CPE 301 Final Project

Group 46

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Overview:

This project entailed the creation of a control system for an evaporation based cooling system. This was done with an Arduino 2560, and a set of components from the Mega Project starter kit used for labs. The circuit was built, and the code operates based on a loop that determines which state the cooler should be in. Various functions have been implemented to check and alter the state, as well as to gather information from the instruments to drive the state change function.

Constraints:

There were several constraints on this project, some from the design point of view, and others from the hardware's limitations. I shall list them below:

1. Arduino library functions were disallowed.
2. The LCD should only update once per minute.
3. The DHT11 sensor only works between 0 and 50 degrees Celsius.
4. Separate power supply is needed for the fan to avoid damaging the Arduino output.
5. Components should be the components from the kit.

Components:

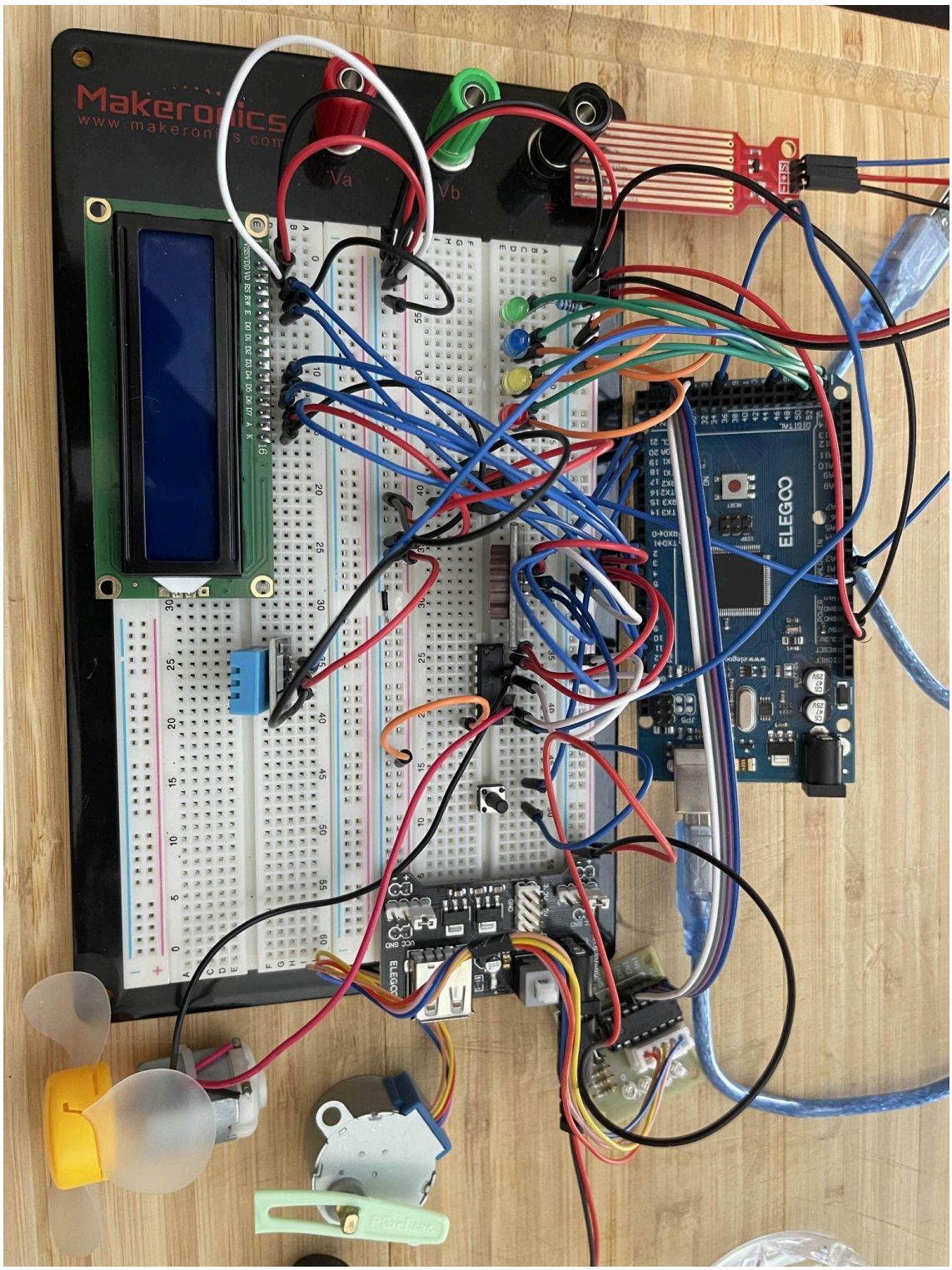
Here is a list of the components used in the construction of the cooler:

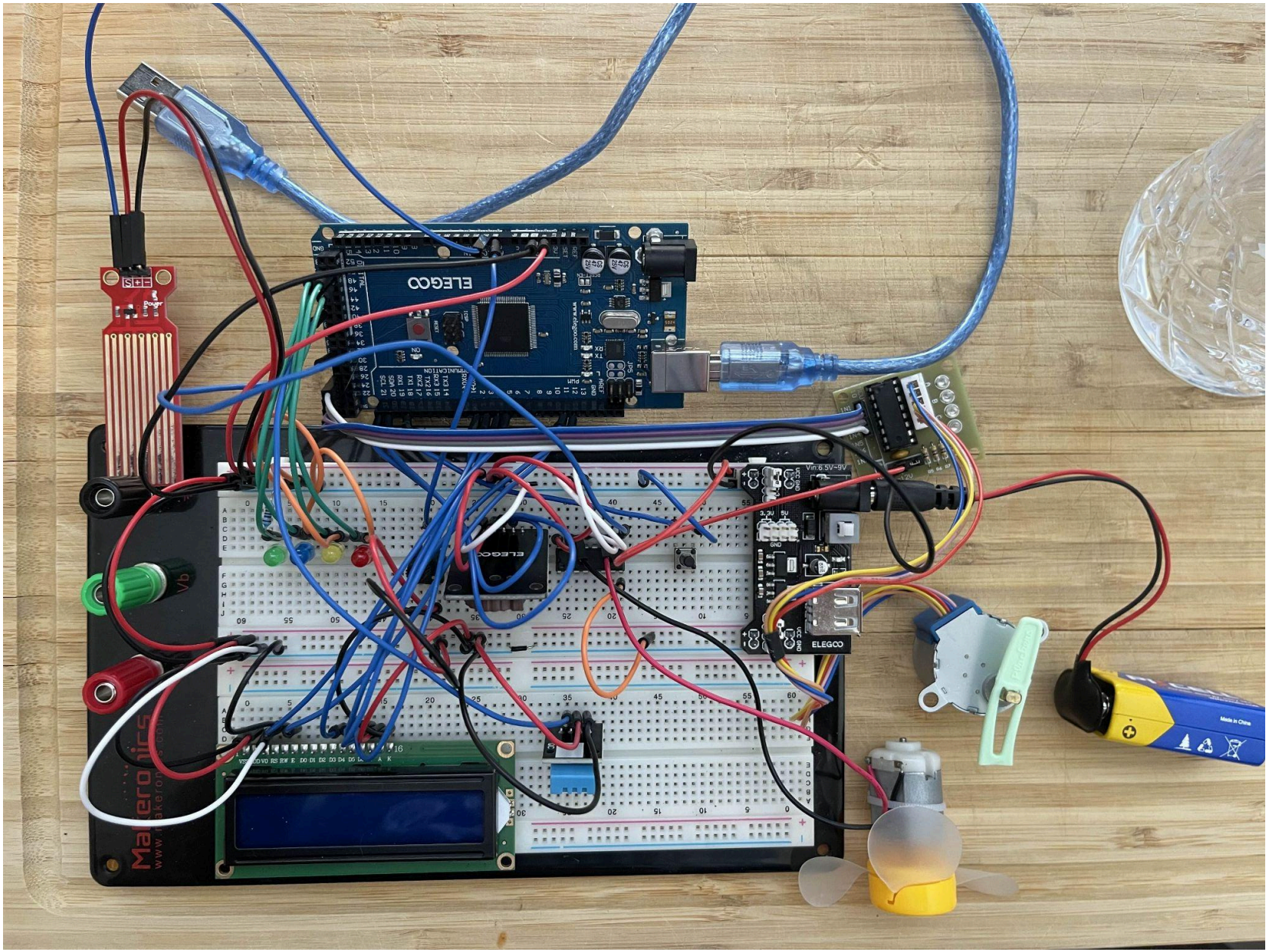
1. Elegoo Arduino AtMega2560
   Datasheet: ATmega640/1280/1281/2560/2561 datasheet summary
2. DHT11 Temperature and Humidity Module
   Datasheet:DHT11-Temperature-Sensor.pdf
3. DS1307 RTC module
   Datasheet:DS1307.pdf
4. LCD 1602 module
   Datasheet:Arduino/Elegoo The Most Complete Starter Kit for MEGA V1.0.2017.10.31/Datasheet/LCD1602A.pdf at master · keopx/Arduino

