



UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN

Project 58

Predictive Plant Care

Electrical & Computer Engineering

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4/27/2023

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3. **Project Build and Results**
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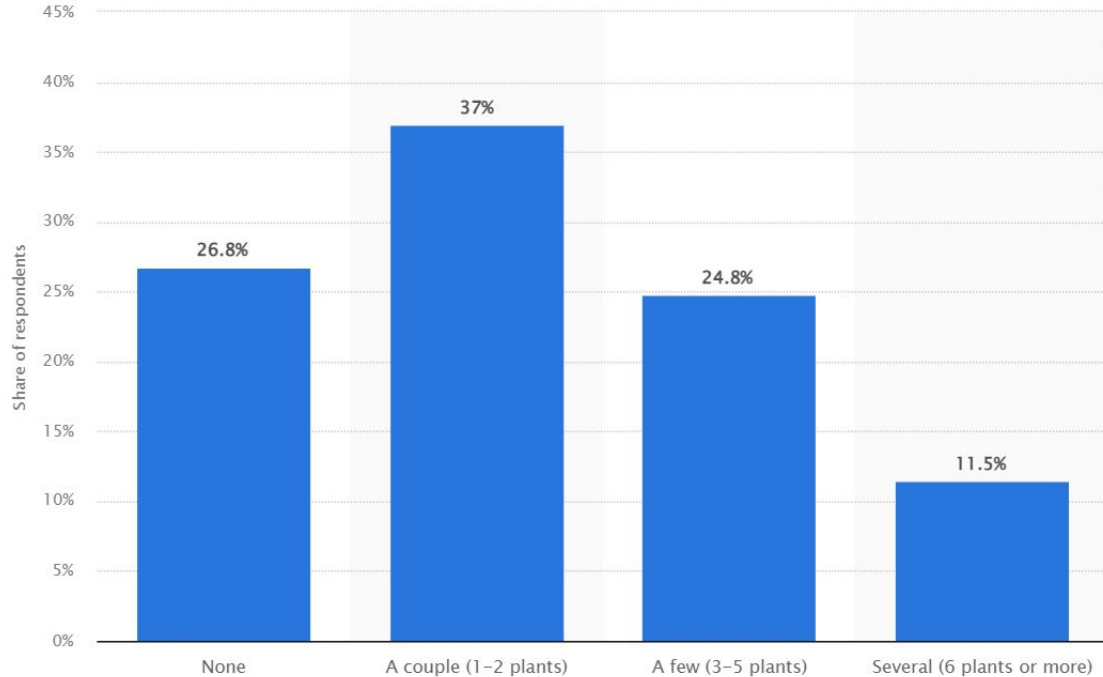


