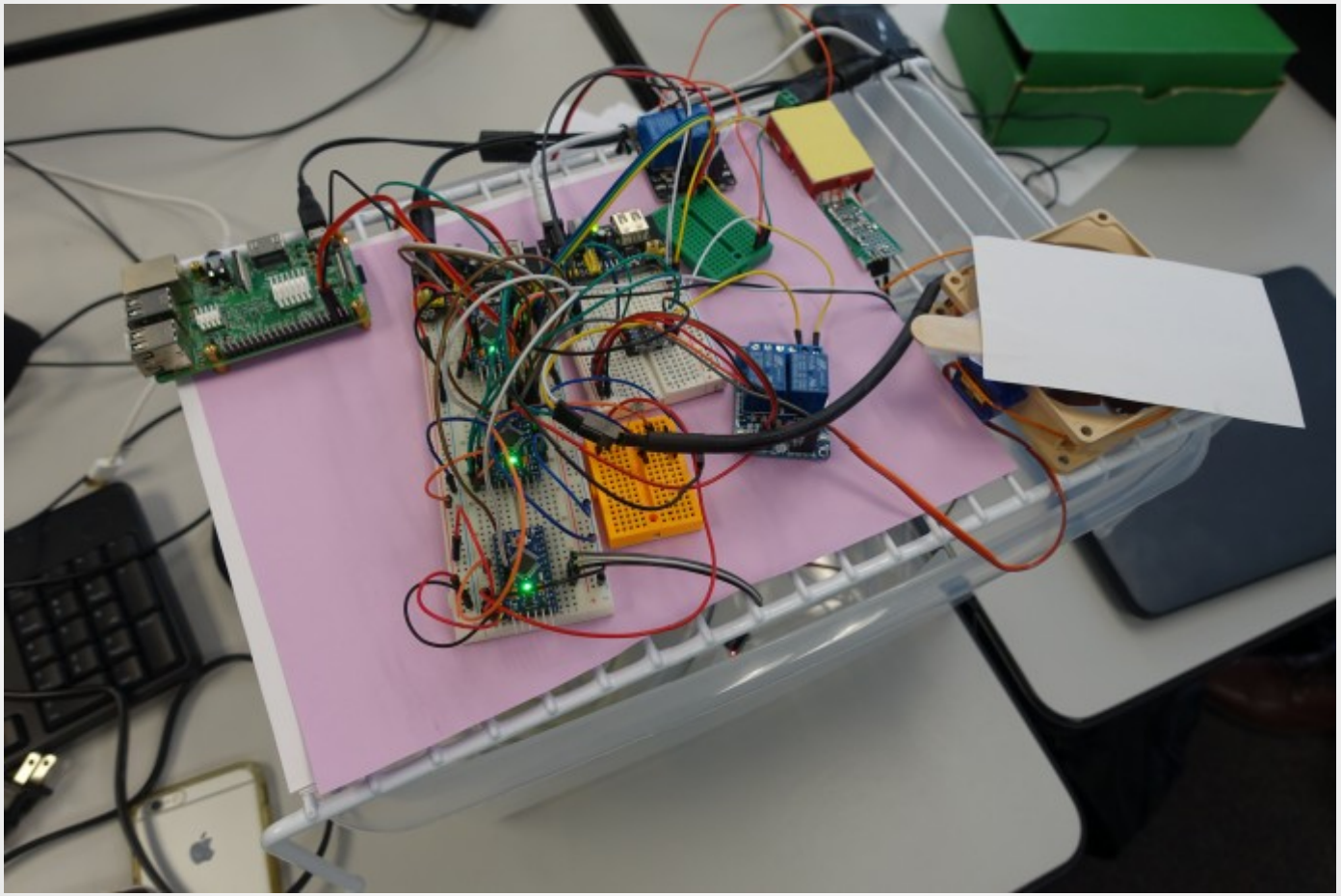
