

**University of Ottawa**

**GNG 1103B: Engineering Design**

**Project Deliverable G:**

Group members:

Name : Student number :

Ethan Langevin (300241099)

Dina Kaufmann (300232359)

Jean Cloete (300278812)

Amnol Dhaliwal (300301979)

Haolin Li (300315912)

November 13, 2022

**1. Introduction**

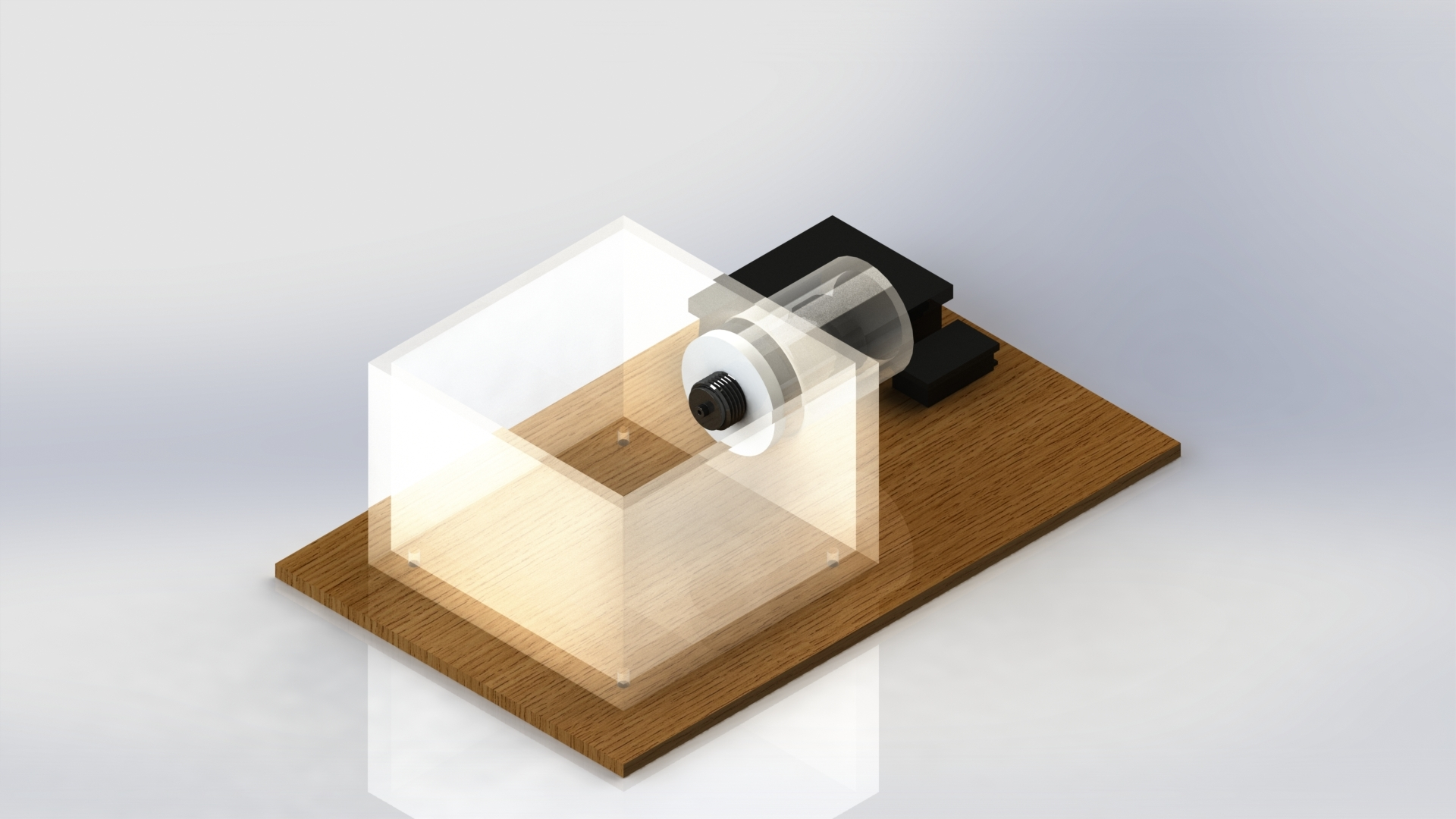
In this deliverable, our team will be working on building a CAD model for our prototype, a user interface, a wireless data transport solution using Wi-Fi or bluetooth, and codings for functions such as calculations and wireless modules.

