



UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN

“Don’t Kill My Plant” Habit Tracker

Electrical & Computer Engineering

ECE 445 (Group 28)

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Habits, Habits, Habits

We are trying to solve a problem that has plagued people for ages: breaking bad habits and adopting good ones. Even though humans may want to change these habits, they usually lack the willpower in order to do so.

Other Solutions Aren't Effective

Common solutions on the market to help people change habits include smartphone tracking apps and physical devices that track physical habits. These solutions are great for tracking, but most of them can be circumvented easily and don't hold people accountable for their actions. In addition, any positive reinforcement methods that they provide are minor and are not effective enough.



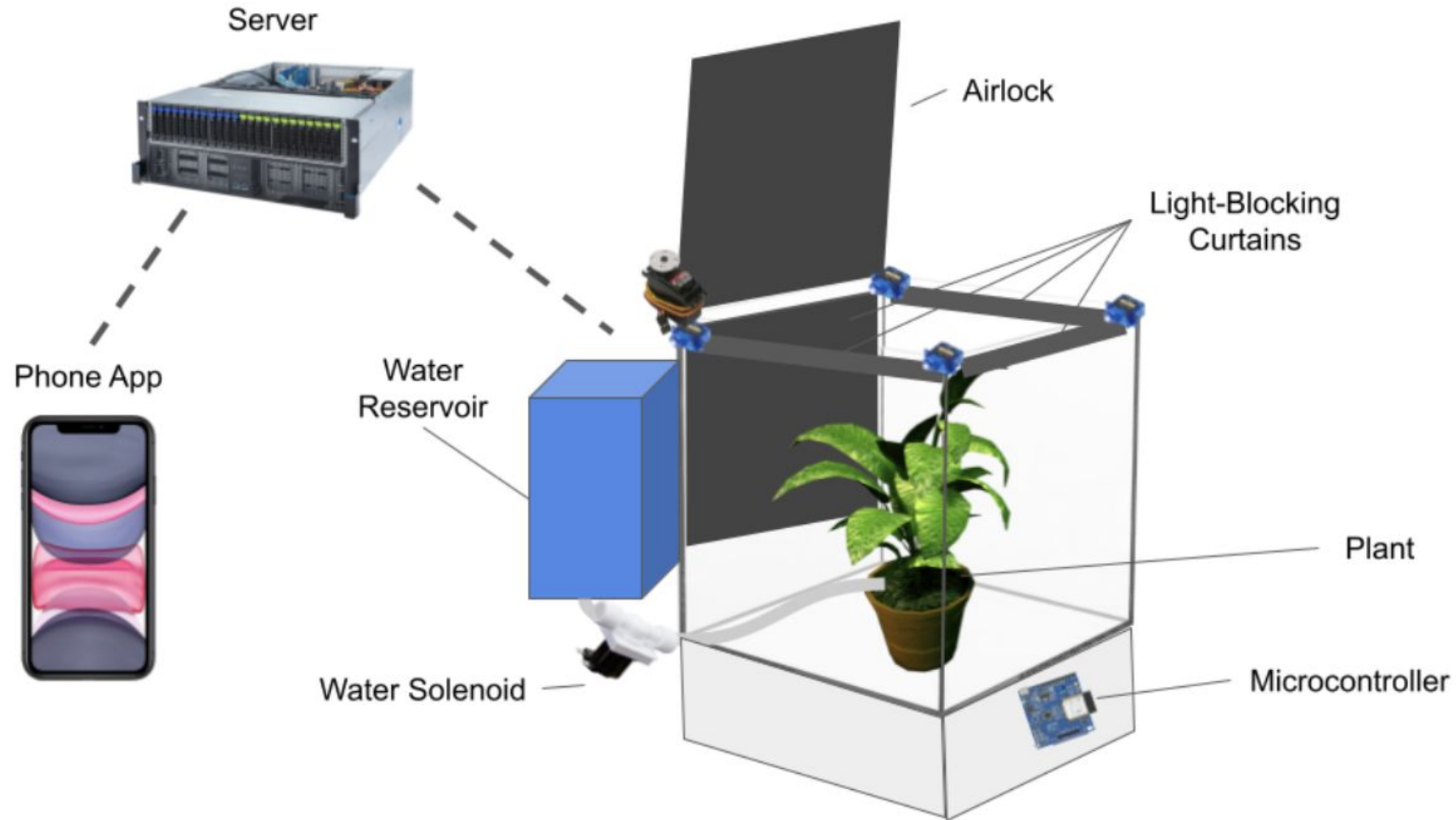
Design Process

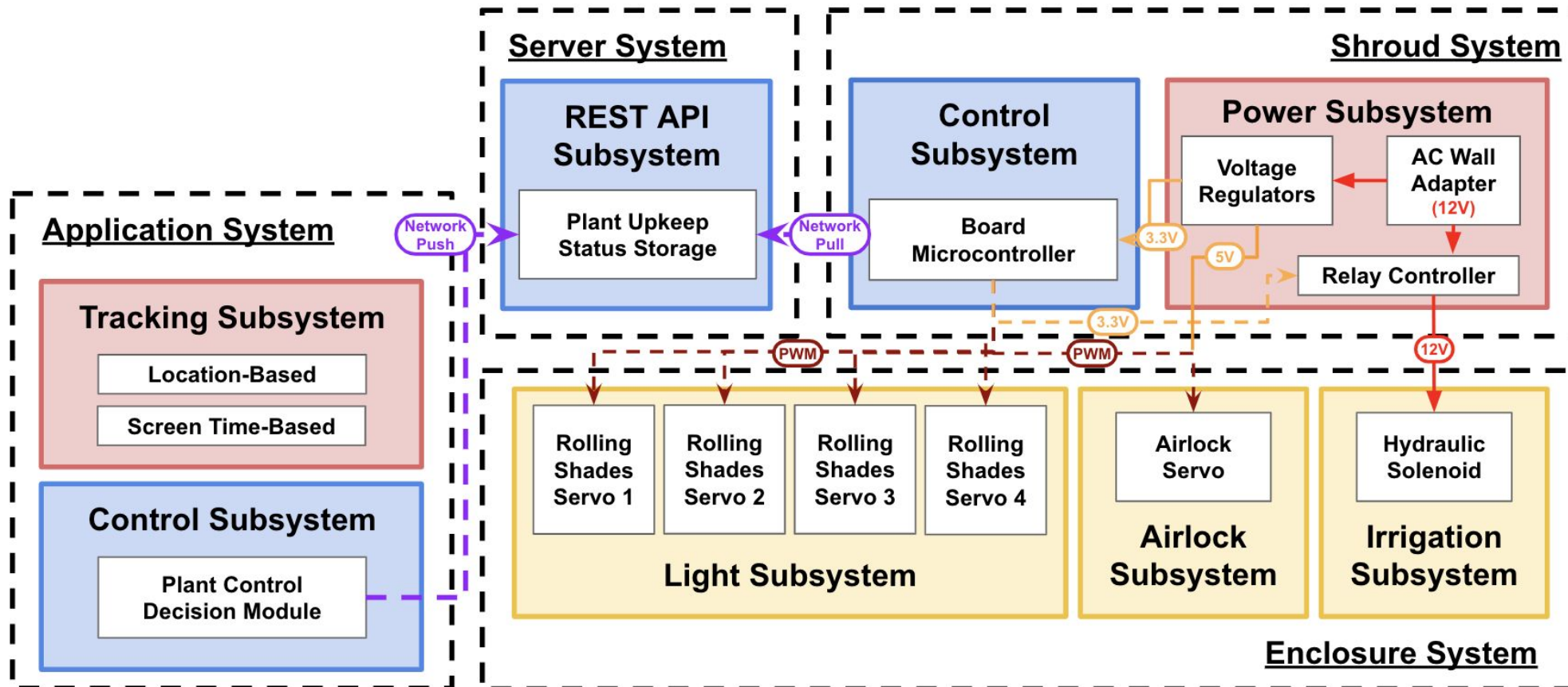
High Level Requirements

- **The application interface is able to facilitate habit tracking for the user and send this information to the physical device**
- **The created device system is capable of keeping a potted plant alive.**
- **The same device system also has the capability of killing a potted plant.**