Our Plant



Objective

How many indoor plants U.S. recreational gardeners kill in a year 2021

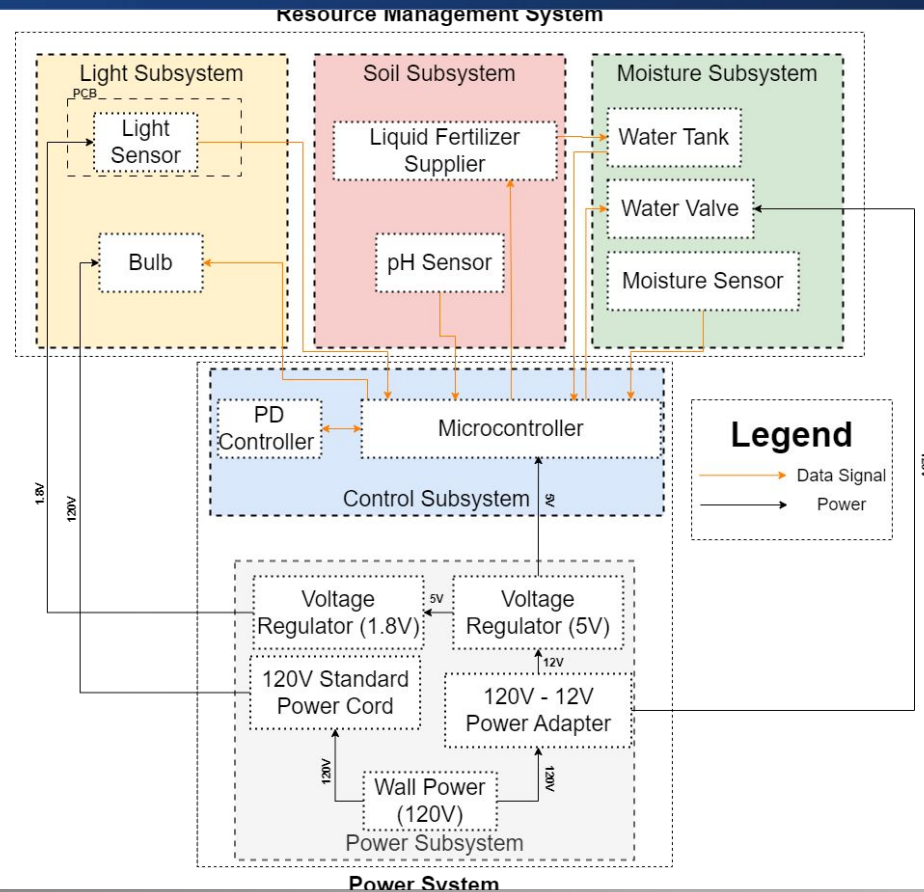


- Problem: many people struggle to care for plants
- Solution: automate the plant care process

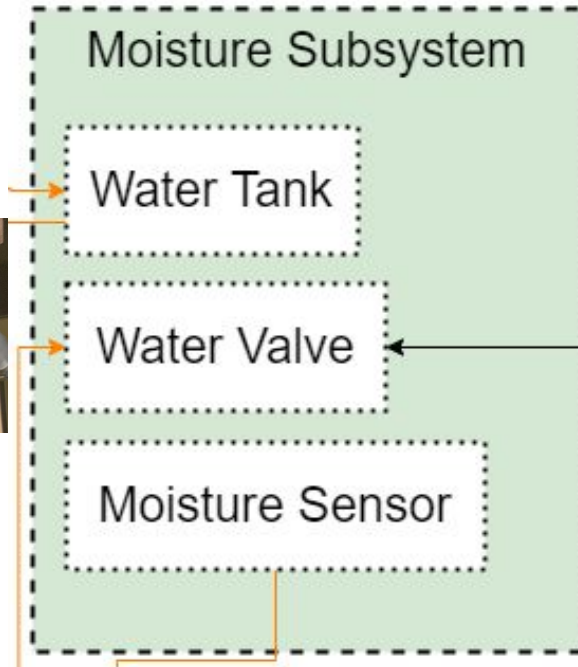


Original Design and Modifications

Initial Block Diagram

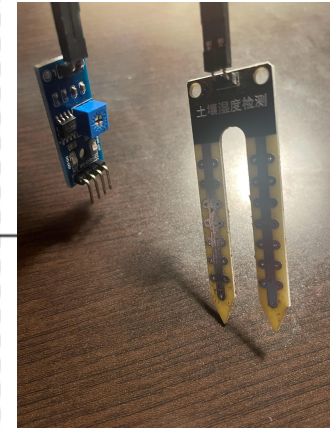
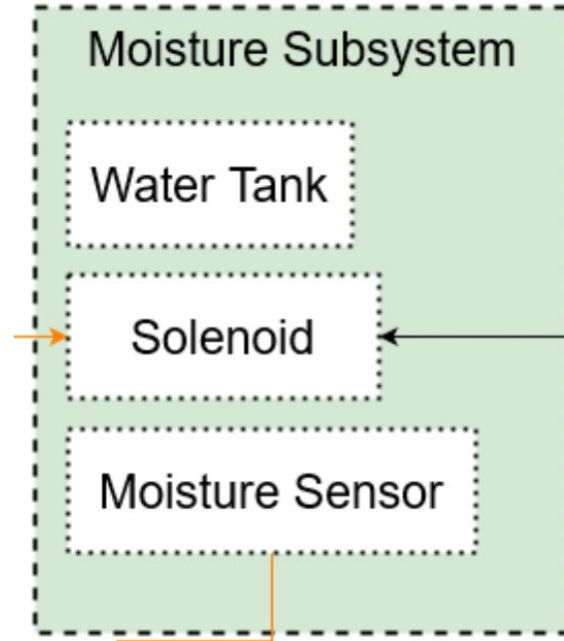


