

# IrriGator

Team: Reid Russell (CS), Jack Storey (CS), Maximilian Dennis (EE)



## Purpose

IrriGator has focused development on an adaptive irrigation system for consumer home use. The ultimate goal is to minimize water usage with a system that adapts to environmental conditions.

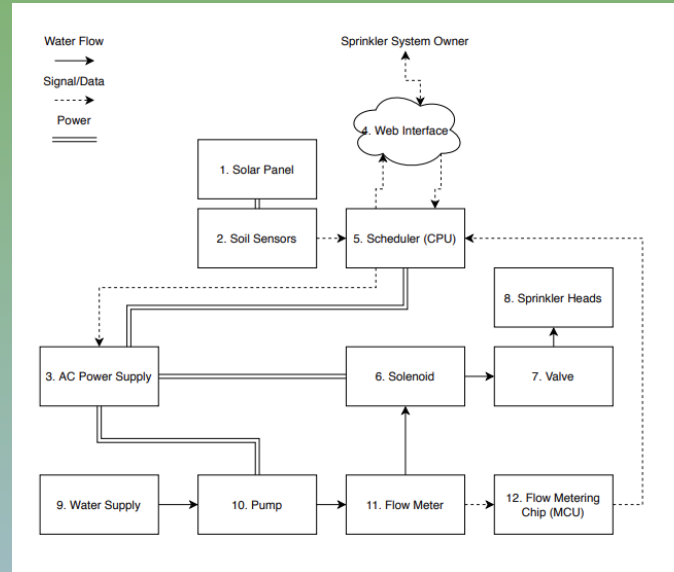
## Technical Solution

Our technical solution consists of two main components: the software and hardware.

The software is responsible for collecting sensor data and relevant API data, formatting this data and displaying it on a frontend for the user, and using the data to make a watering schedule.

The hardware allows the flow of water to a given zone for a given period of time and collects the data from moisture and flow sensors for use by the software.

## Hardware



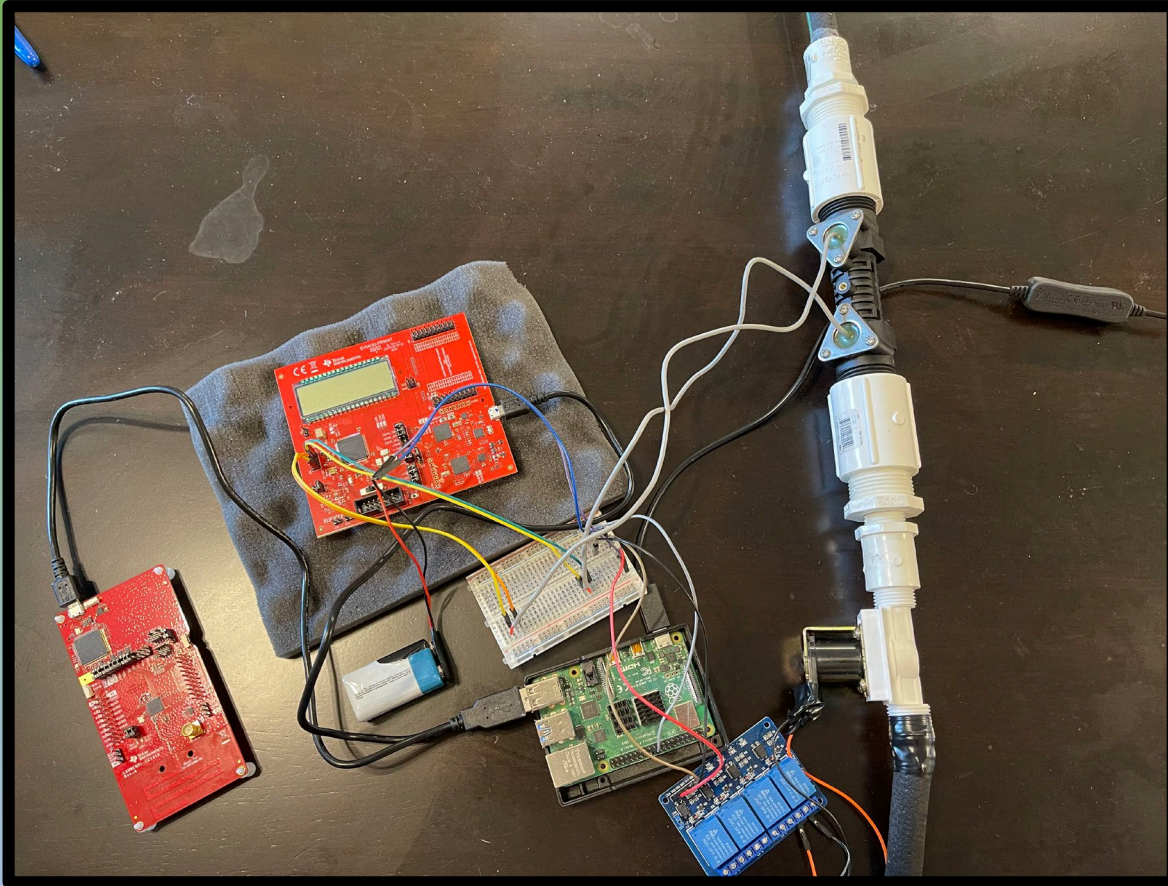
## Conclusion

Our solution is capable of processing data from source to frontend and make water scheduling decisions based on that data. Additional testing is needed to optimize the algorithm for the perfect amount of water usage for a given zone.