**2. Initial Feedback**

Shane’s feedback gave us the reassurance that the group is on the correct path, “Like it, concept works”, and when asked for his opinion on the accuracy of 99.1%, “accuracy is better than any other tool and works”. This feedback is used to know we are heading the right way and we will continue to move forward with our concept.

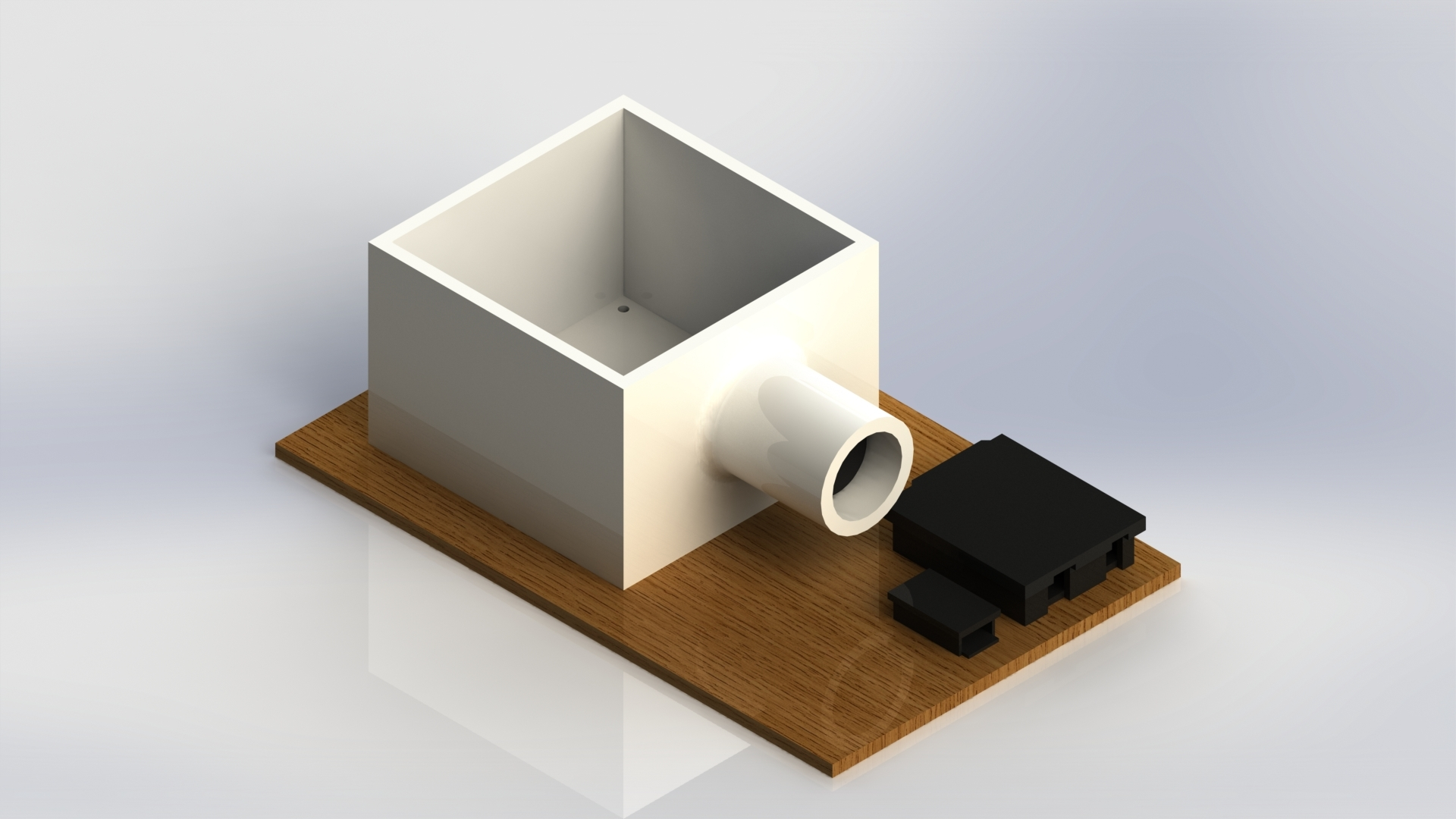
**3. Prototype**

For the UI Mockup and explanation: Follow link below. The Functioning Model will be showcased at the end of the 3rd prototype stage. <https://docs.google.com/presentation/d/19zVPA5l1DF4_EL5QcRnK70c6YIuywkkYclpfa2n47mQ/edit?usp=sharing>