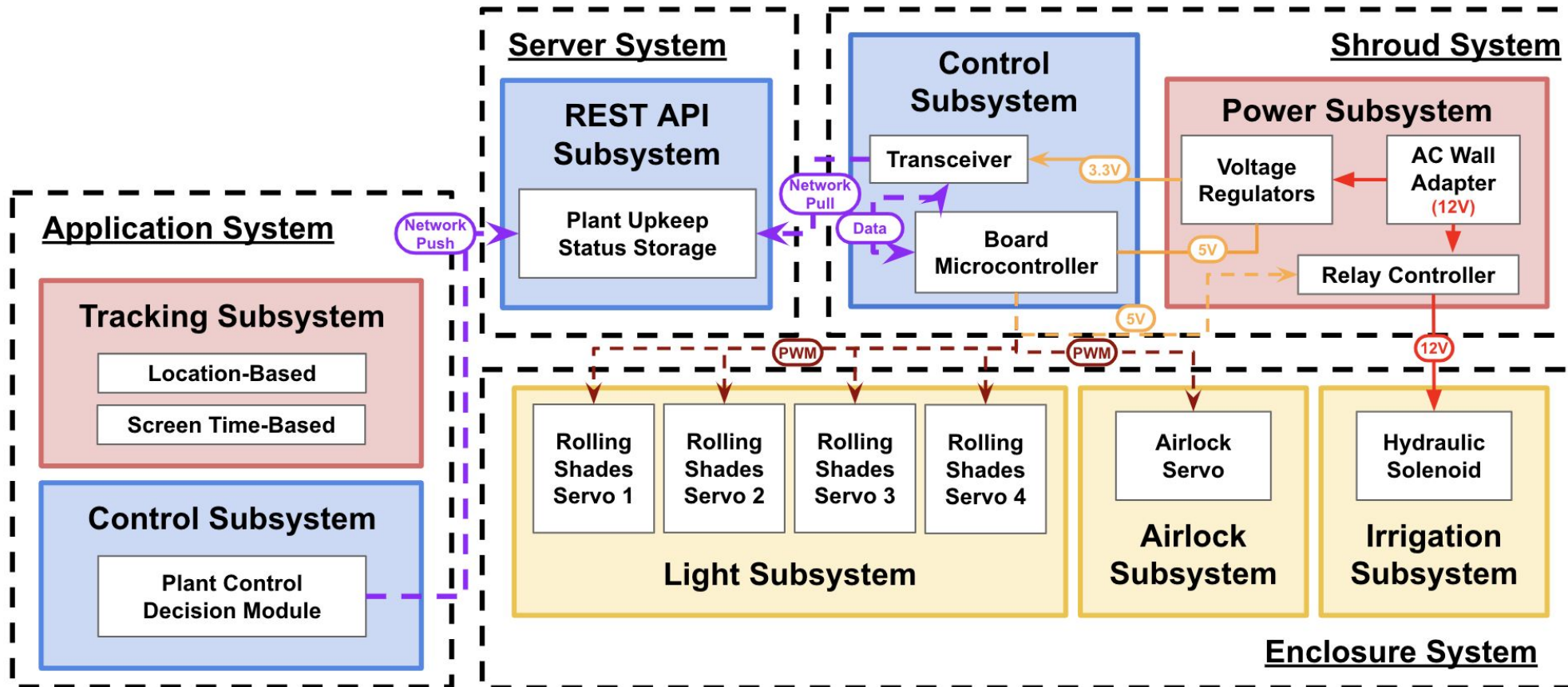
High Level Requirements

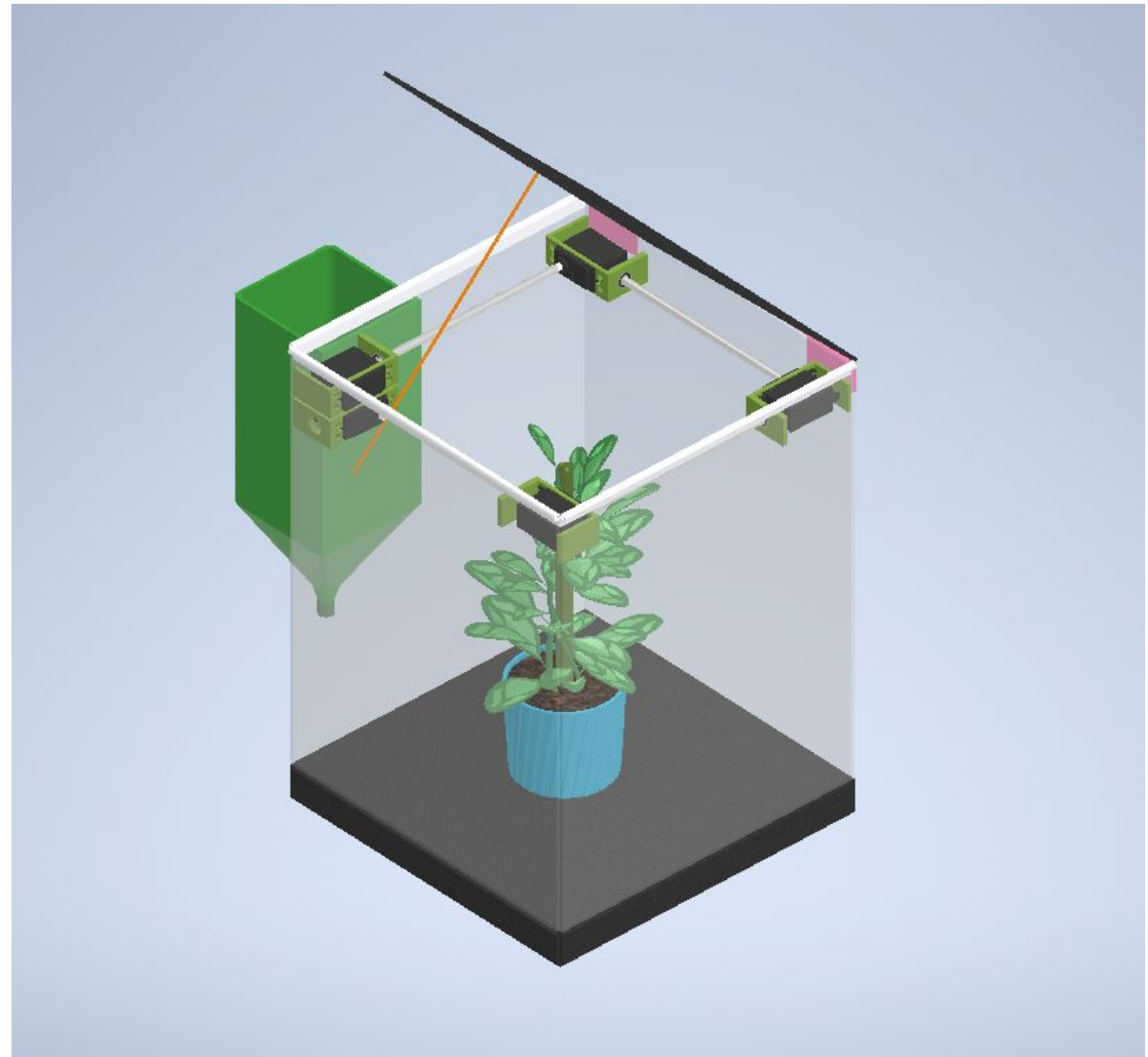
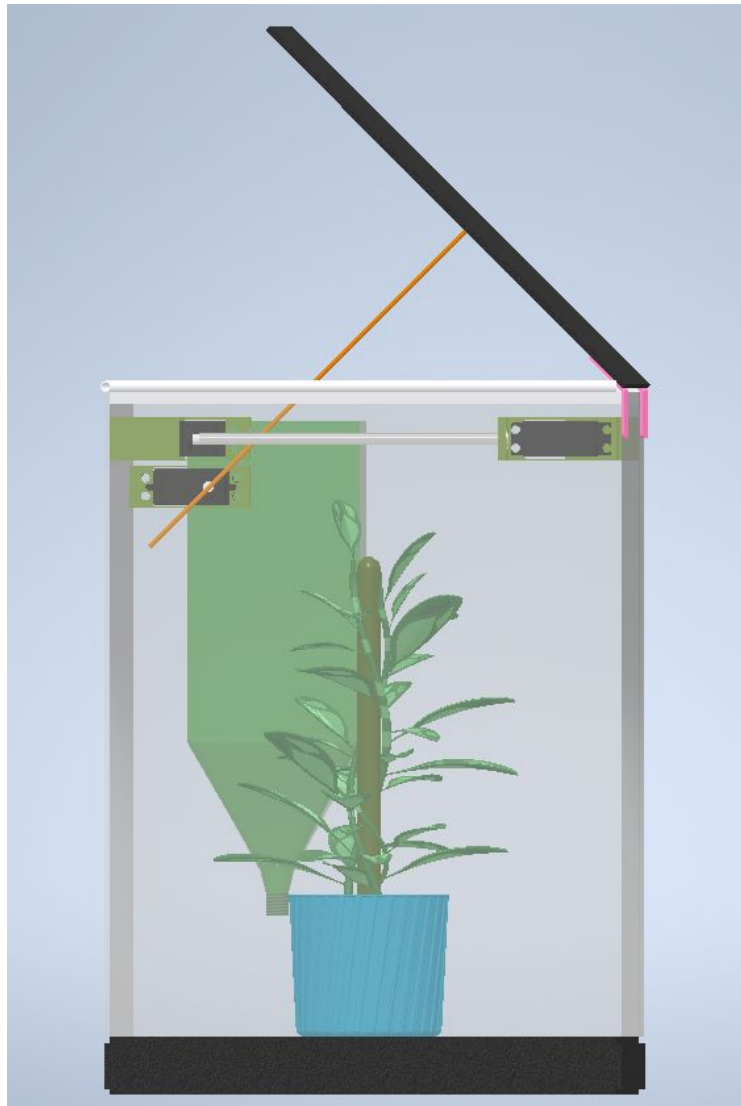
- **The application interface is able to facilitate habit tracking for the user and send this information to the physical device**
- **The created device system is capable of keeping a potted plant alive and killing a potted plant according to the data passed to it.**
- **The design has a modular design, allowing for more plants-enclosure addons to track more habits.**





