

Billy Lawton
Designing for IoT: Byrne
1/27/19

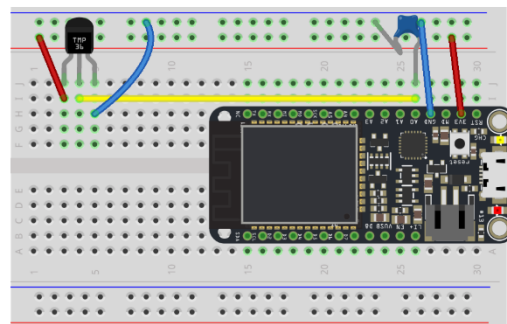
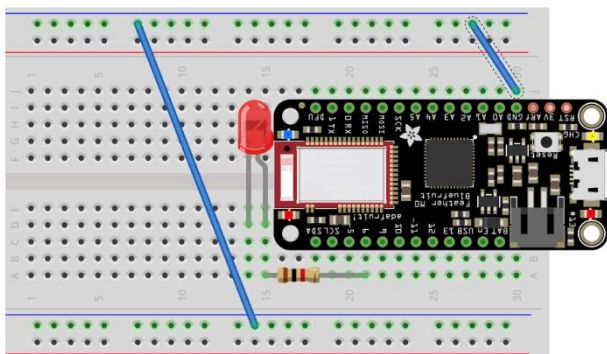
Creative Project 1: Augmented Object (Connected Temperature Sensor)

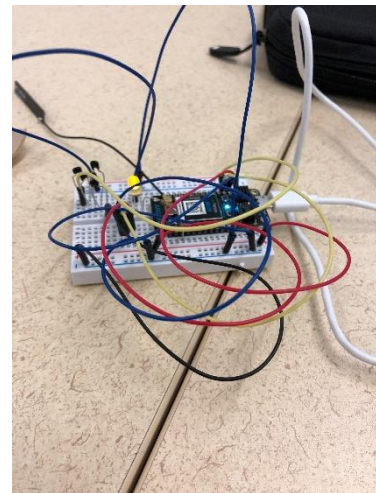
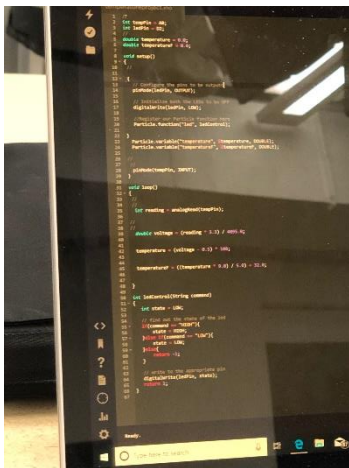
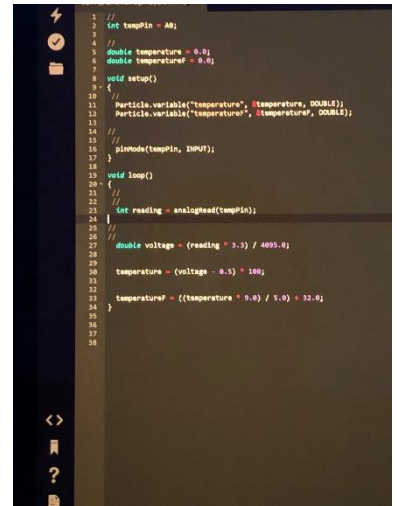
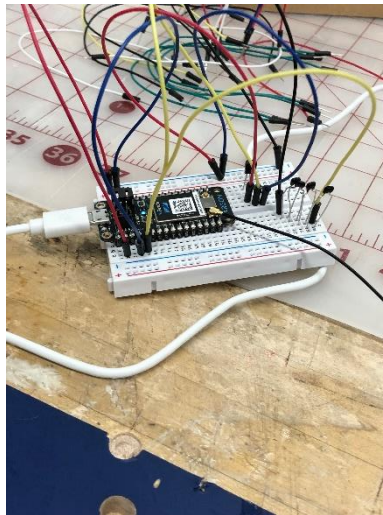
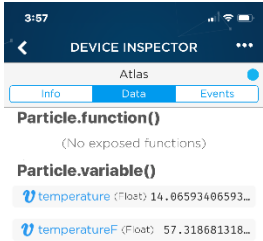
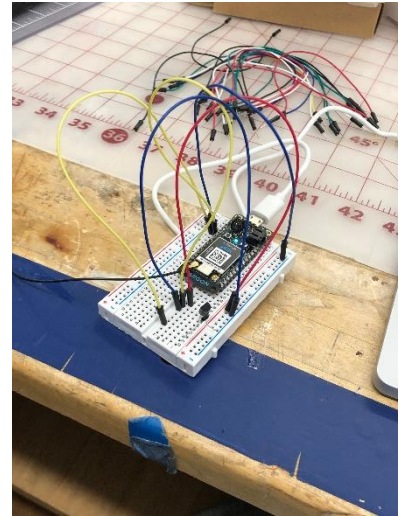
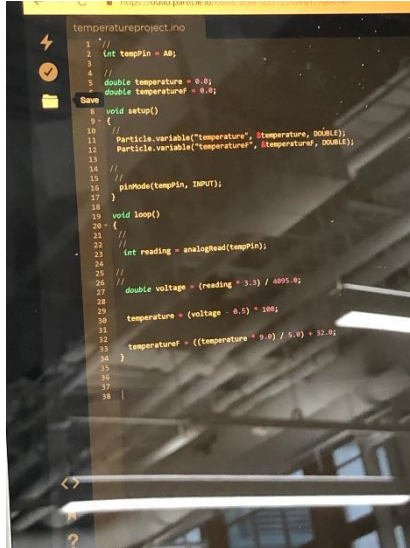
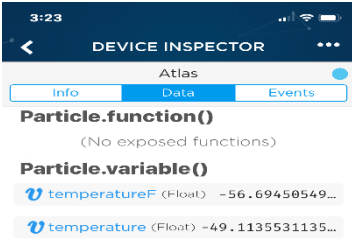
Problem Statement: My object is intended for apartment or home owners that have reason to be concerned about maintaining a stable temperature for sensitive things like plants. It can also be applied for those that have a second home and want to make sure that the conditions are kept in good shape (i.e. pipes didn't burst or heating system didn't give out). I chose this solution because it's a good opportunity within the scope of my talents and something that's readily applicable to my life, as my mom keeps house plants that require certain environmental conditions and wants to be able to remotely monitor the temperature conditions of our cabin that's many hours away to help ensure that nothing goes wrong. This technology accomplishes this mission by offering a simple solution that gives a good estimate of the temperature conditions and allows the user to monitor the home environment remotely.