For the 3D model of the final prototype a cad model was produced in a program called solidworks. The render features a tank to hold the water, how the pressure sensor will be mounted and 3D printed cases for the arduino and the bluetooth module.

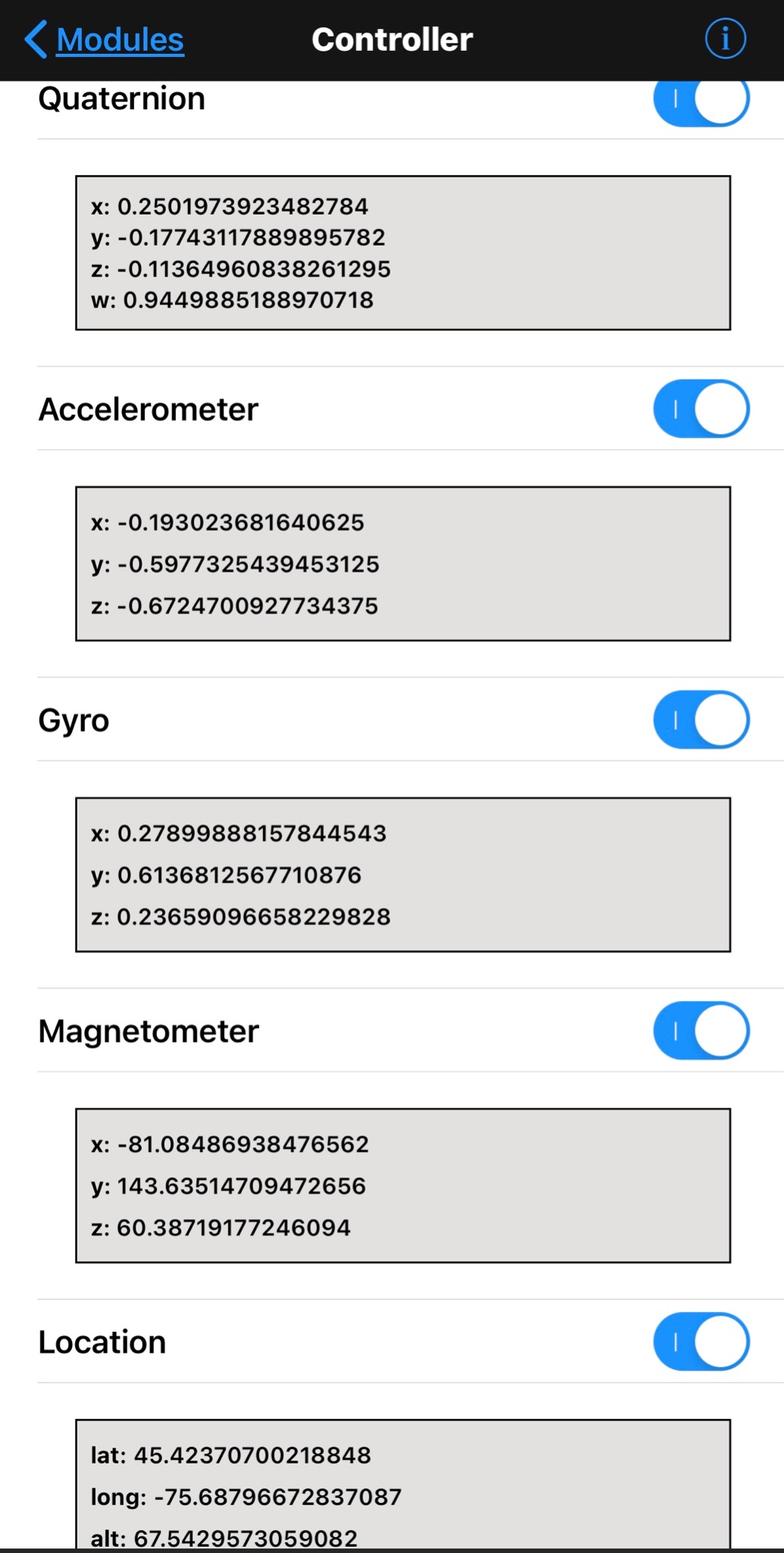
**4. Prototype Results**

**5. Prototype