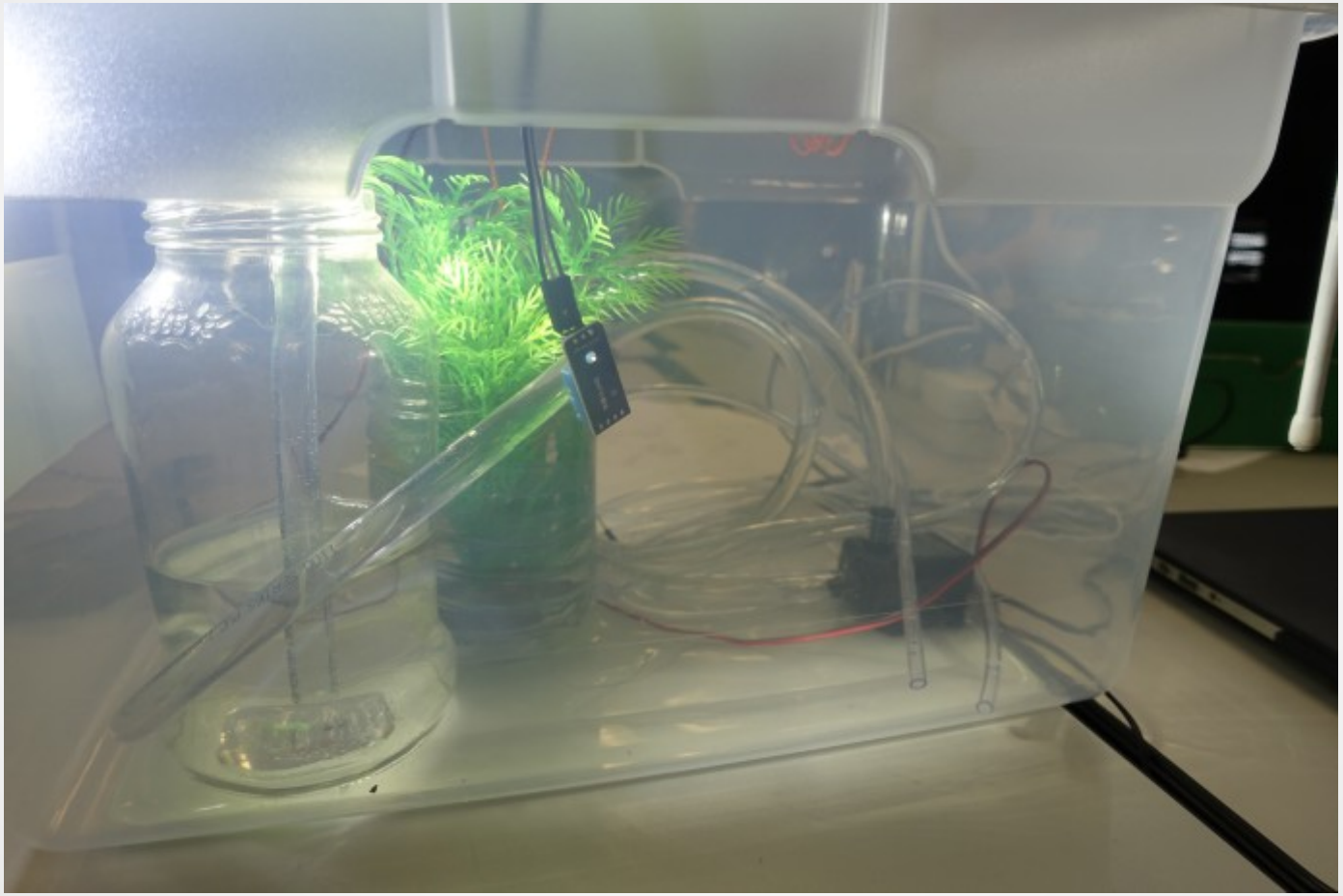
Micro Greenhouse