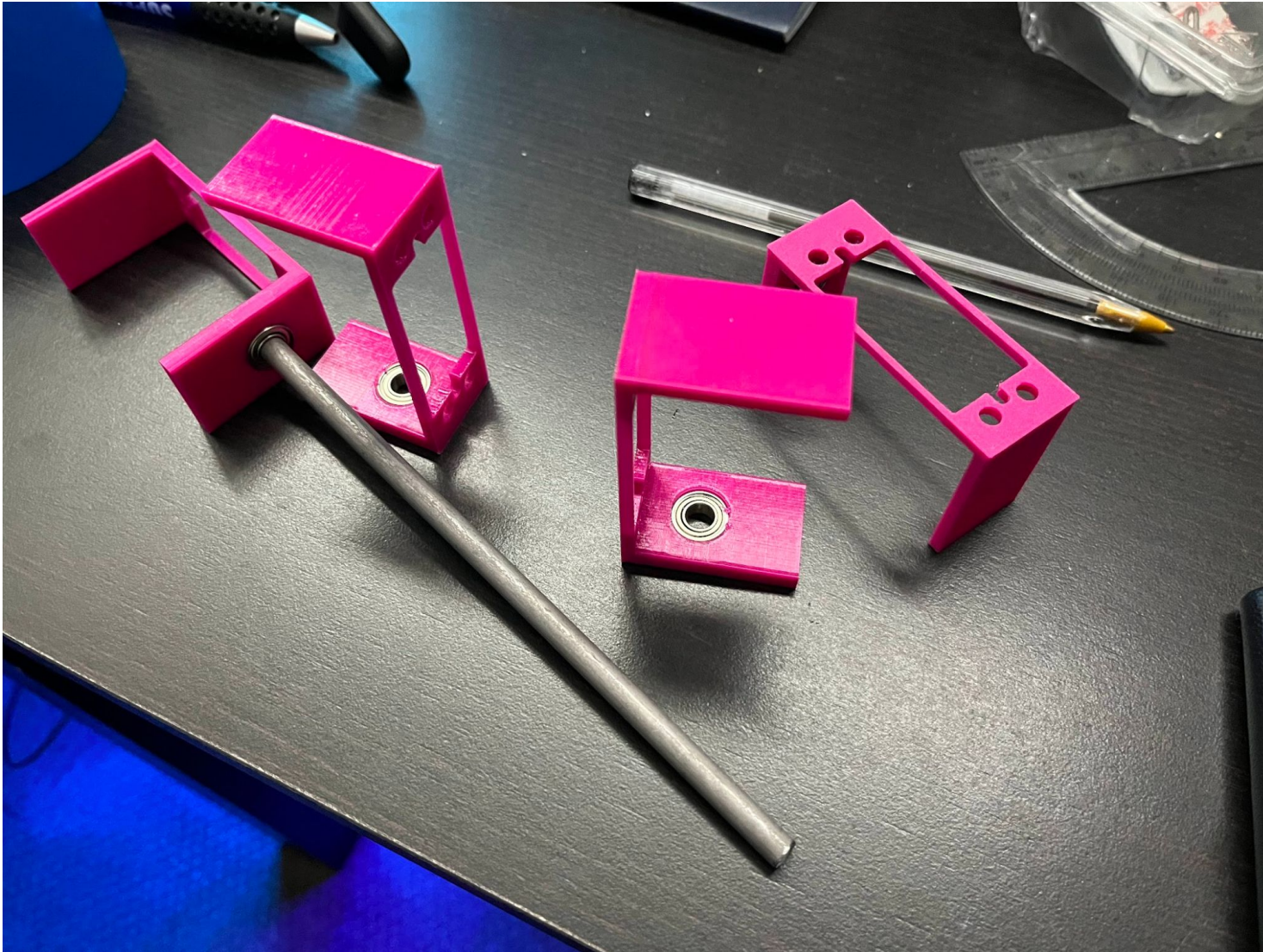
Revised Block Diagram



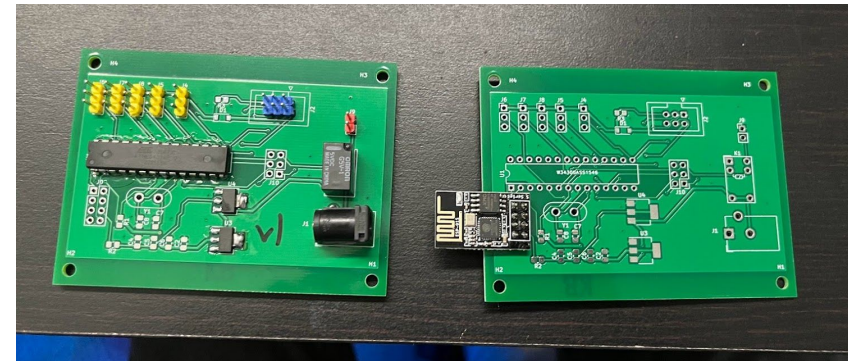
