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CPE 301.1001
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Project Overview

Objective:

To use knowledge taught in class and practiced in the lab to use the arduino to build a swamp cooler.

Overview:

Using the Arduino ELEGOO Mega 2560 we built a swamp cooler that measures temperature and water levels to change states.

Design and Constraints:

> Design:

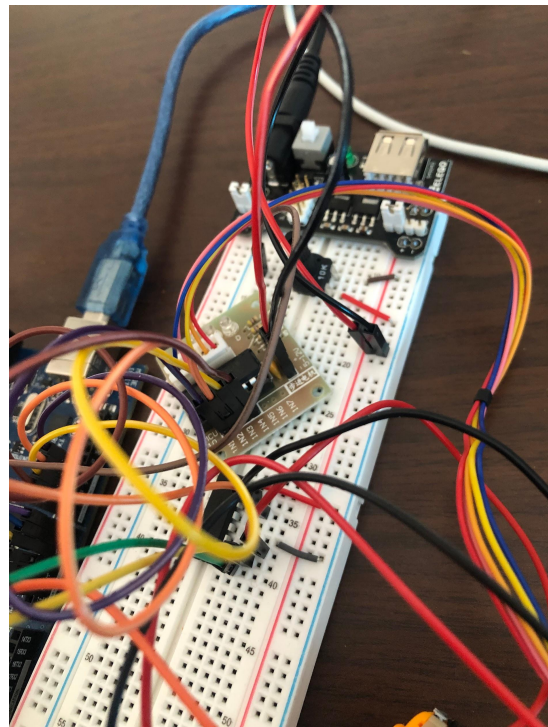
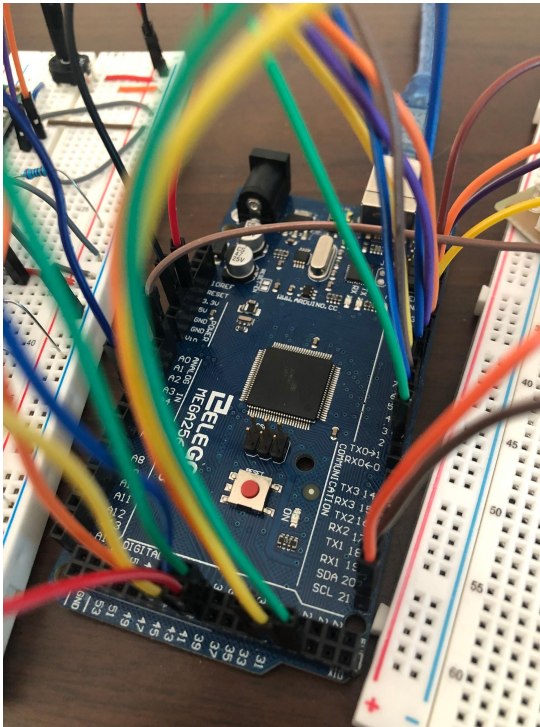
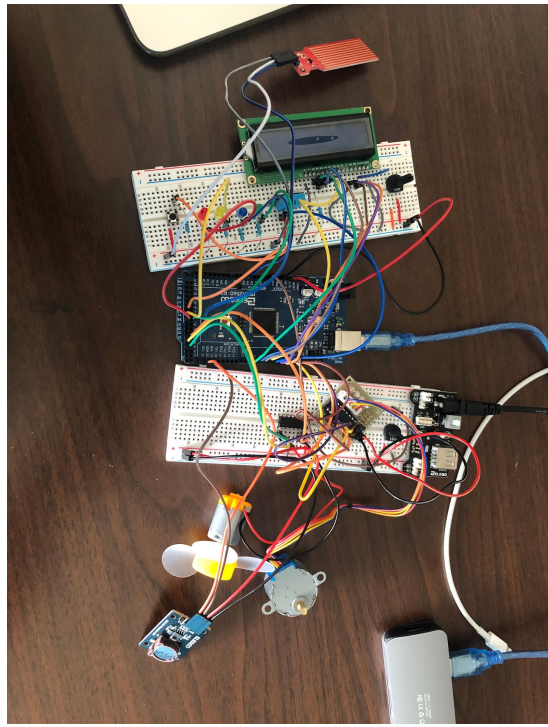
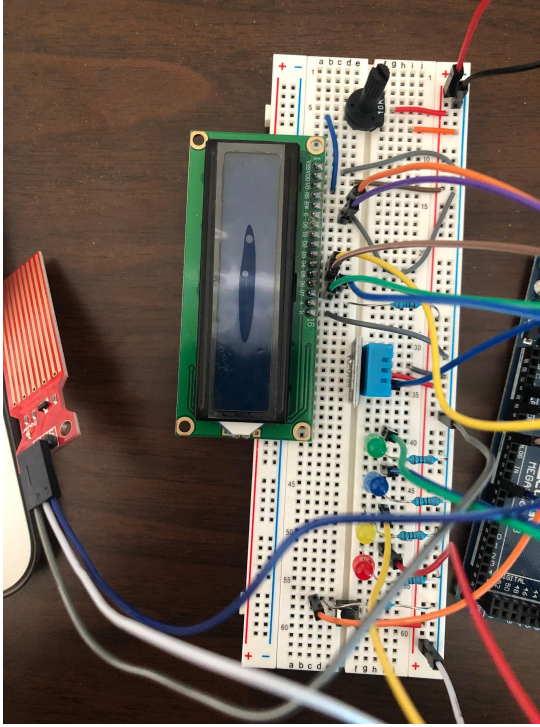
The water cooler has 4 states. These states depend on the temperature and water levels. The 4 states are disabled, error, idle, and running. The swamp cooler has several components that are dependent and independent to these states.