Vadim Babiy
Daniel Bracamontes
Wesley Nguyen
Jeremy Shaw

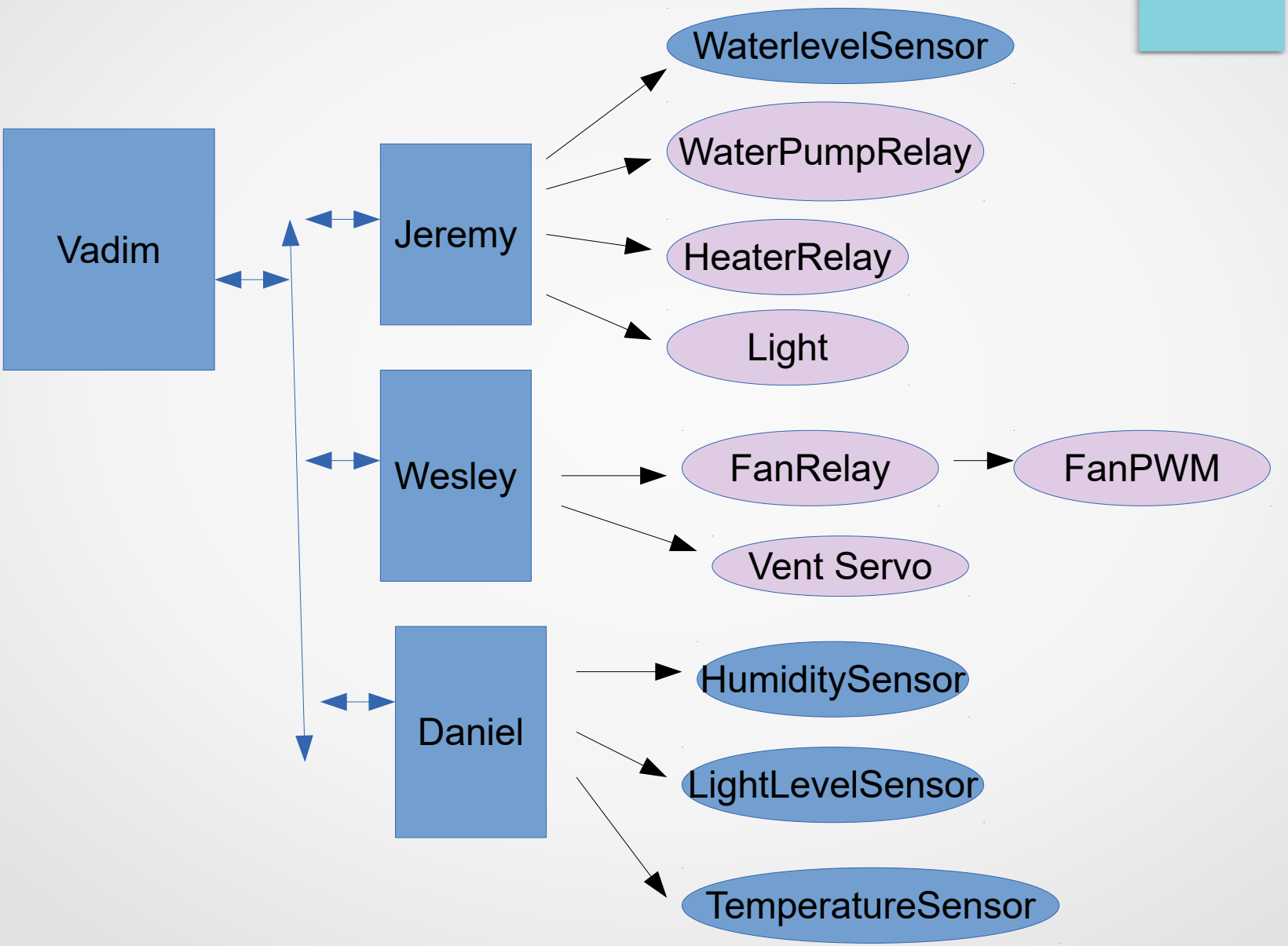
Upper Level Deck



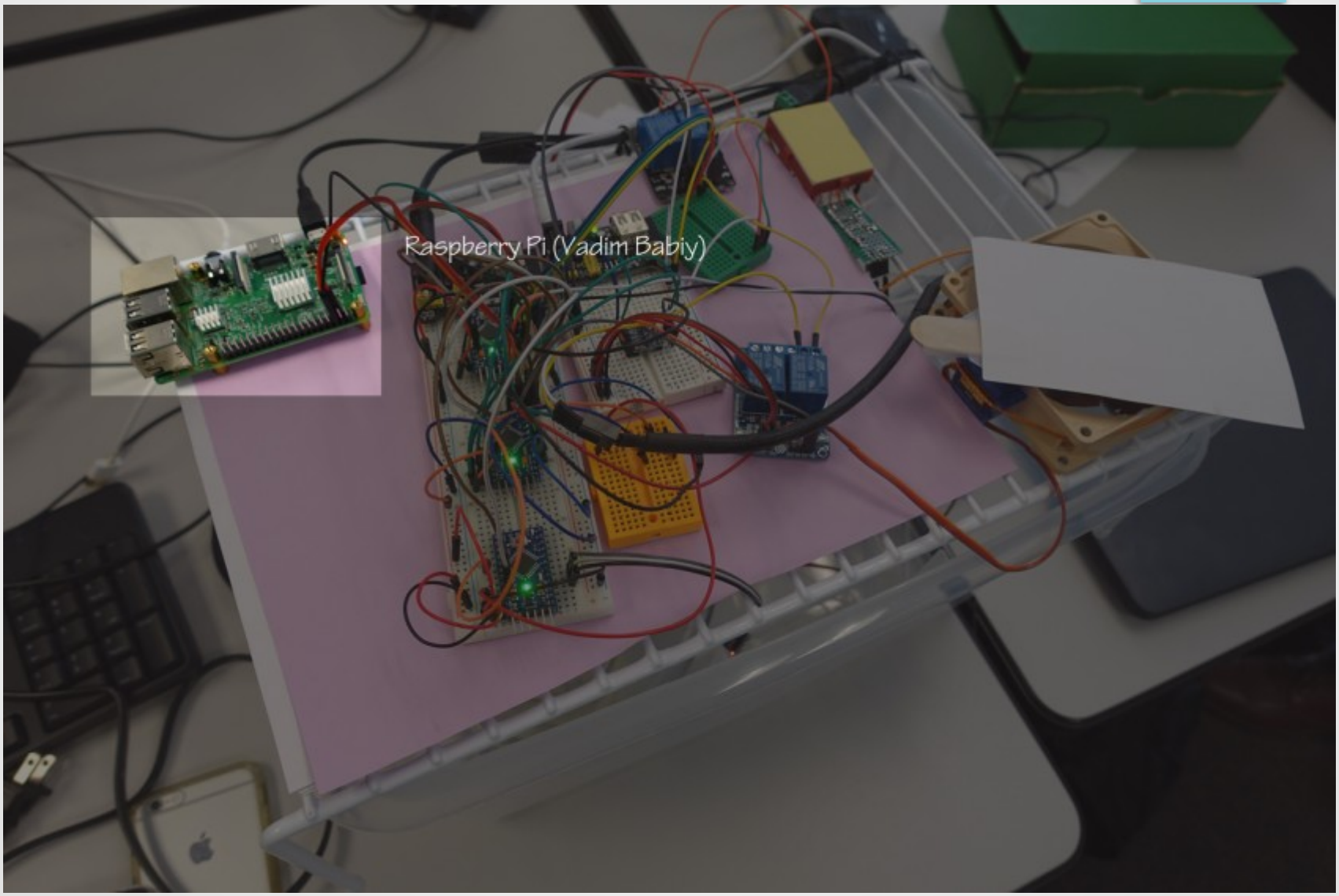
Lower Level Bin



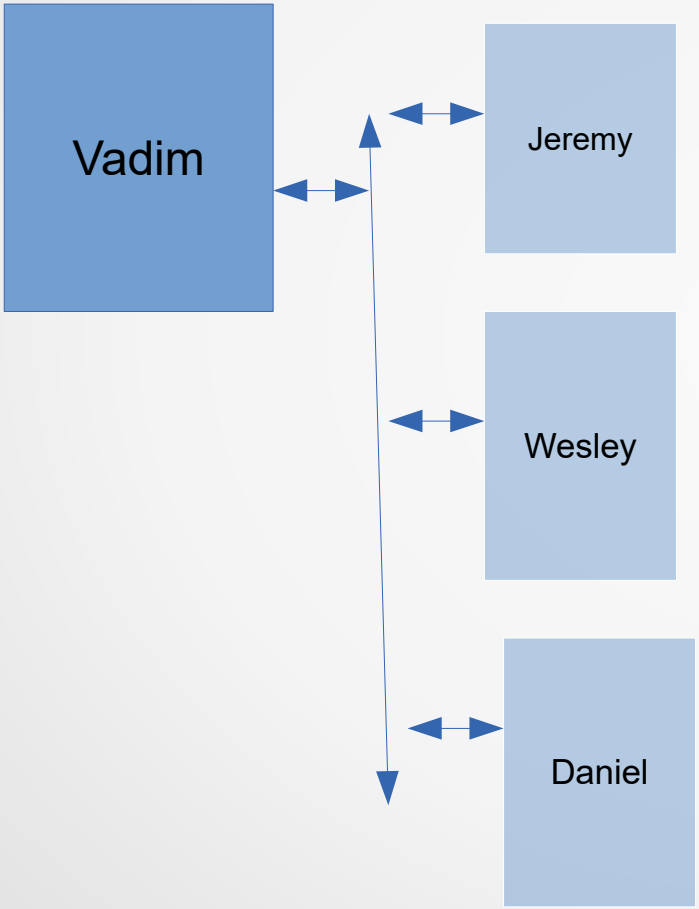
Overview


Vadim
Jeremy
Wesley
Daniel
WaterlevelSensor