Feedback**

****

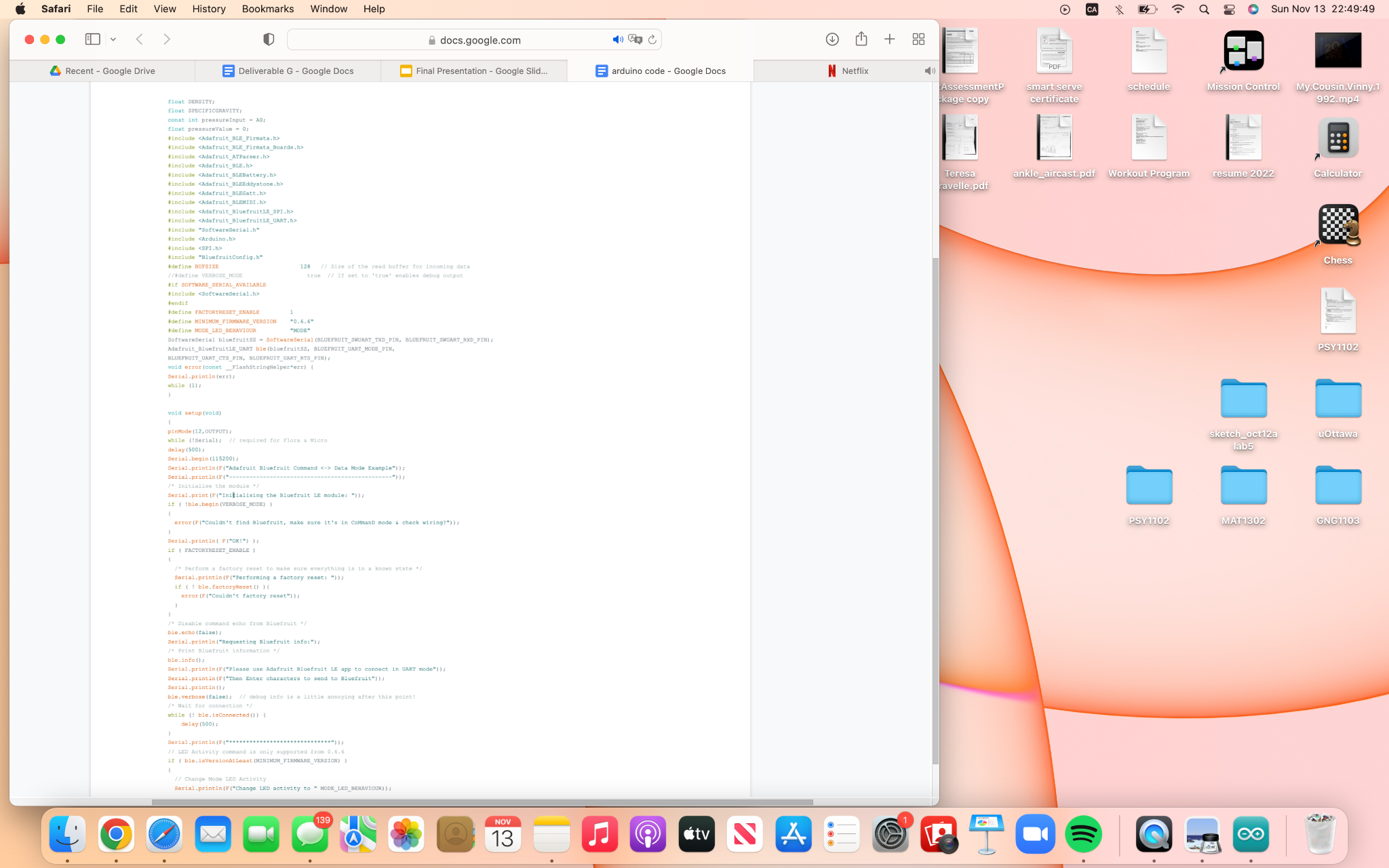
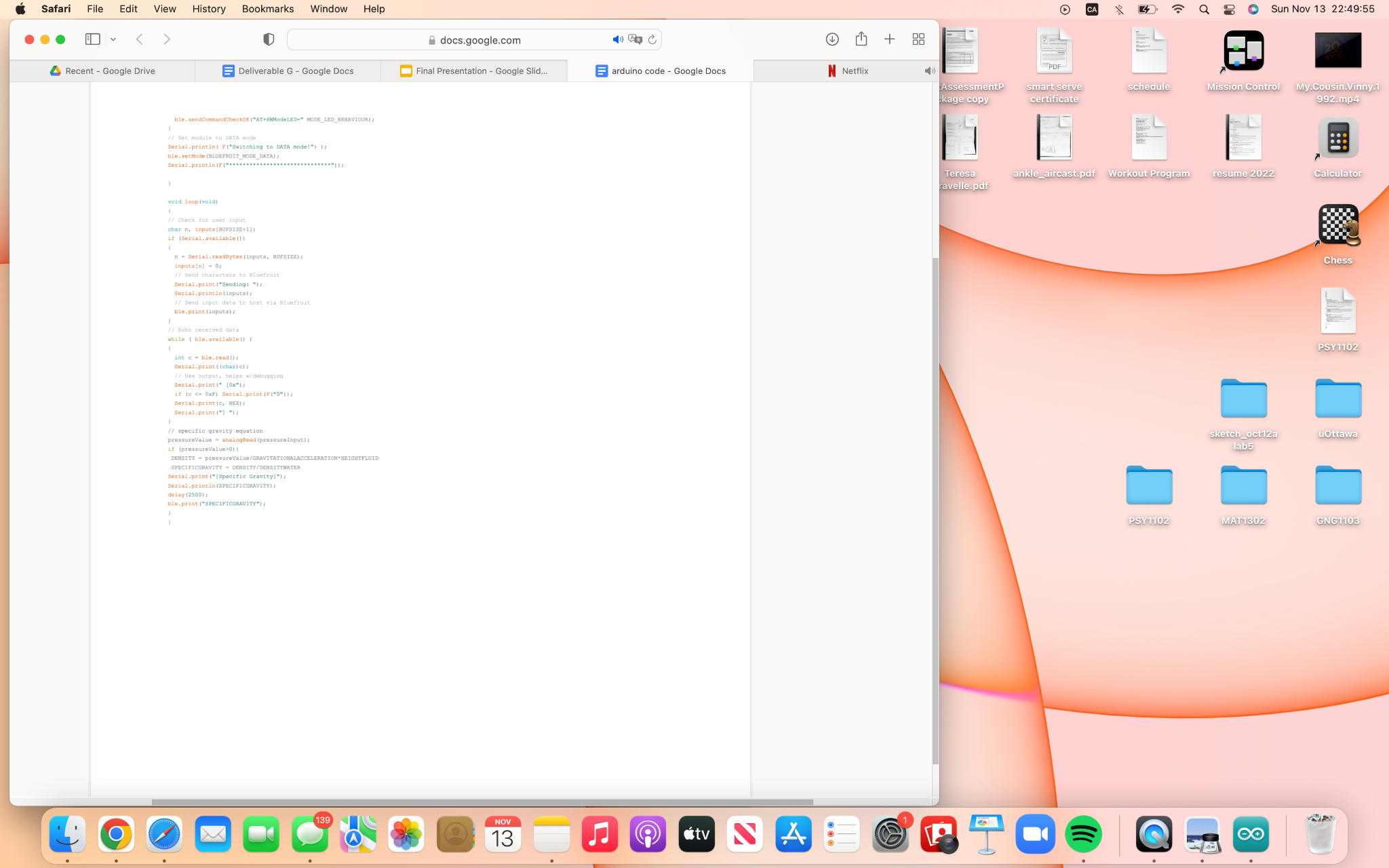
**4. Wireless Data Transport Solution using Bluetooth**