Original Design



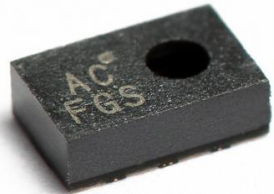
*Solenoid and Water
Tubing*

Modifications

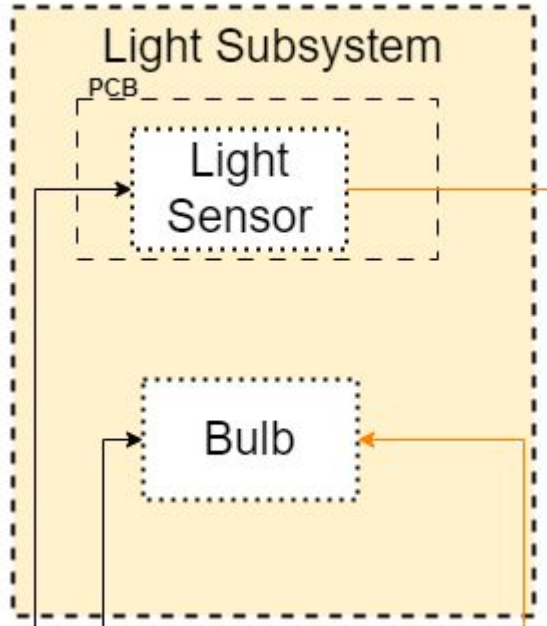


FC-28

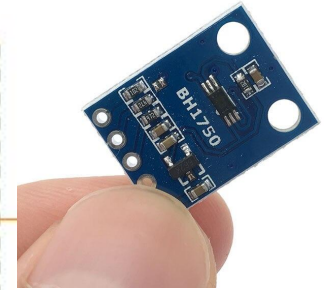
Original Design



AS7341



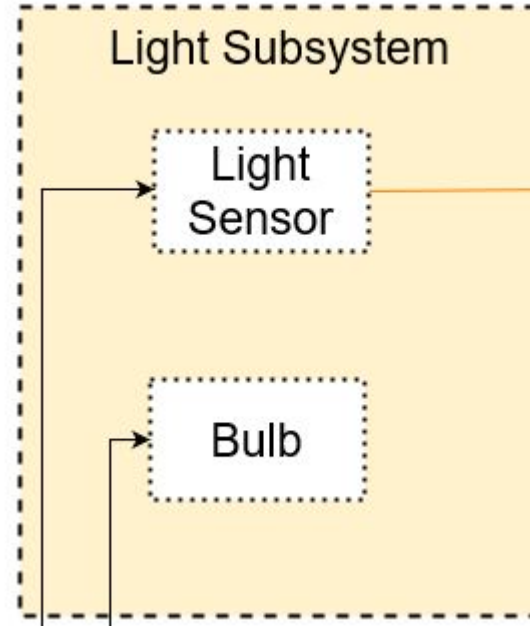
Modifications



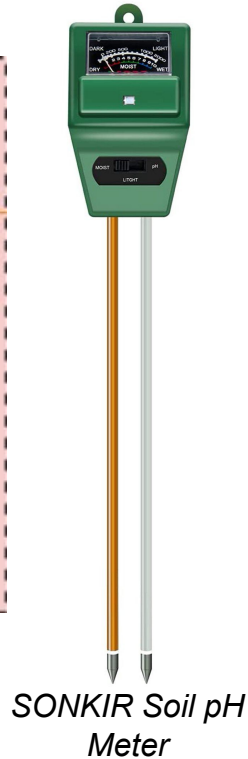
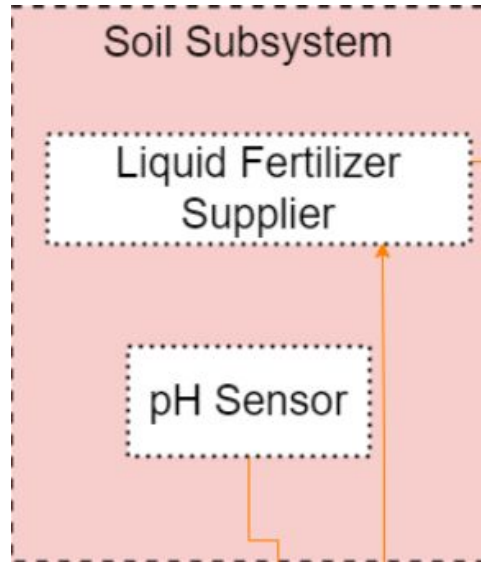
BH1750