WaterPumpRelay
HeaterRelay
Light
FanRelay
FanPWM
Vent Servo
HumiditySensor
LightLevelSensor
TemperatureSensor

Vadim Babiy



Vadim



- CLI to directly poll sensors and control peripheral devices

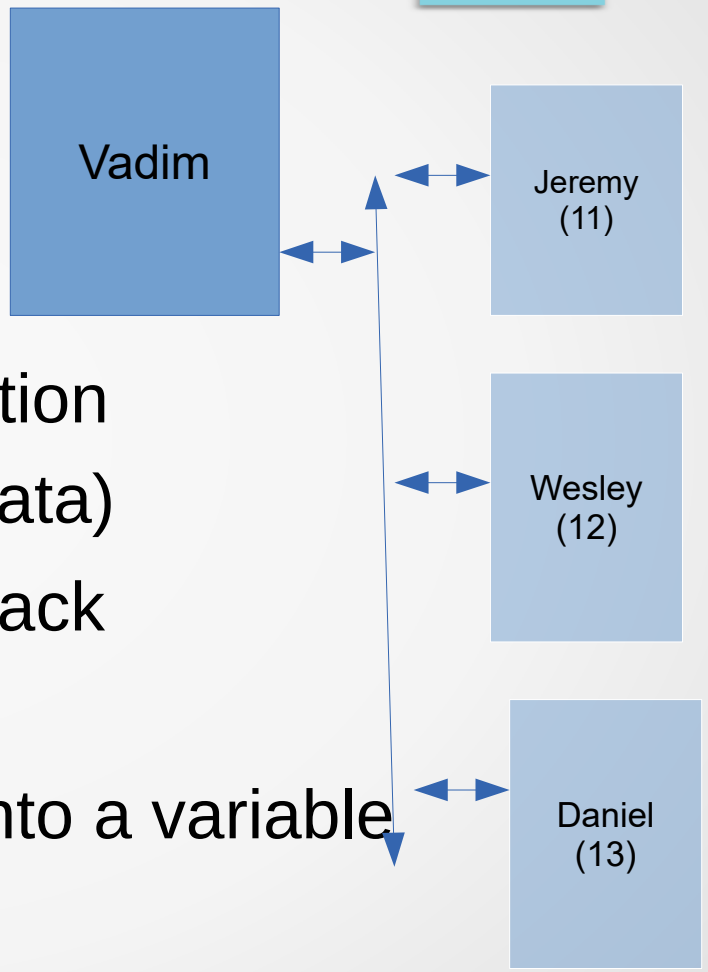
-Web server to give current sensor readouts

