Design:

https://github.com/cabmeron/SWAMP-ASS-COOLER

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Components:

- 1X: LCD 1602 Display
- 4X: Color Leds (Blue, Yellow, Red, Green)
- 2X: Potentiometer
- 1X: Stepper Motor
- 1X: Fan Blade
- 1X: Kit motor
- 1X: DHT11 Temperature / Humidity Sensor
- 1X: Water Sensor
- 1X: External Power Supply
- 3X: Breadboard
- 1X: Push Button
- 4X: 1000 Ohm Resistor
- 1X: 220 Ohm Resistor
- 1X: Arduino ATmega 2560
- MANY WIRES, varying length

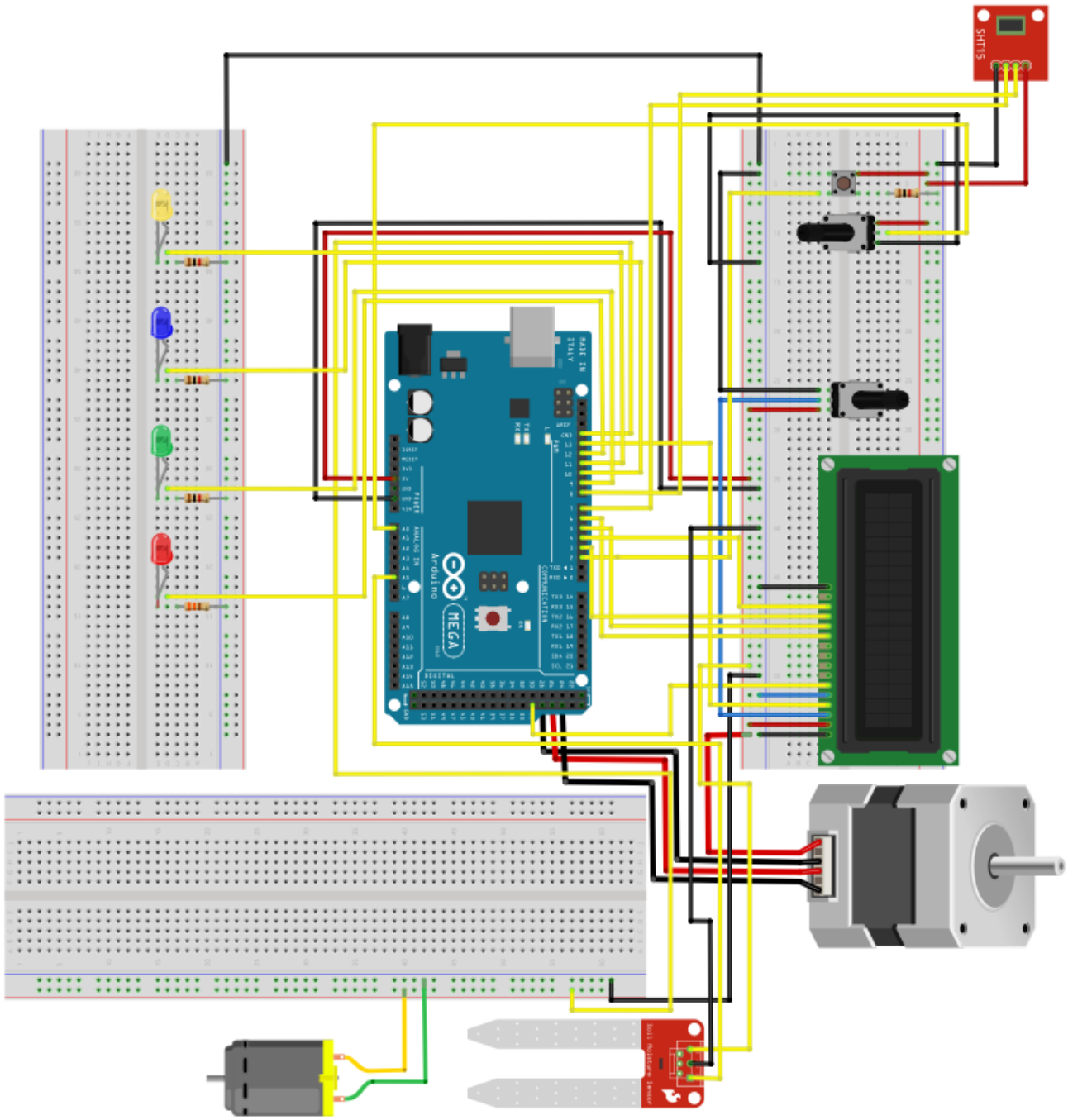
Tech Stack:

- C++, Arduino IDE

Constraints:

- Water Level: trigger if water value < 100 (may not be optimal speed)
- Temperature: vary based on environment (set greater than our testing room (> 24 C)
- Needs external power supply for fan / ATmega 2560
- Fragile components, easily damaged
- Cannot operate is freezing environments / no water (will not survive on Venus either)
- Complicated setup for potential client unless deployed with less hardware exposure

Schematic: Fritzing (0.9.10)