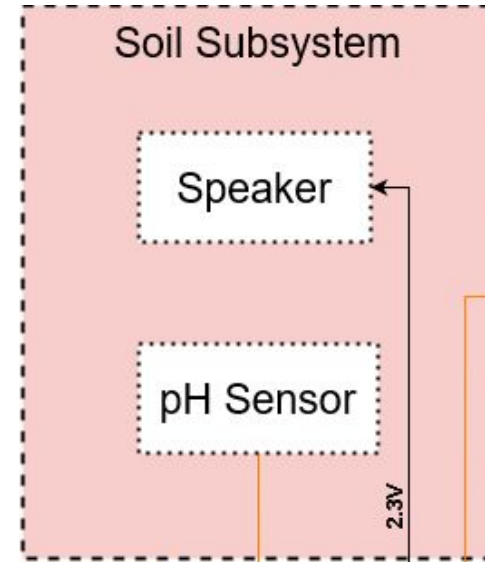
SSR-25AA



Original Design

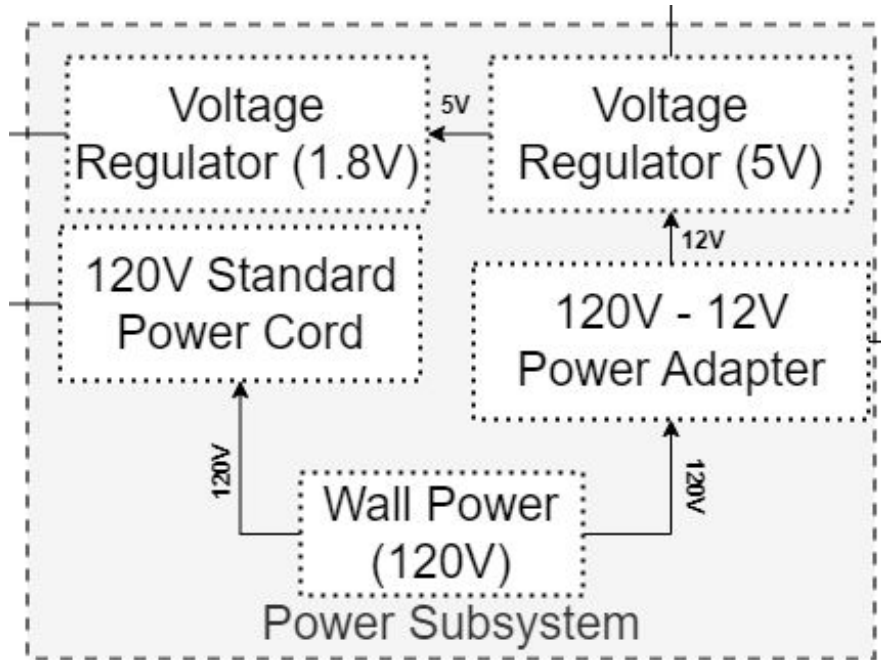


Modifications

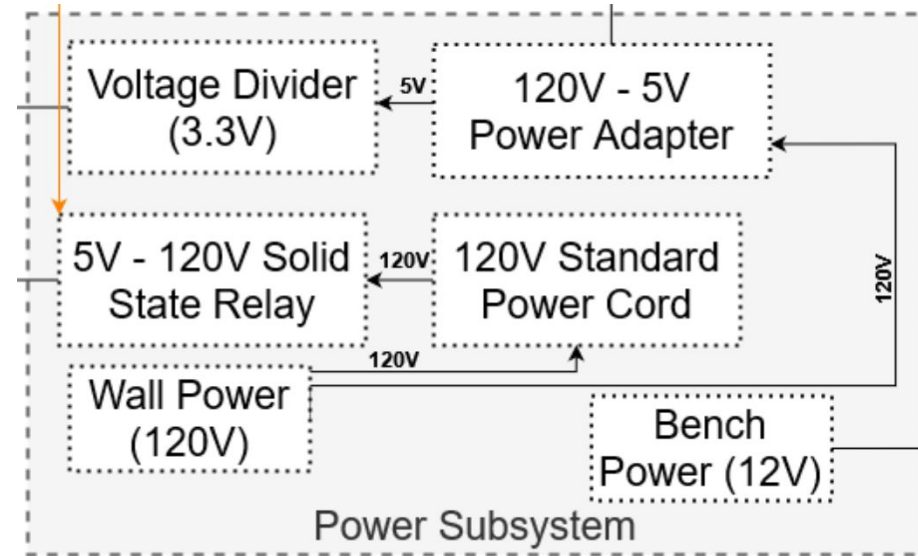


*SP-2306-1
Speaker*

Original Design



Modifications



Original Design

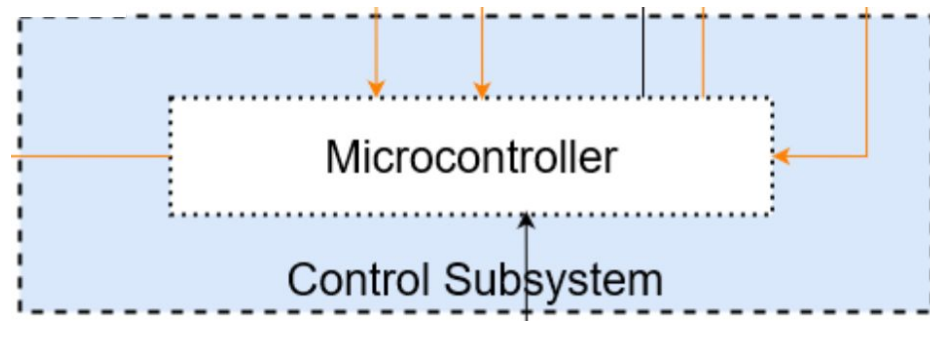
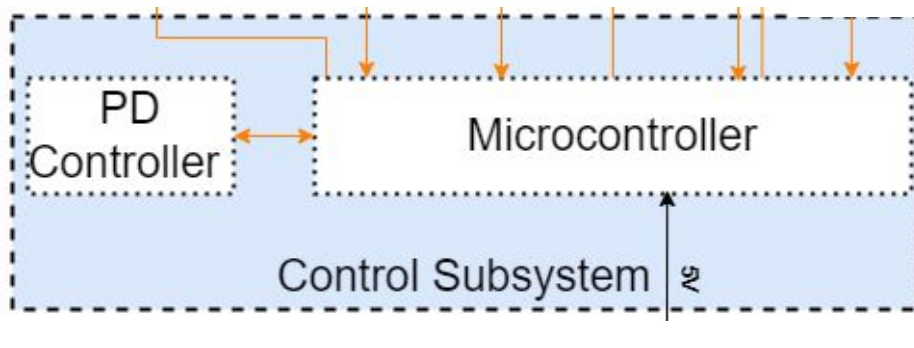
- Microcontroller sends and receives signals
- PD controller for light