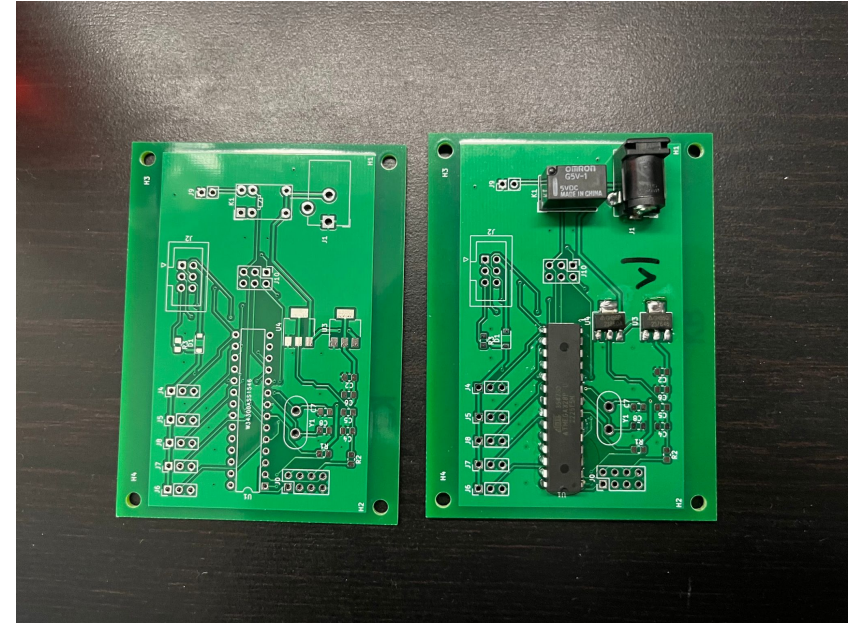
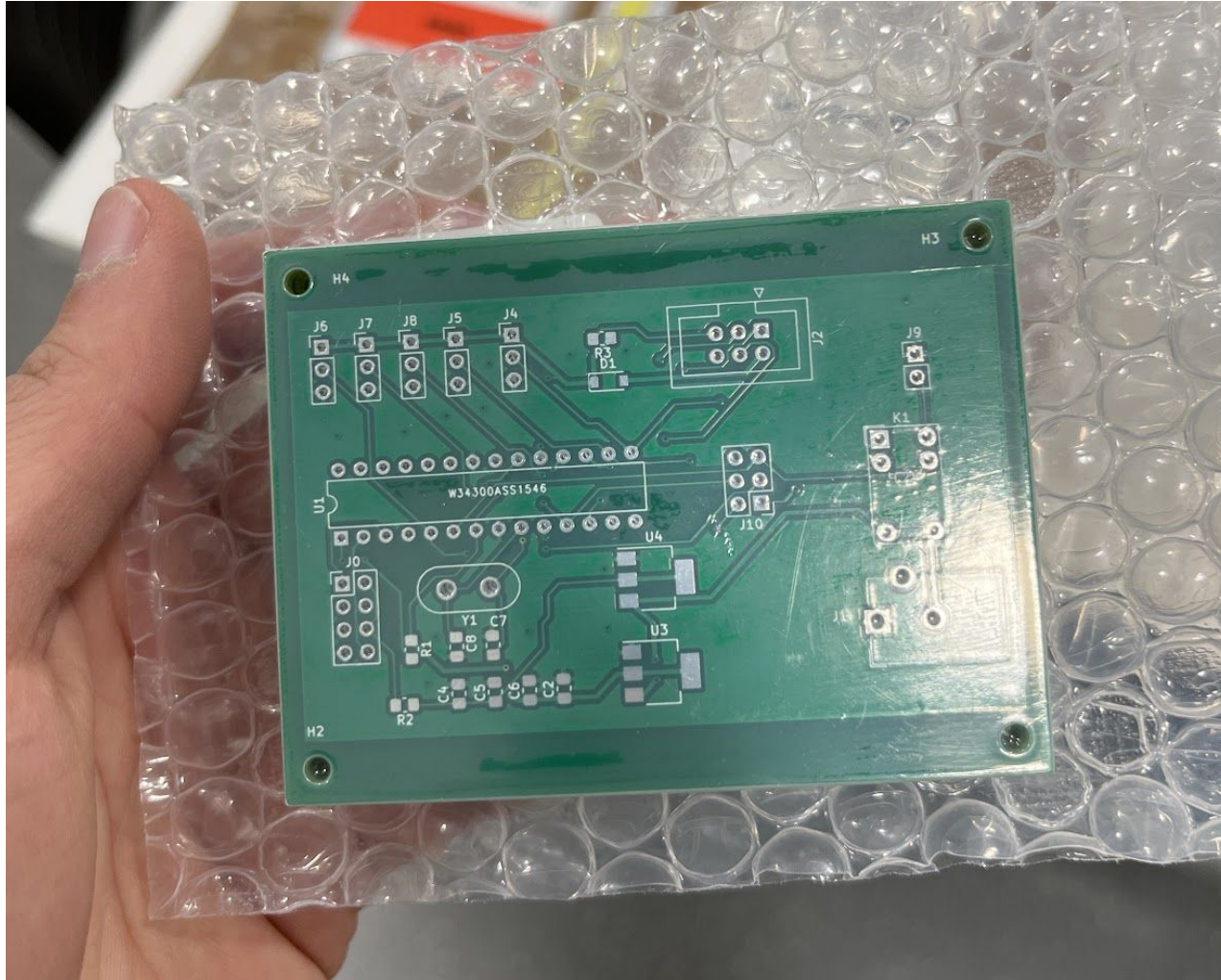




