through it, then the resistor will regulate it.

Voltage in circuit 1: Each LED may always not emit the same voltage, resulting in one LED having the chance of being lower or brighter. If there were many more LED's, one resistor may not be enough to regulate the voltage.

Voltage in circuit 2: Each LED will be regulated, resulting in the voltage being uniform for each LED. With each LED being regulated, there will always be enough resistance for each LED.

Current in circuit 1: Each LED may not get the same amount of current through the circuit.

Current in circuit 1: Each LED will get the same amount of current through the circuit.

Resistance in circuit 1: There may be to much current running through the resistor.

Resistance in circuit 2: Each LED has a resistor; therefore the current will always be regulated.

Circuit Two- Edited

In this circuit, I proposed to add a barometric pressure sensor, by adding this, the message would change depending the pressure put on the button.