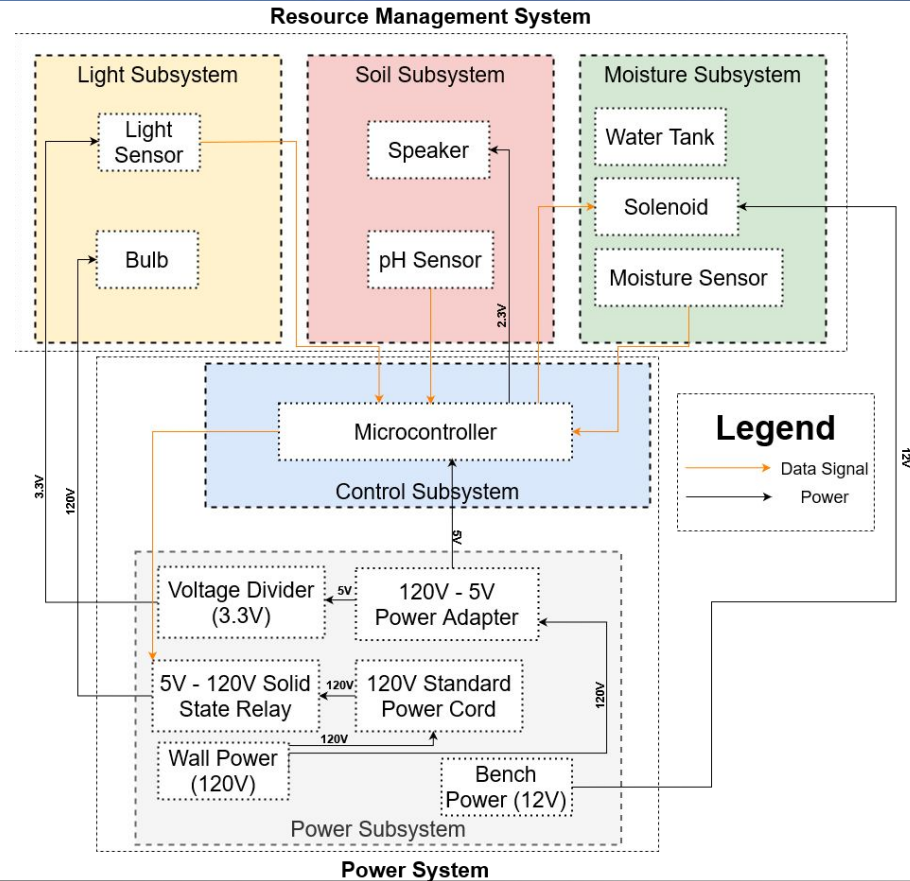
ATMEGA328P

Modifications

- Simple controller instead of PD controller



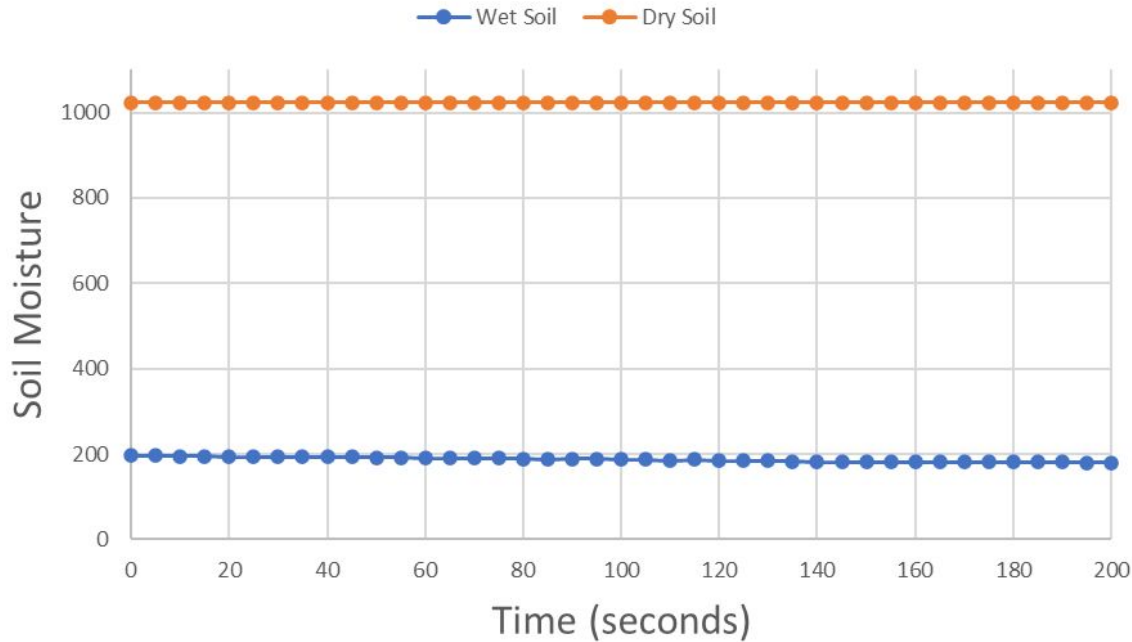