Goal: I've set out to create a simple temperature sensing circuit that uploads data to the Particle cloud that the user can view by simply downloading the Particle app and viewing the data. The data can be refreshed in real time to allow the user to continuously monitor the conditions. This system fits my goals of getting the user real time temperature data that they can view remotely from anywhere and allows them to respond accordingly and more quickly based on this data.

Process: In going about creating this circuit, I gathered the components described in the tutorial walk-through. After some initial issues identifying the right parts, I realized that the lab didn't have the recommended 10 nF capacitor for this temperature sensing circuit. To overcome this issue, I used four .04 uF capacitors in series to get the desired effect. Even then, my temperature readings were way off, reading at -55 degrees Fahrenheit. After some consultation with the TAs, we saw that my sensor wasn't being powered by anything and couldn't accurately sense the environment in the lab. I needed an additional jumper wire connection at A2 on the breadboard to power the sensor. With this final connection, I started getting credible temperature readings within a range of 55-75 degrees Fahrenheit on the Particle app. I lastly went back and added an LED light to show the user that the circuit is connected to the internet and actively transmitting data.

Outcome: The parts included capacitors, the TMP36 temperature sensor, jumper wires, and an LED. **Diagram Sources:** <https://diotlabs.daraghbyrne.me/docs/a-simple-internet-appliance/iot-led/> ; <https://diotlabs.daraghbyrne.me/docs/working-with-sensors/tmp36/>





Video Link: [C:\Users\billy\Downloads\IMG_1078 \(1\).MOV](C:\Users\billy\Downloads\IMG_1078 (1).MOV)

Next Steps: I would try to develop a prototype that doesn't need to be plugged into a computer with a USB. I would also find a more steady sensor that can more reliably measure the external temperature. It enhances the usability, convenience, and accuracy of this product by having a standalone body that can connect to wifi without requiring a direct connection to a computer. The sensor could be placed in more rooms around the home to monitor more area and give better information.

Reflection: I was able to successfully complete the simple system that I was looking to create. It was frustrating and discouraging trying to get and identify the parts that I needed and put it all together into something that works. Understanding code and working with electrical circuitry is something I struggle with and have no passion for, so this process has all been rather cumbersome and painful for me. The application of this temperature sensor is rather simple but helpful for those looking for peace of mind in maintaining their property and other belongings.