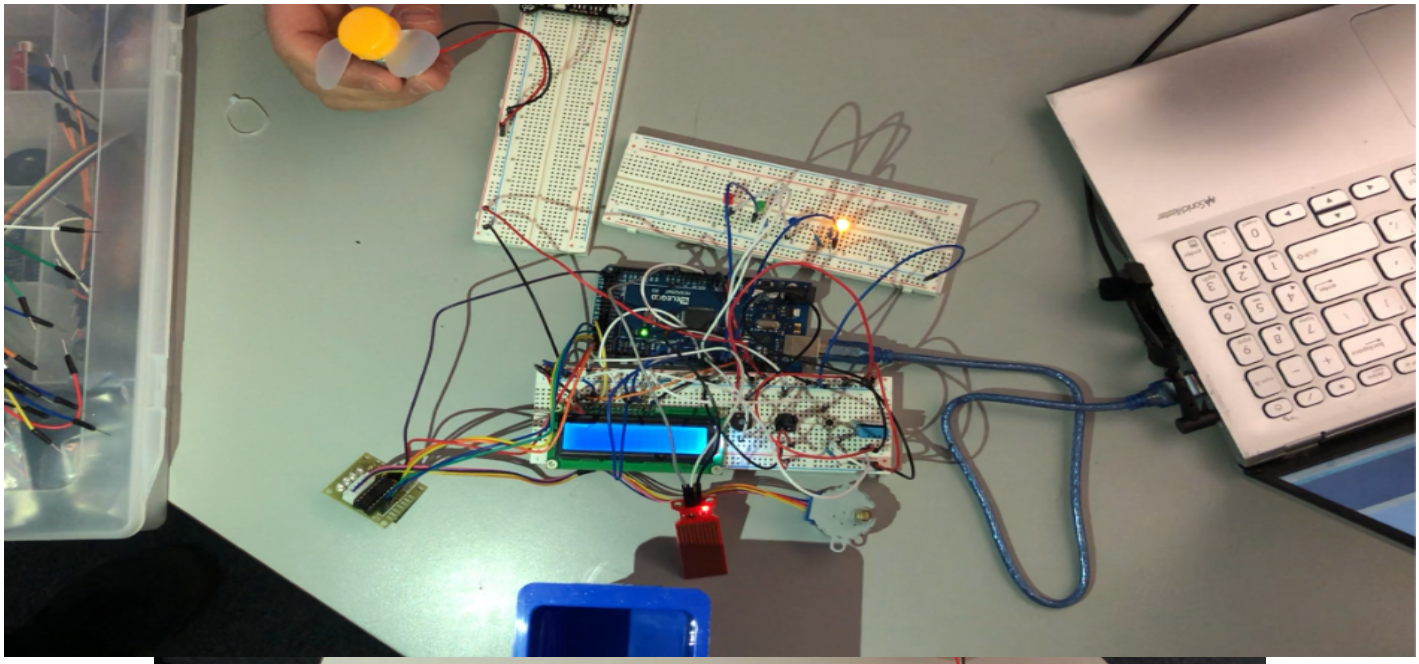


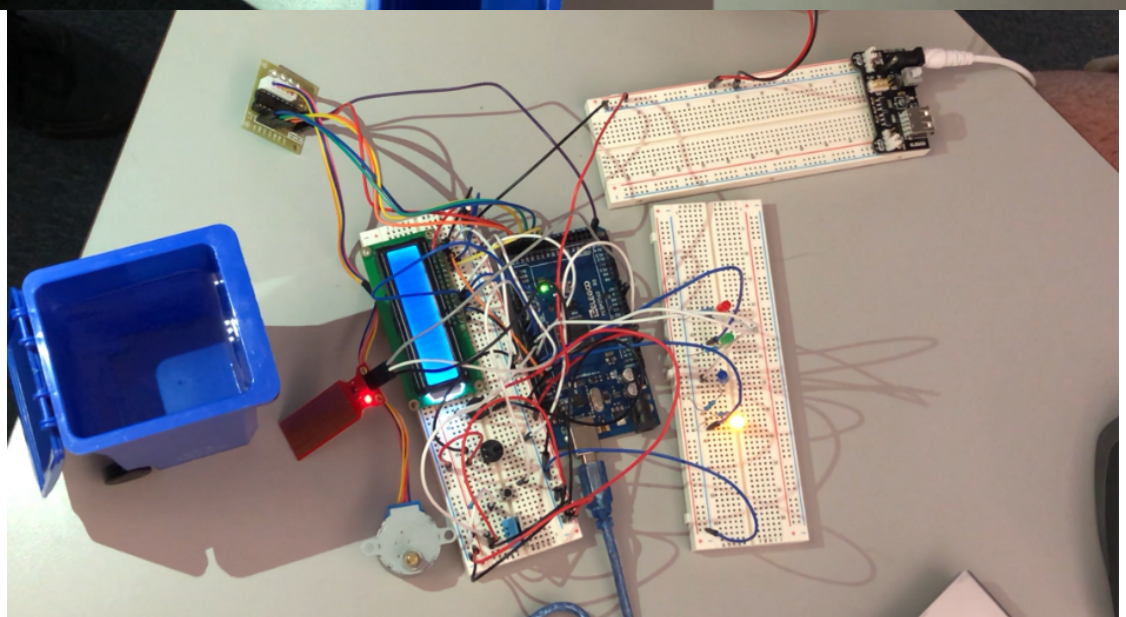
Description:

LED’s light up relative to cooler state

1) Disabled (yellow)
2) Idle (green)
3) Running (blue)
4) Error (red)

- Gathering temperature and humidity for real-time LCD display
- Potentiometer controls stepper motor
- Fan coupled with external power supply
- Water level Sensor to maintain idle or running states
- ISR() for register manipulation





Supplemental Material Links

https://ww1.microchip.com/downloads/en/devicedoc/atmel-2549-8-bit-avr-microcontroller-atmega640-1280-1281-2560-2561_datasheet.pdf (ATMEGA 2560 DATA SHEET)

https://github.com/adafruit/DHT-sensor-library (DHT library)

https://github.com/arduino-libraries/LiquidCrystal (LCD library)

https://github.com/arduino-libraries/Stepper (Stepper Library)

Demonstration:

https://www.youtube.com/watch?v=UfBXz0tN9KI&feature=youtu.be