Final Block Diagram



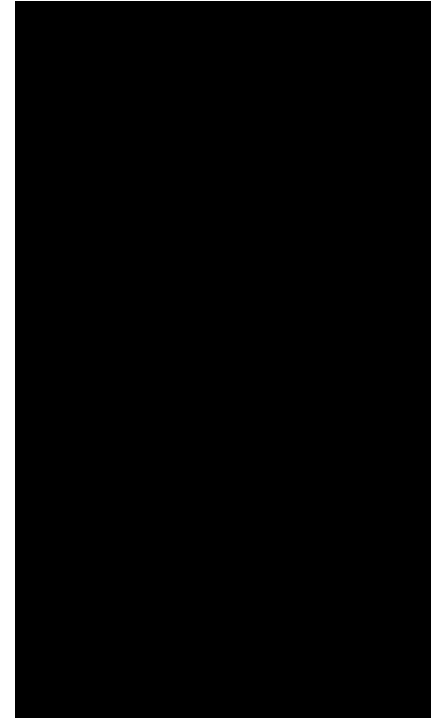


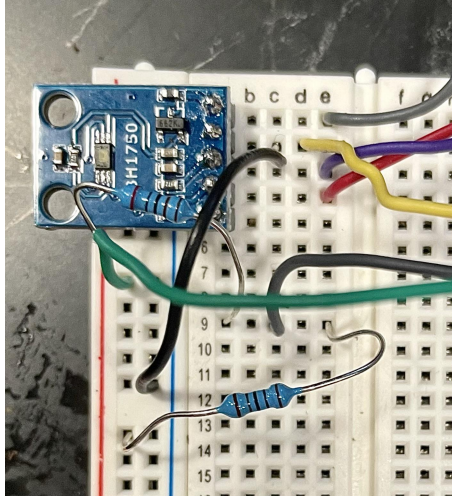
Project Build and Results