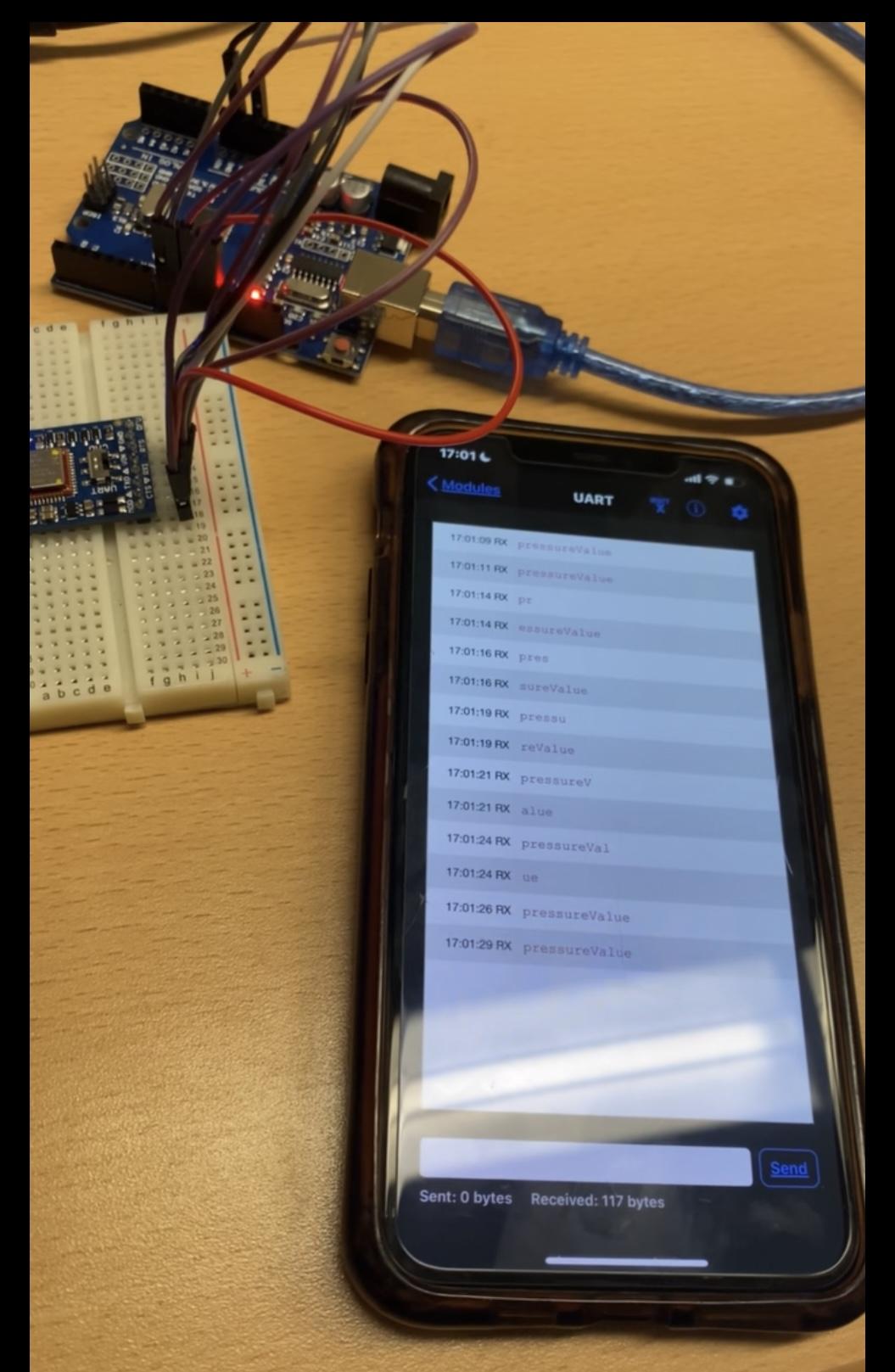
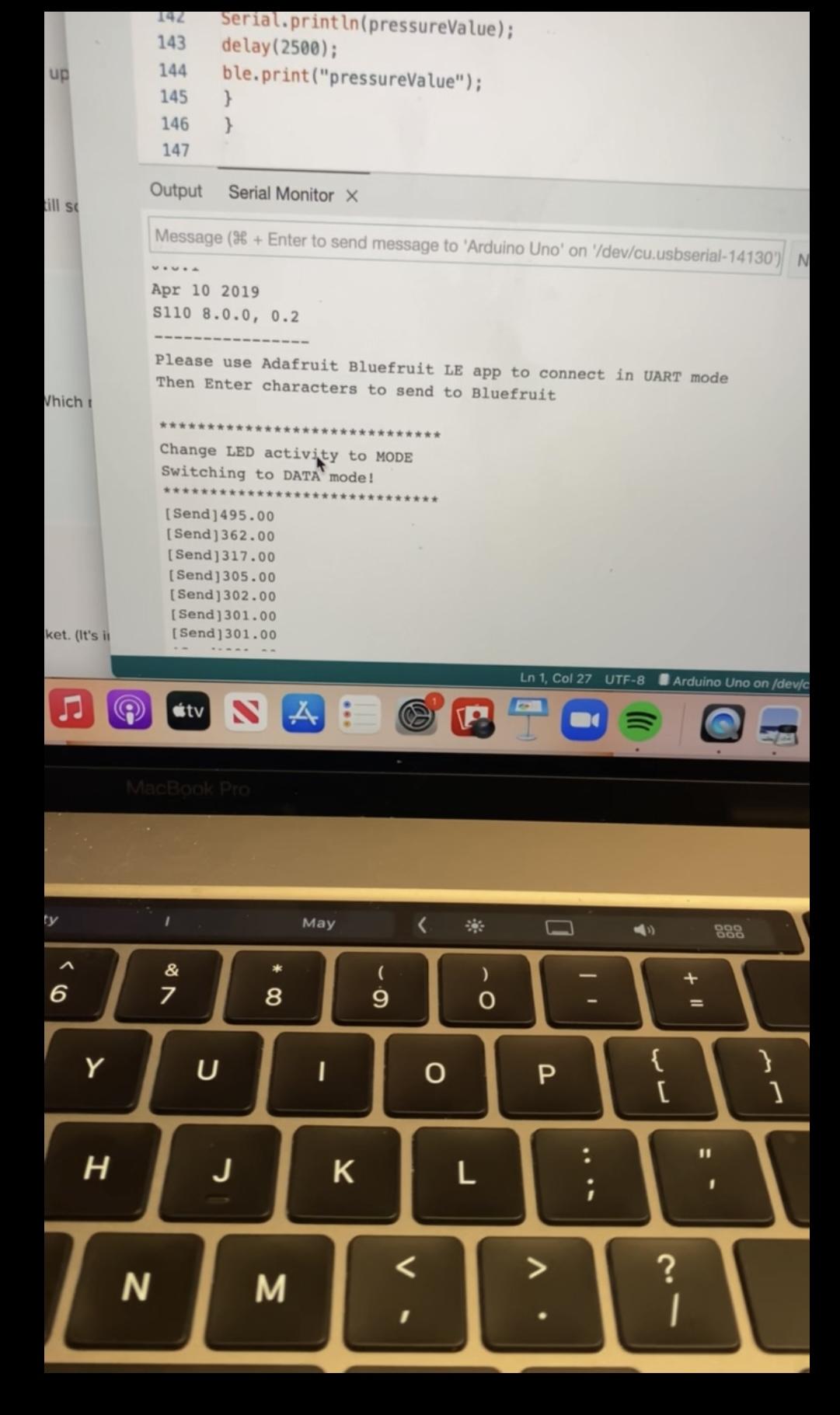
Using Adafruit Bluefruit LE UART Friend 3 - 5V we were able to transfer accurate specific gravity numerical values from Arduino Uno IDE to the “BluefruitConnect” app with an iOS mobile device. communicates to just about any device with a hardware or software serial port using an easy-to-learn AT command set and allows projects to be prototyped fast by using an iOS or Android phone/tablet as a controller. The app has color changing capabilities, quaternion/accelerometer/gyro/magnetometer, and location tracking (GPS).



**5. Coding**

The Arduino Uno IDE code below leathers up our Adafruit Bluefruit LE UART Friend bluetooth device and is now capable of transferring accurate Specific Gravity measurements to the "BluefruitConnect" app via an iOS mobile device using a combination of values recorded from our pressure sensor and Specific Gravity equation.



****

**6. Conclusion**

We now have a concept for the final solution. We have a foundation for UI, a means of relaying the data from the devices such as the pressure sensor to the computer.

**7. Trello**