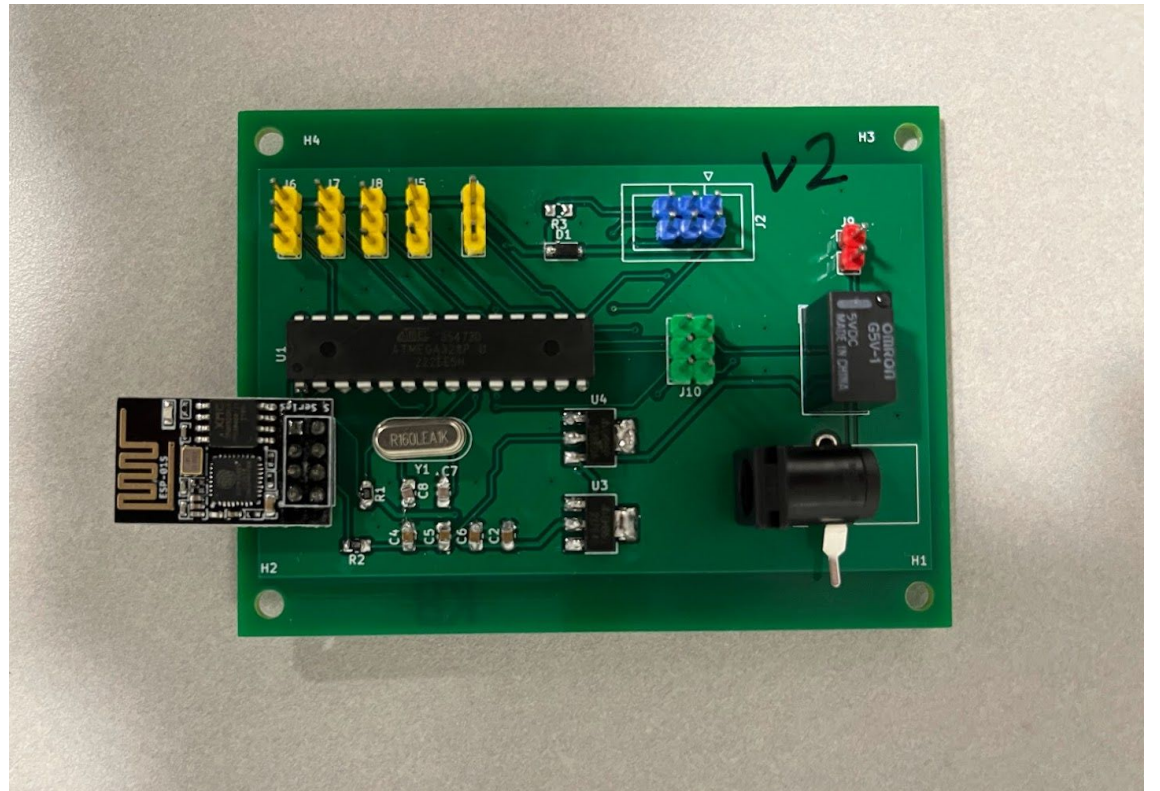
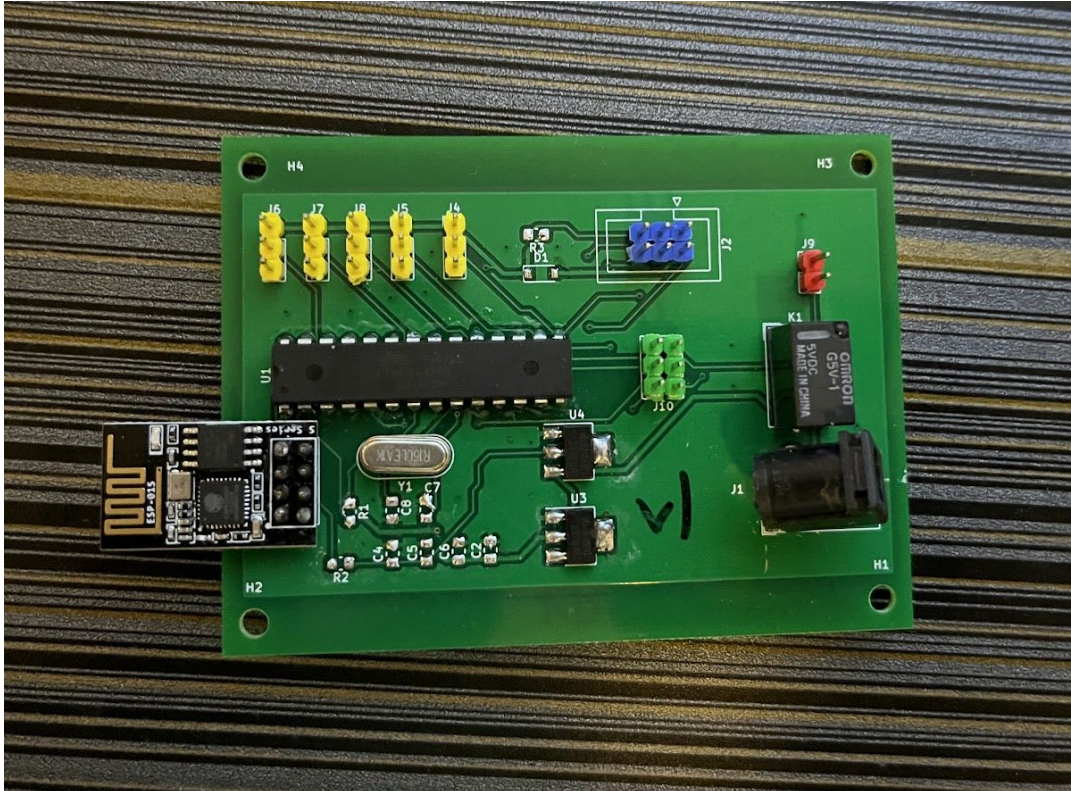
Build Process