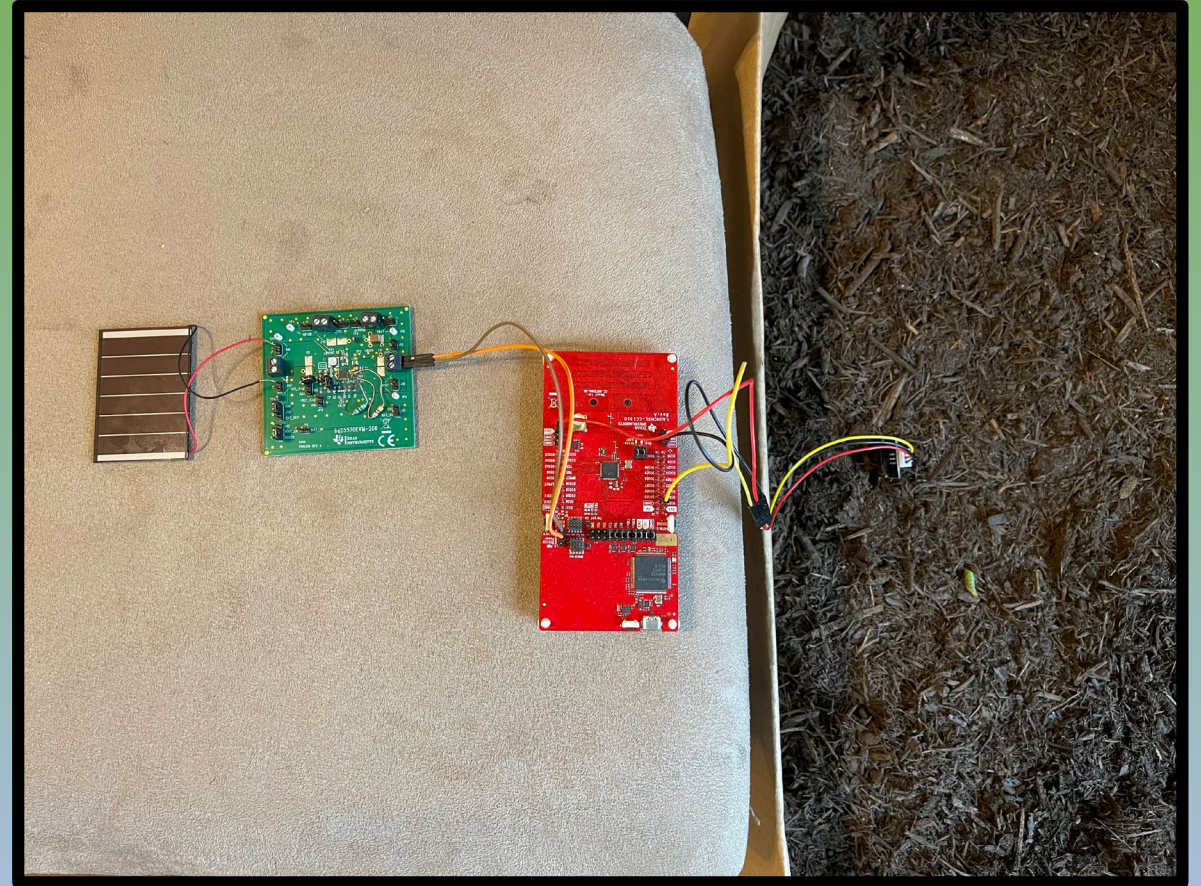
## Software

- Flow and Moisture Sensors: The ultrasonic flow sensor measures the amount of water flowing through the system. The moisture sensor connects to a solar panel for power and uses a microcontroller to wirelessly transmit data to the raspberry Pi. Both use integer values for data.
- Raspberry Pi: This is the brains of our system. It hosts the frontend, the database, and the backend. It also receives and formats sensor data, uploads data to the database, and controls the watering schedule.
- MongoDB: MongoDB allows us to use a NoSQL database to store our data and provides quick and easy access to data on the frontend.

# The System



Flow metering and control consisting of solenoid, ultrasonic flow sensor, evaluation board, and transmitter.



Moisture sensor module consisting of sensor, evaluation board, converter, and solar panel.