-acts as I2C master to drive the I2C bus

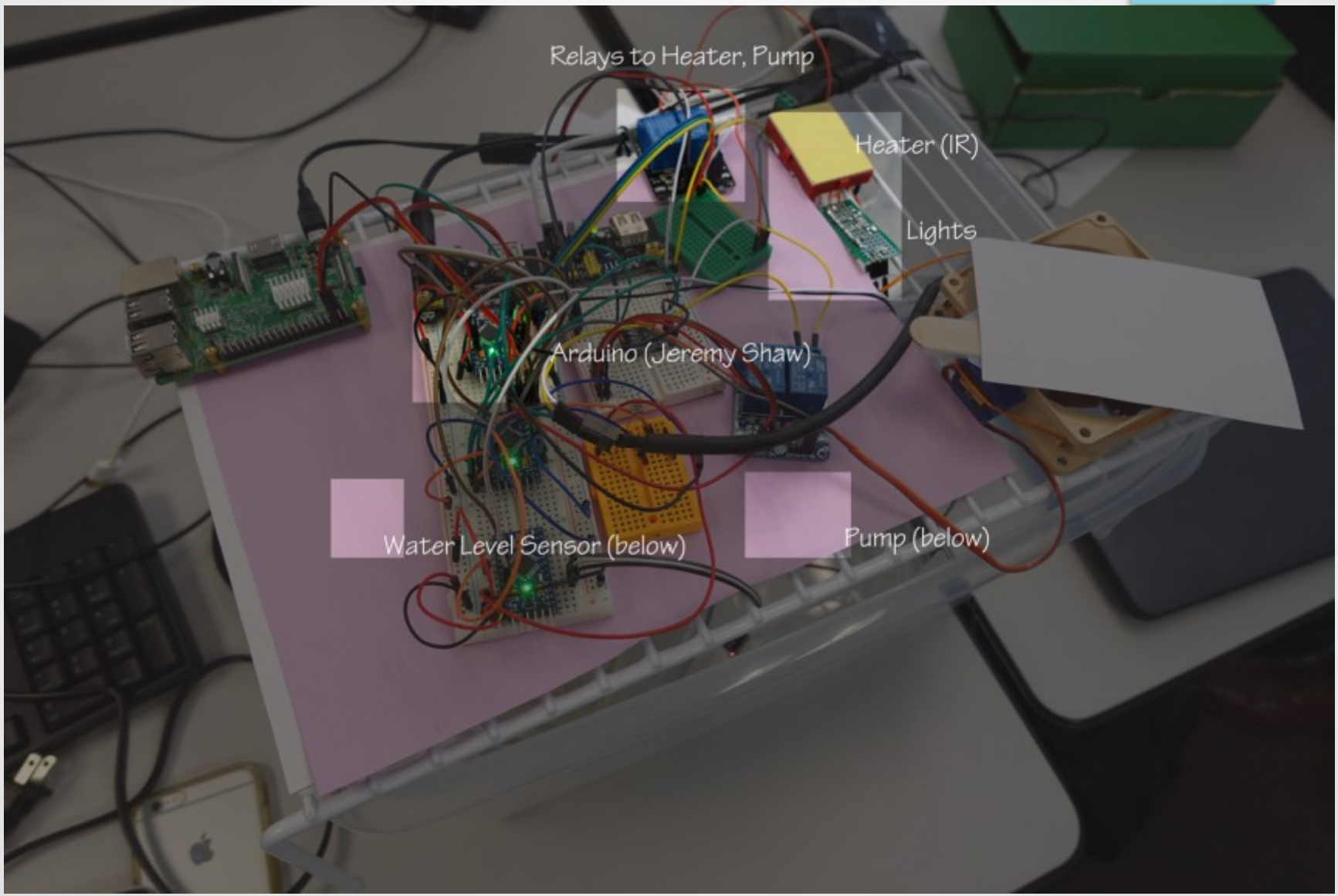
```
0 for write file
1 for read file
11 for Jeremy
12 for Wesley
13 for Daniel
Device address:
[11
This is Jeremy's Arduino
0 for exit
1 for water level
2 for water pump on/off
3 for heater on/off
4 for light switch on/off
[Enter 0-4: 0
0 for write file
1 for read file
11 for Jeremy
12 for Wesley
13 for Daniel
Device address:
[12
you chose Wesley's Arduino
0 for exit
1 to turn off fan
2 to set low fan speed
3 to set medium fan speed
4 to set high fan speed
[Enter 0-4: 0
0 for write file
1 for read file
11 for Jeremy
12 for Wesley
13 for Daniel
Device address:
[13
Daniel's Arduino reporting
0 for exit
1 for temperature sensor
2 for light sensor
3 for humidity sensor
Enter 0-3:
```

Aside: I2C

- Setup in a poll – respond format
- Example:
  - V: bus_write(address, request)
    - Sends a request for information
  - J/W/D: onRequest(requestedData)
    - This feeds the information back
  - V: int x = readNumber()
    - This reads the information into a variable