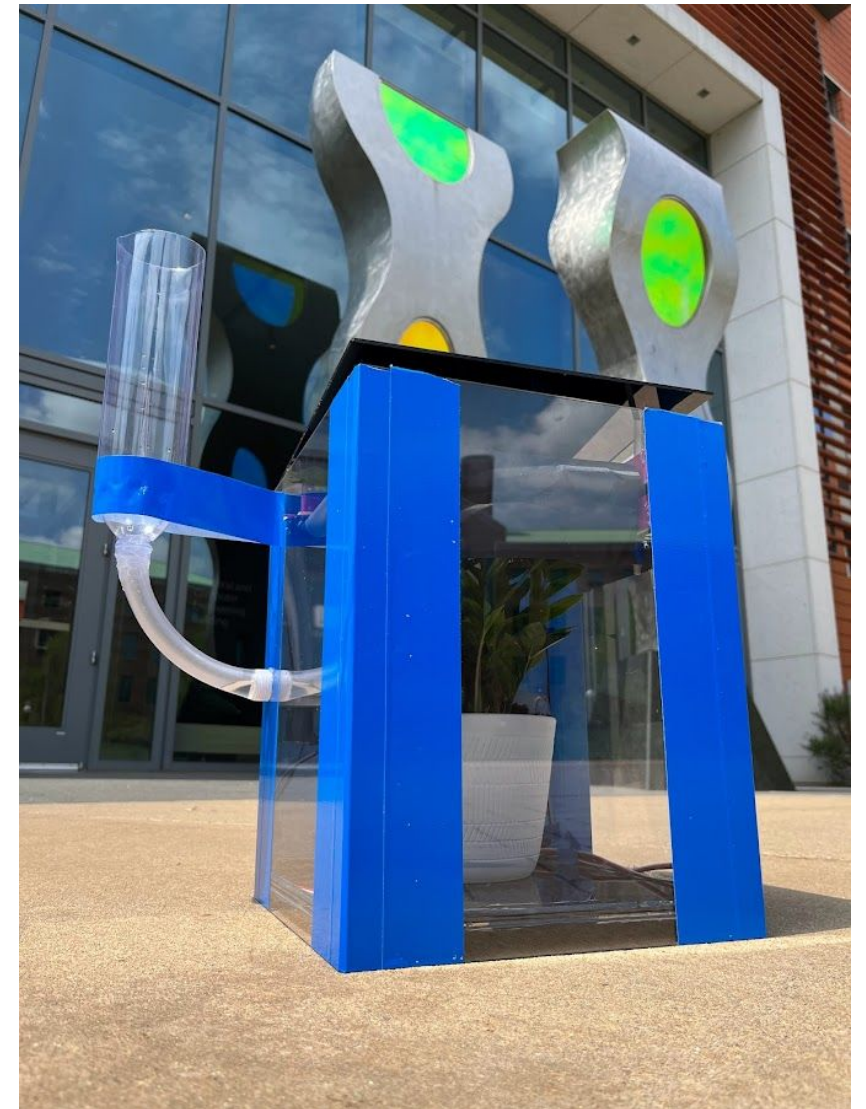


Challenges with the PCB



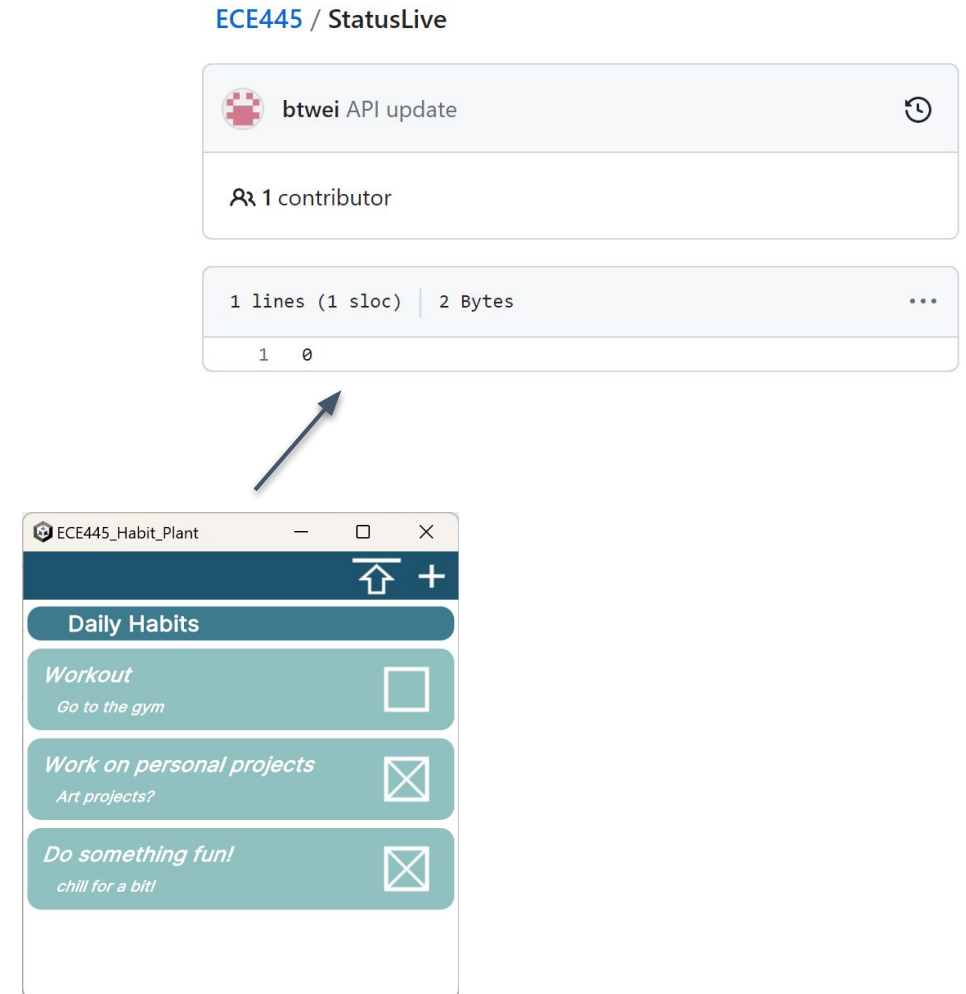
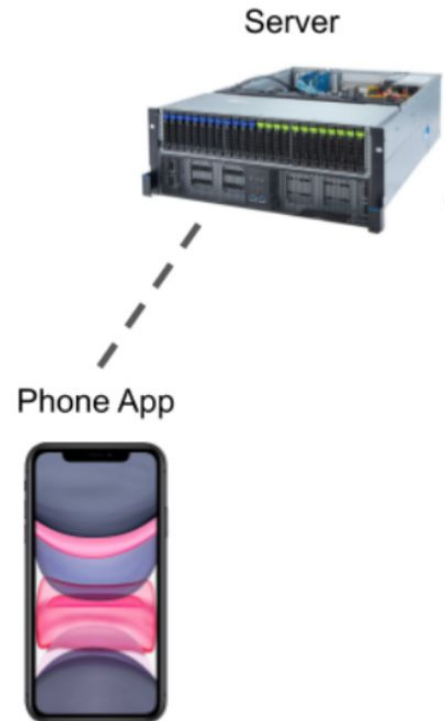


Final Build



App Features

- Base Functions
- Features



Verifications & Testing

Requirement	Verification
...	...
-Post Binary Signals to the server	-Verify on the Server a forced 0 and 1

API update

main

btwei committed 2 days ago

Showing 1 changed file with 1 addition and 1 deletion.