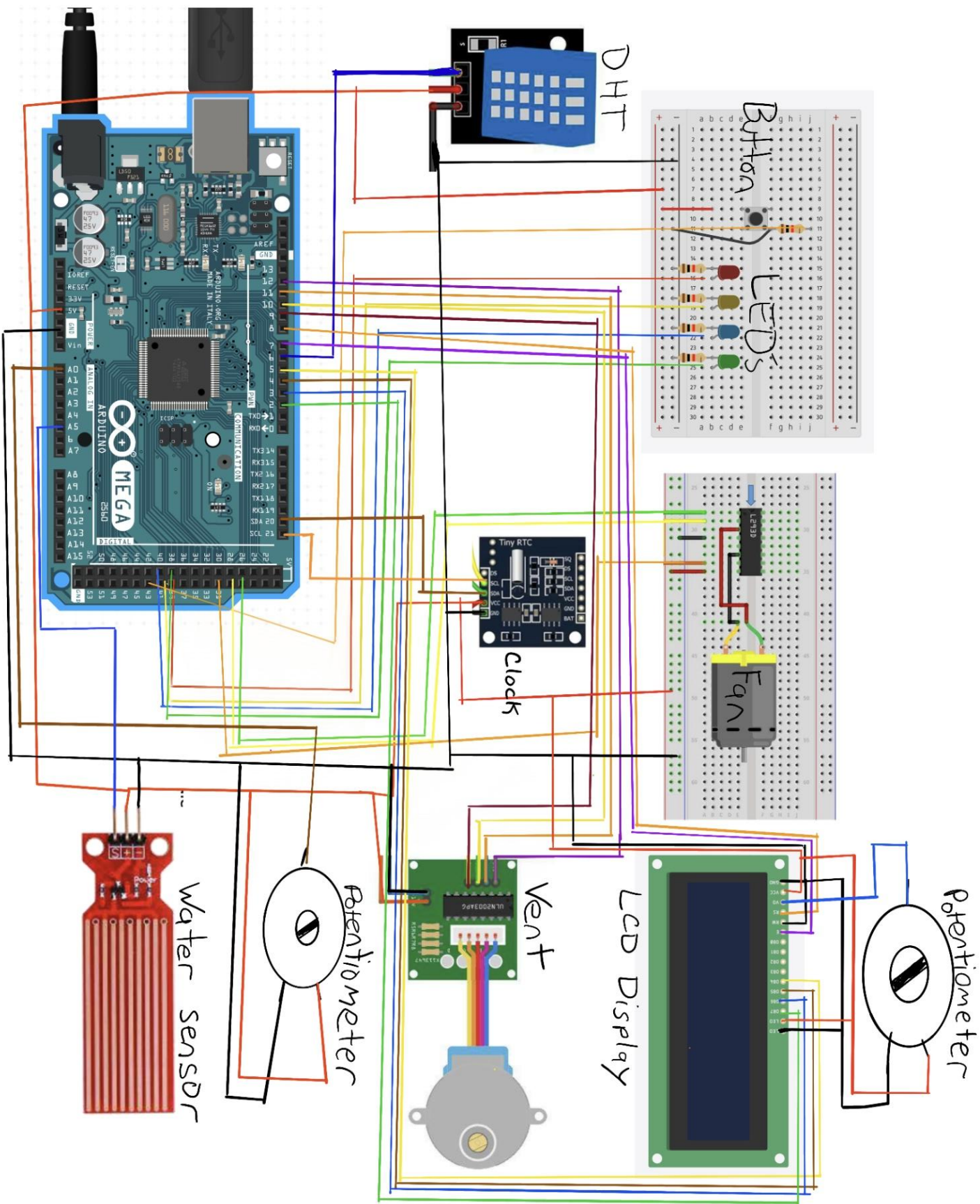
Materials:

- ELEGOO Mega 2560
- Fan
- Power supply
- Stepper motor
- Stepper driver
- LEDs
- Resistor
- Potentiometer
- LCD
- DHT sensor
- Button
- Real Time Clock
- DC motor
- L293D
- Water Sensor

> Constraints...

There are 4 states disabled, error, idle, and running. These constraints depend on the level of the water and the temperature of the room. If the temperature is too high and the water level is in the threshold the state is running. Anything other than this changes the state. If the temperature is too low it will be sent to idle and if the water level is too low then it will go to error.





Github Repo: <https://github.com/1109-McCartney-Sean/CPE-301-Final-Project>

Demo Video: Can be found in the Github

Specification Sheets:

- Arduino Mega 2560 R3 - <https://docs.arduino.cc/static/7a2c58aba77ca2a88e9a4b43a8b6a072/A000067-datasheet.pdf>
- Humidity/Temperature Sensor (DHT11) - <https://www.mouser.com/datasheet/2/758/DHT11-Technical-Data-Sheet-Translated-Version-1143054.pdf>
- Button - <https://www.arduino.cc/documents/datasheets/Button.pdf>
- LEDs - <https://www.arduino.cc/documents/datasheets/LEDRGB-L-154A4SURK.pdf>
- Clock - <https://pdf.direnc.net/upload/tinyrtc-i2c-modul-datasheet.pdf>
- DC Motor Fan - https://www.arduino.cc/documents/datasheets/DCmotor6_9V.pdf
- Potentiometer - https://www.arduino.cc/documents/datasheets/ACP_potentiometers.pdf
- Water Sensor - https://curtocircuito.com.br/datasheet/sensor/nivel_de_agua_analogico.pdf
- Vent (ULN2003APG) - https://datasheet.lcsc.com/szlcsc/ULN2004APG_C14336.pdf
- LCD Display - <https://www.arduino.cc/documents/datasheets/LCDscreen.PDF>
- Used for component schematic- <https://images-na.ssl-images-amazon.com/images/I/D1oC-c3G5TS.pdf>