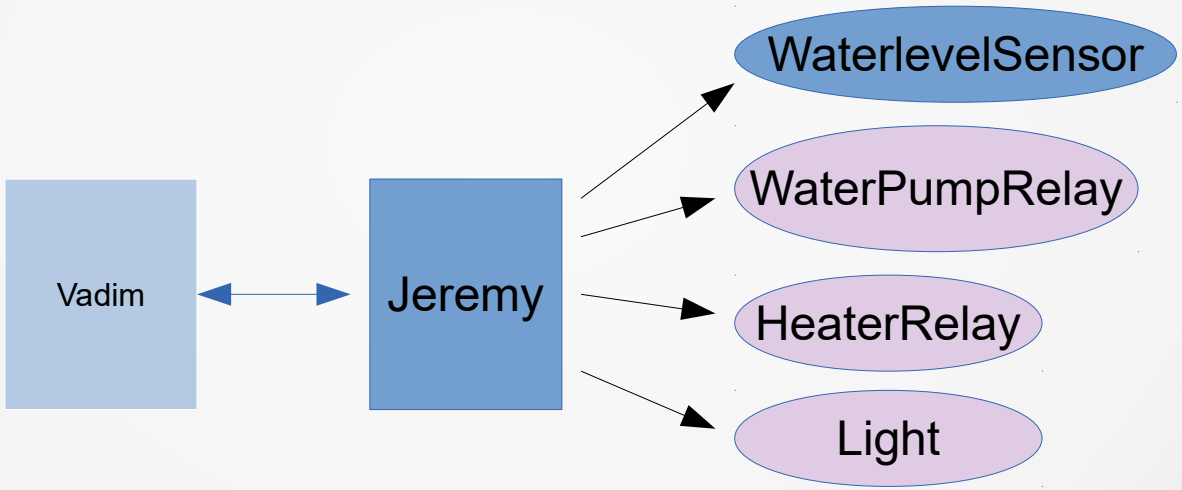


Jeremy Shaw

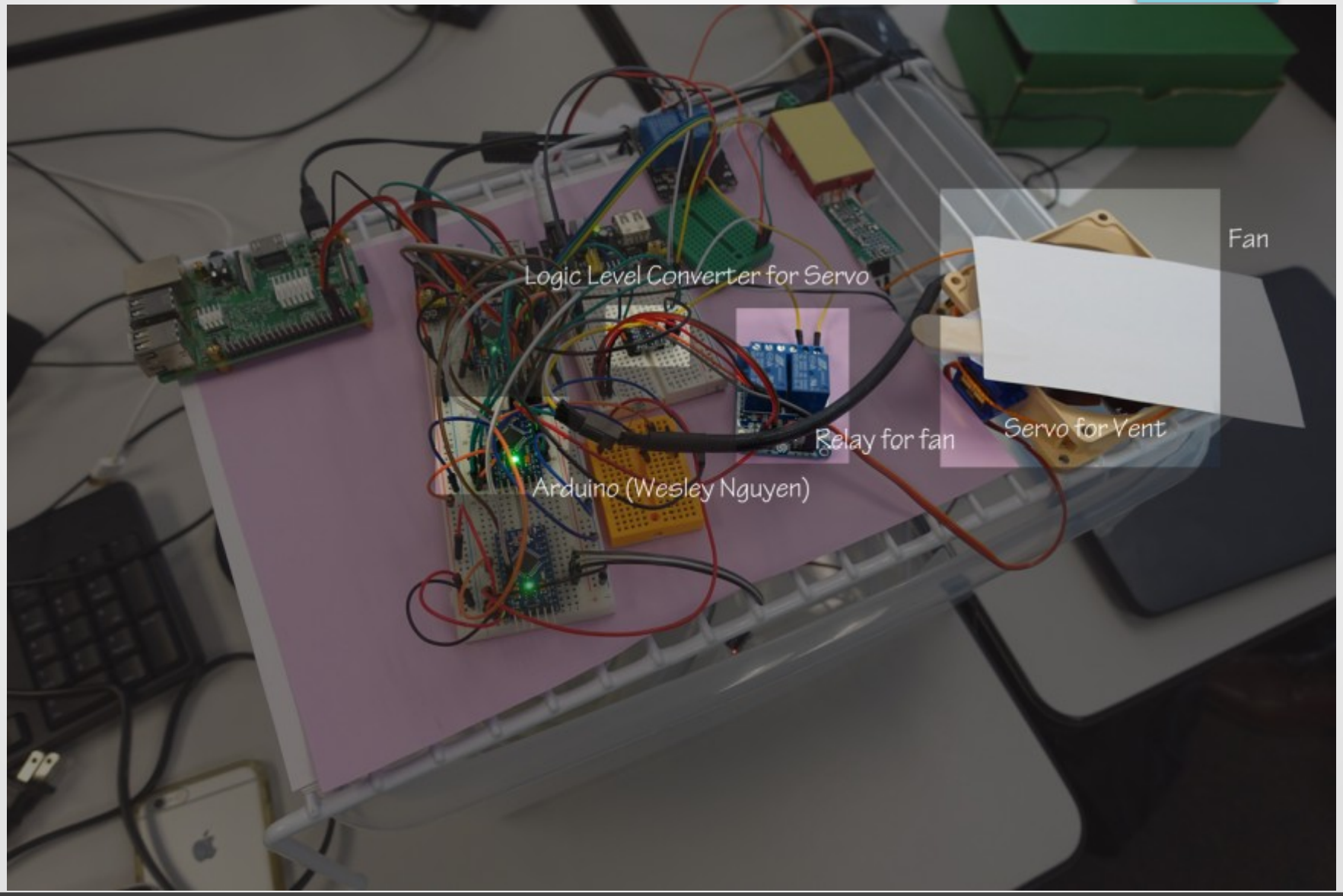

Relays to Heater, Pump
Heater (IR)
Lights
Arduino (Jeremy Shaw)
Water Level Sensor (below)
Pump (below)

Jeremy (I2C address 11)