▼ 2 StatusLive

...	...	@@ -1 +1 @@
1	- 0	
	+ 1	

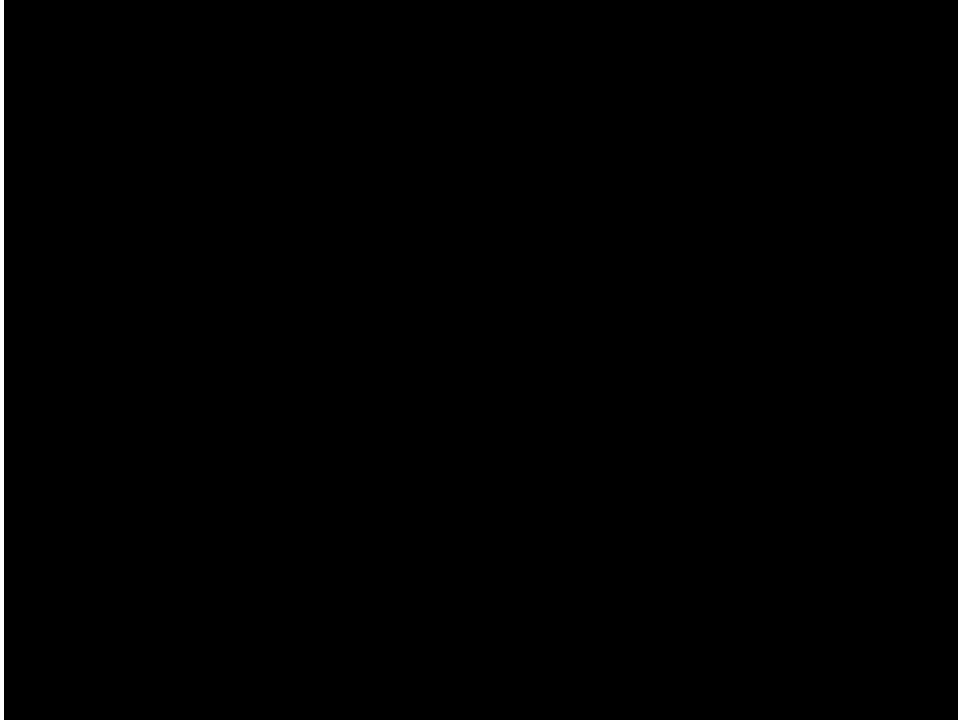
late

i committed last week

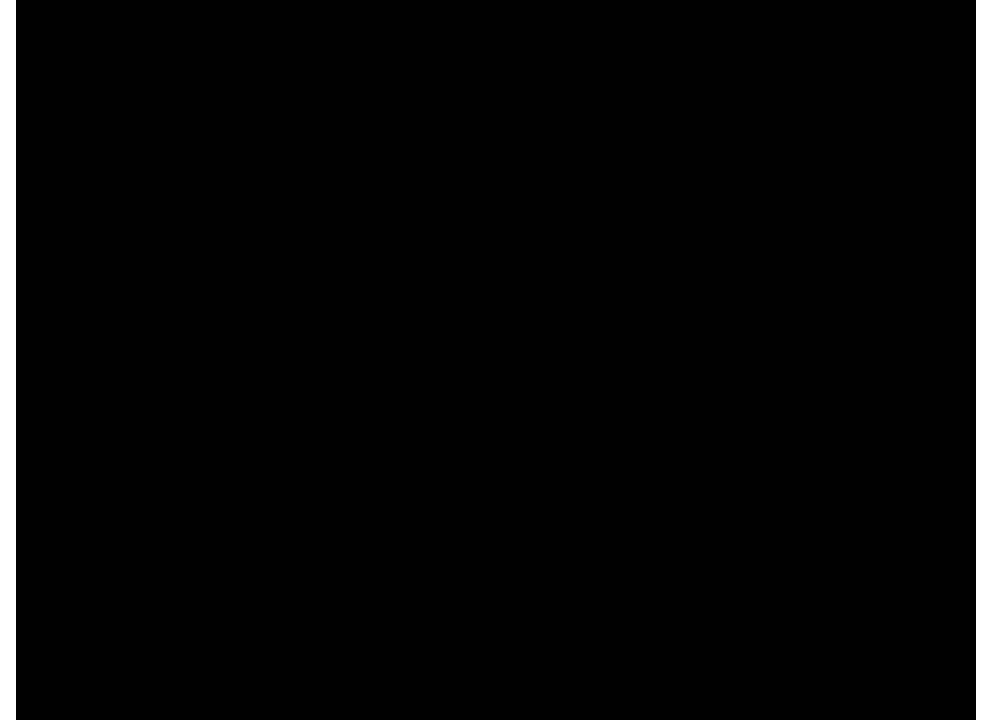
changed file with 1 addition

StatusLive

...	@@ -1 +1 @@
	- 1
1	+ 0



“Kill the potted plant”



“Keep the potted plant alive”

Build Challenges

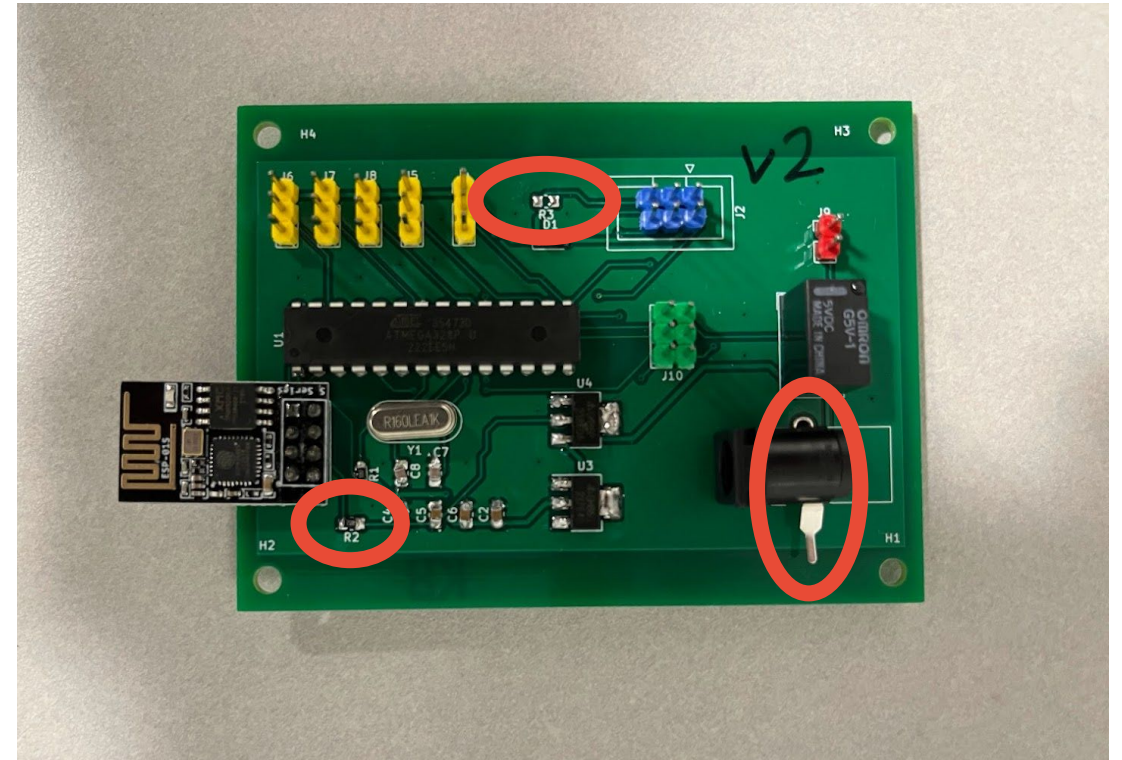
- **Silicone Epoxy Issues**
- **Waterproofing and Airlocking**
- **Lifting the Lid**

Application Challenges

- **Web server implementation**
- **Location Tracking Habits**

Electronics Challenges

- Reverse Polarity on the Barrel Jack
- Reset Signal Disconnect with the MCU
- Swapped Pins on the PWM Cables
- 3.3 Volts to ESP8266





Testing and Successes

Power Subsystem

- Must convert 12VDC to 5VDC ✓
- Must convert 12VDC to 3.3VDC ✓

Application Interface Subsystem

- The application includes basic user configurable habit tracking that leverages phone features such as location info ✓
- The application should be able to post binary signals that correspond to each plant enclosure: 0 for habit kept, 1 for a habit broken ✓

Plant Enclosure Subsystem

- The shades can fully roll and unroll through the use of servos ✓
- The airtight lid can fully close and open through the use of a servo ✓

Microcontroller Subsystem

- Binary signals are successfully fetched from the server ✗
- Servo subsystems are managed through control signals, opening blinds or closing them and opening the airlock or closing it based on the corresponding binary signal ✓
- Irrigation subsystems are managed through control signals, watering regularly or withholding water based on the corresponding binary signal ✓

Irrigation Subsystem

- This subsystem must water the plant when it receives a logical 1 signal and not otherwise ✓

Learning Moments

Redesigning the Project

Further Ideas



Thank You



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