Soil Moisture vs. Time

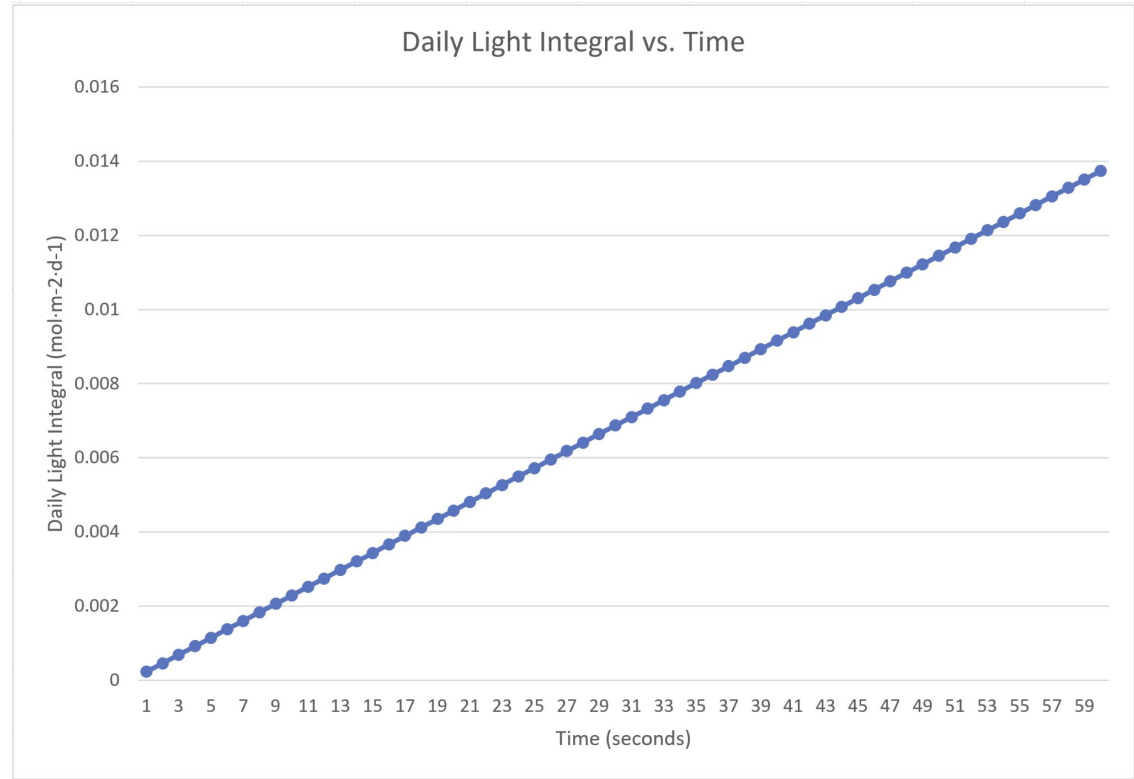


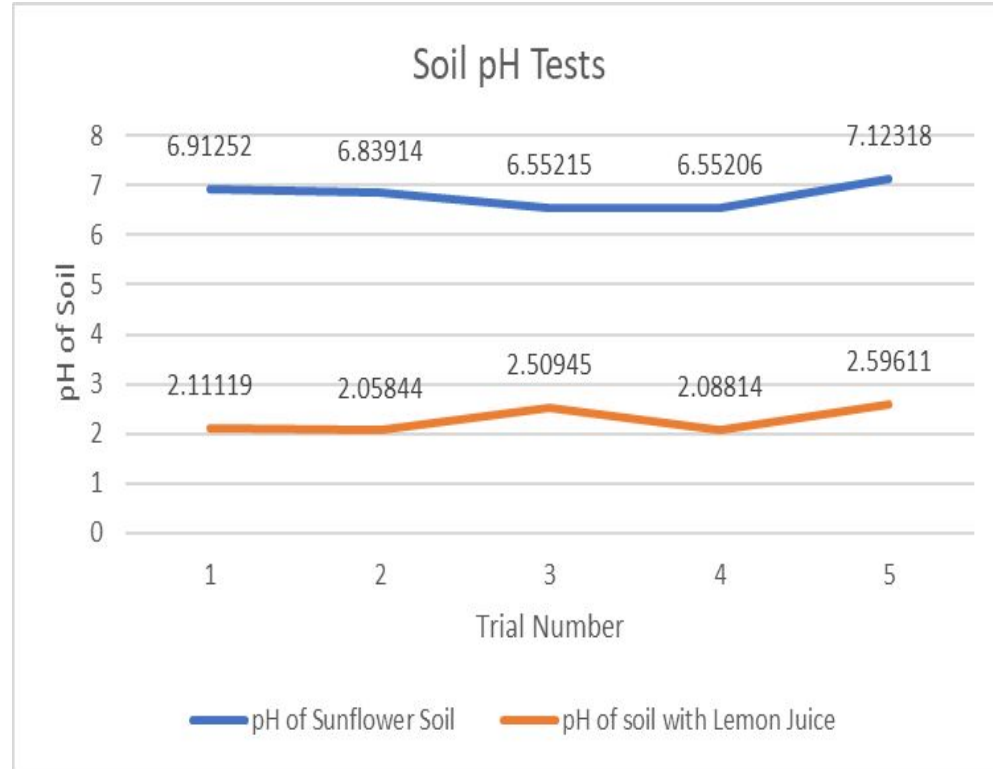
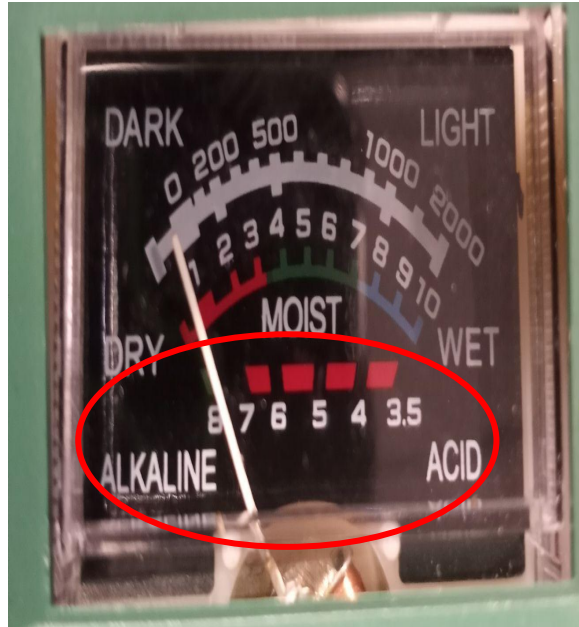
Success!