- Sensors abstracted to be presented via i2c
- Relays and light presented to i2c

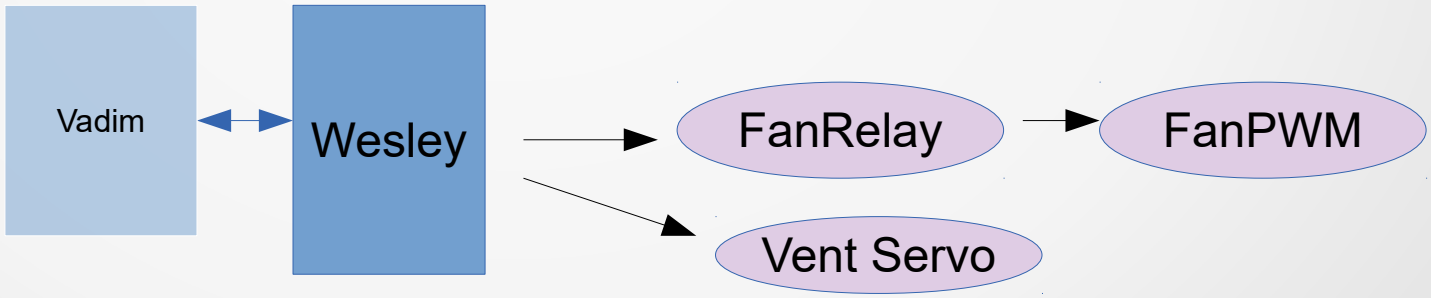


Wesley Nguyen

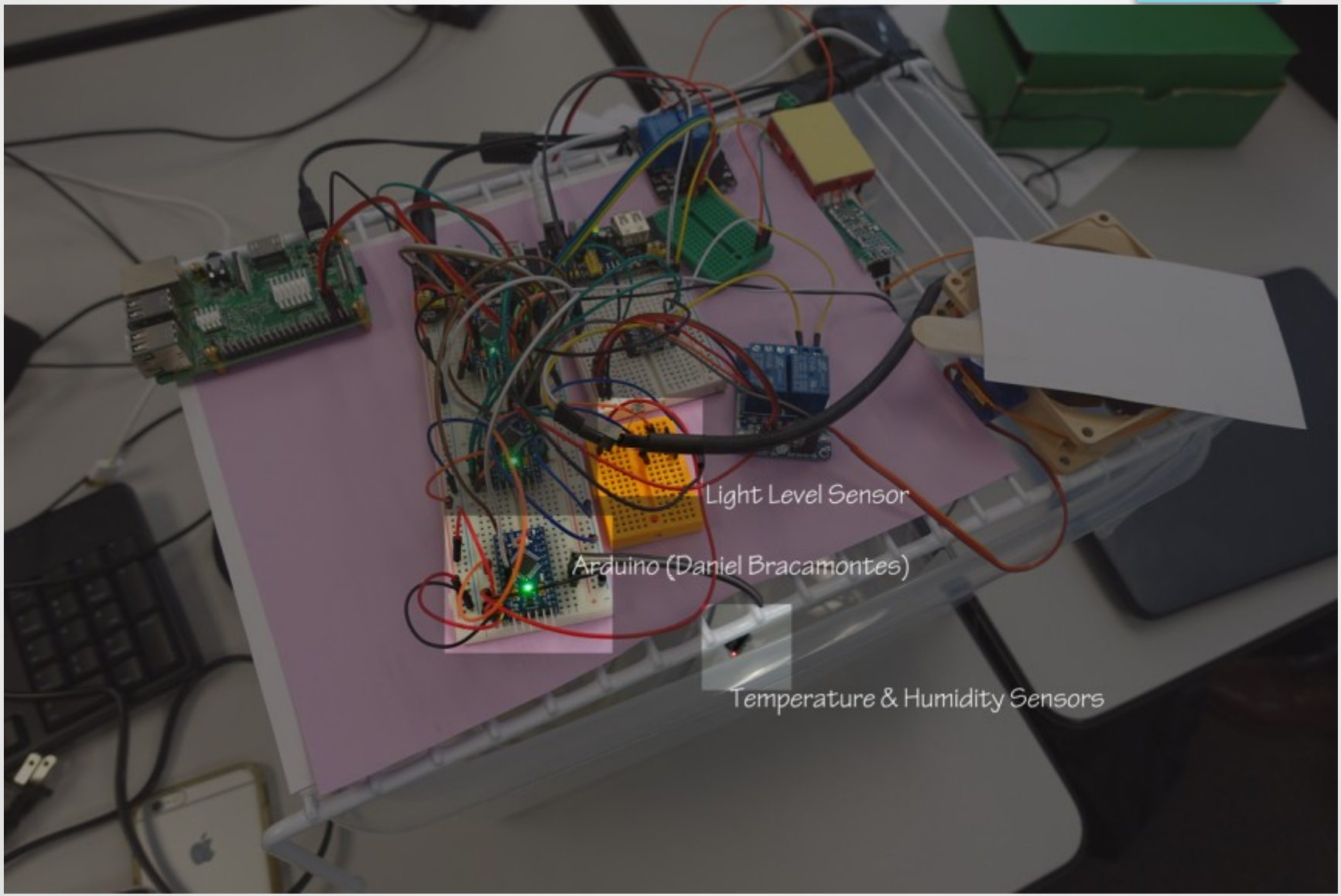


Wesley (I2C address 12)

- Presents Fan control (relay and PWM) to I2C

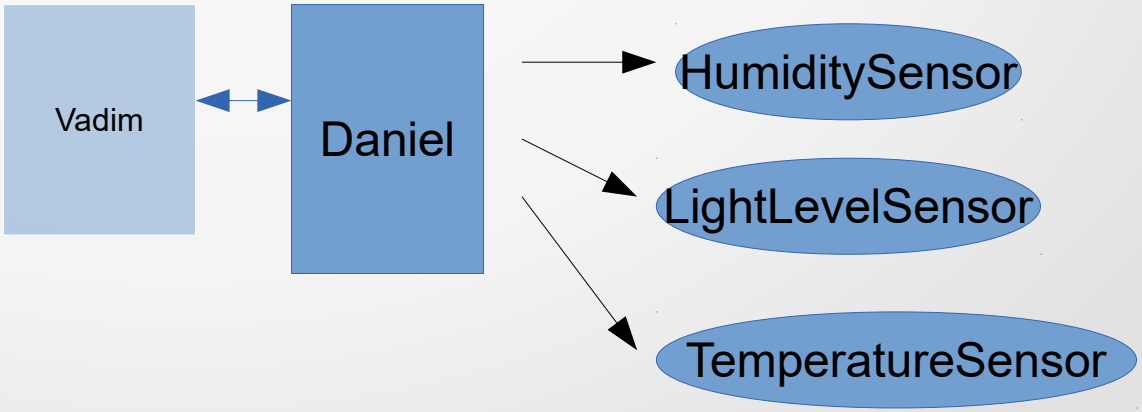


Daniel Bracamontes



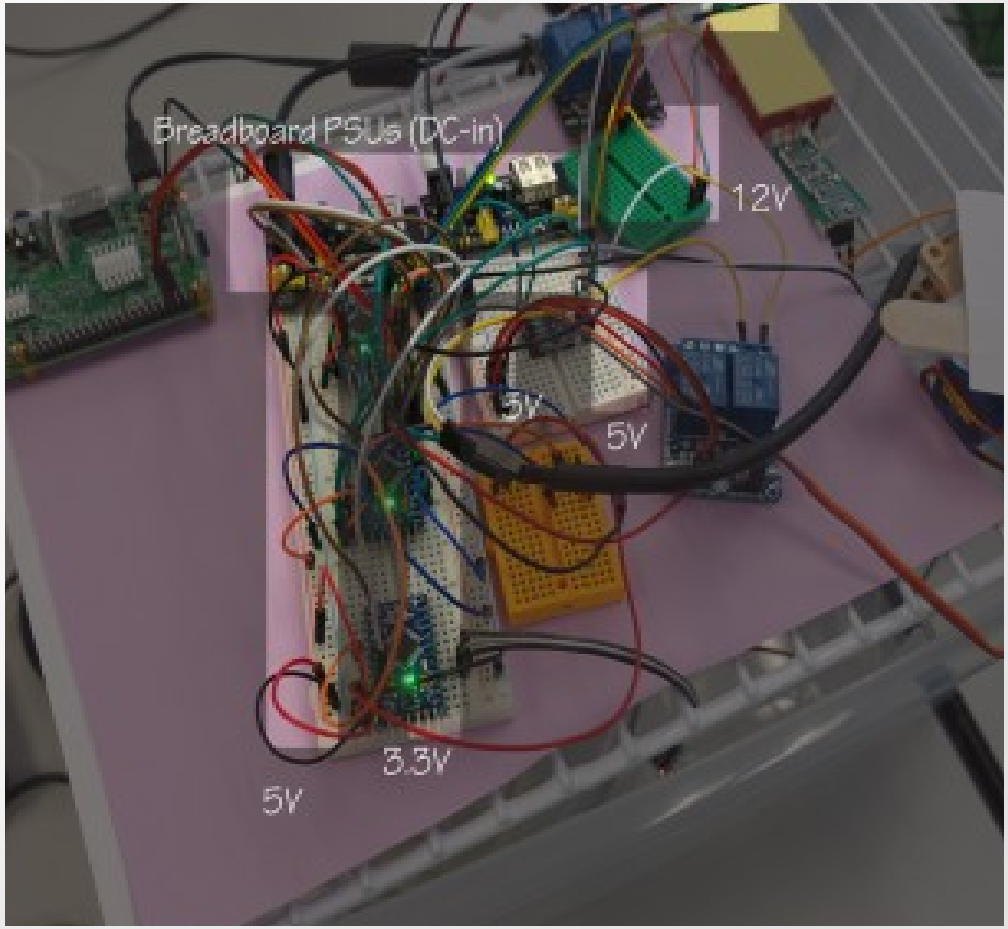
Daniel (I2C address 13)

- Presents Light level reading from ADC to I2C
- Presents Humidity/Temp from DHT11 to I2C
  - DHT11 has a maximum 1Hz refresh cycle, so the interstitial arduino automatically polls the DHT11 and stores the values locally to present to I2C master



Simplification

- Only need one microcontroller with network interface
- Reduce down to two relays:
  - Heater
  - Pump



Thanks!