Breadboarded Light Sensor







ALITO 120V AC - 5V DC Adapter

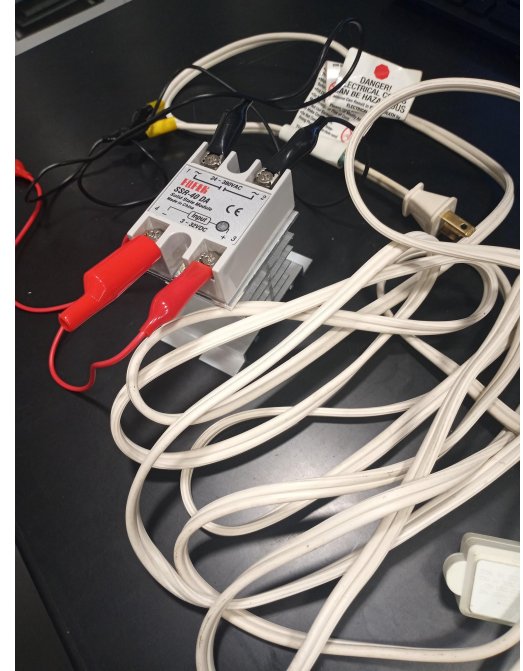
Power Subsystem

Requirements

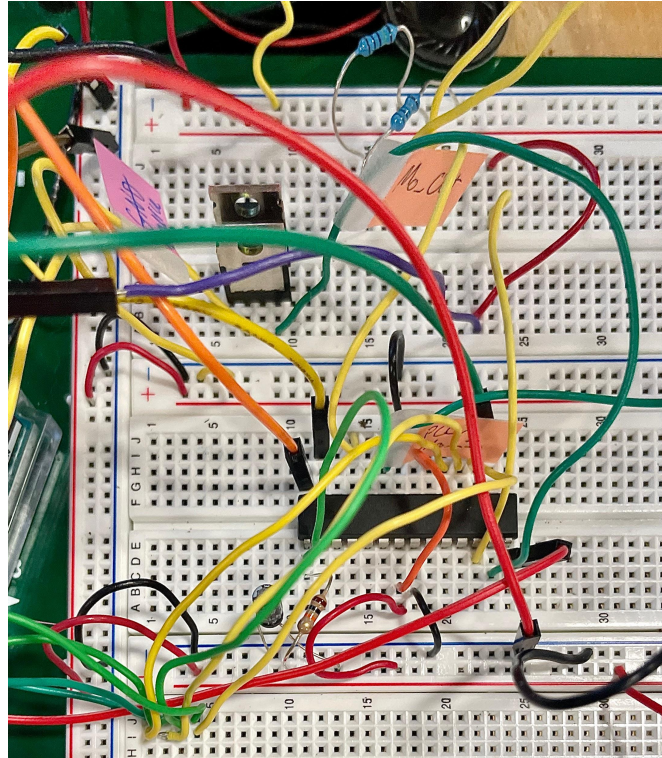
1. Right voltage
2. Doesn't overload

Results

- Success?



SSR-25AA Relay



Breadboarded Control System



Successes and Challenges

- Programming and integration
- Most of system autonomous
- Subsystem requirements

- Breadboard difficulties due to no working PCB
- Scheduling and time to work
- Matching system needs
- Calibration



Conclusions and Future Work

- We learned about the different components that go into taking care of a plant
- If doing this project again, we would have modified some subsystem designs to use different parts
- We also would have followed our initial schedule more closely

- Monitoring water levels in the tank
- Interface for user to choose different plants
- Improve functionality of pH system

Ethical Concerns

The biggest way to misuse this product would be to grow illegal plants, such as opioid plants or marijuana, with this device. While there is not much that we can do on our end to prevent this, we can very clearly discourage the misuse of our product.

Thank you!

Questions?

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