5. L293D driver
   Datasheet: L293D Datasheet(PDF) - STMicroelectronics
6. ULN2003 Stepper Motor Driver Module
   Datasheet: Arduino/Elegoo The Most Complete Starter Kit for MEGA V1.0.2017.10.31/Datasheet/ULN2003A.pdf at master · keopx/Arduino
7. Water Level Detection Sensor Module
   Datasheet:Arduino Water Level Sensor - Datasheet Hub

Various connecting wires, breadboard, and LED lights were also used, as well as computers to write and compile the code.

Pictures of Final System:

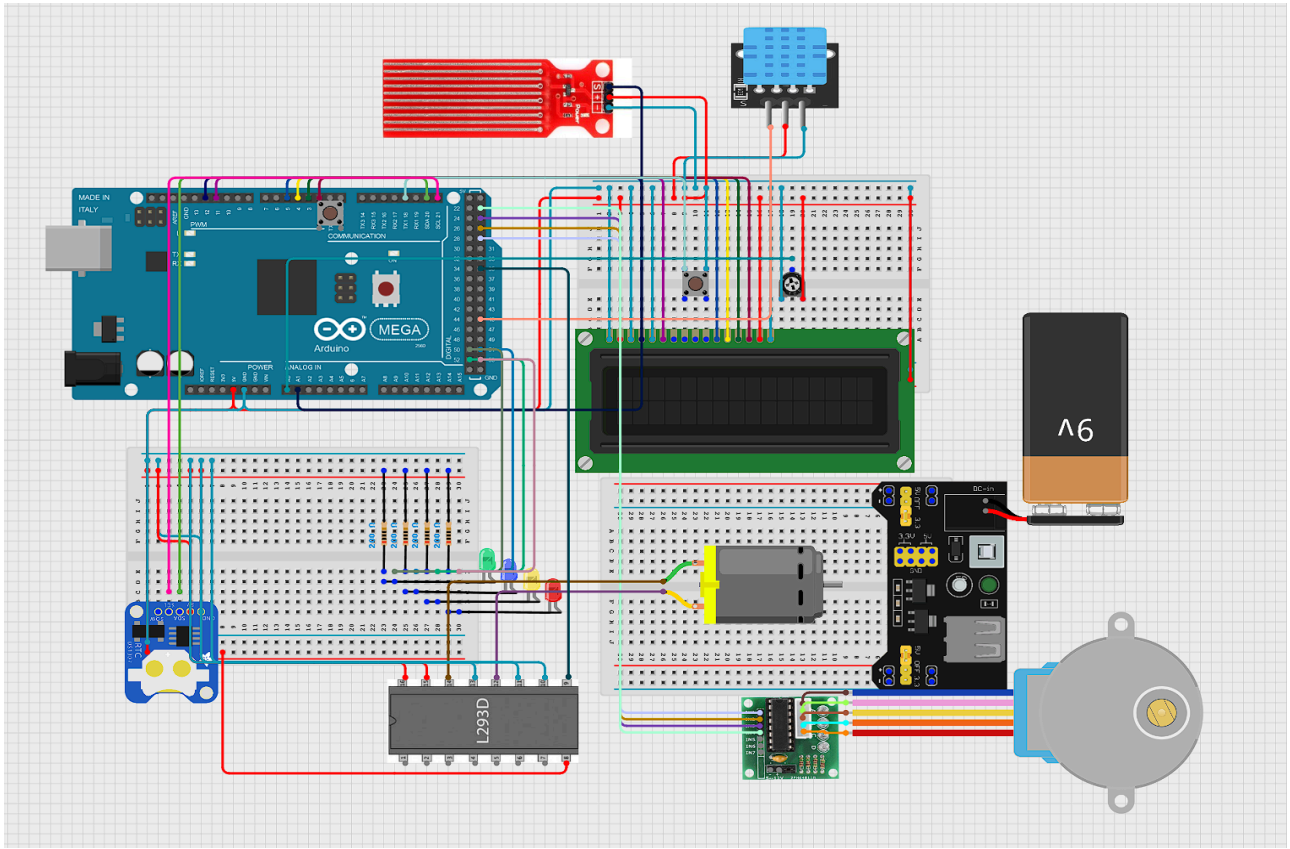



ELEGOO
ELEGOO
ELEGOO
Vin:6.5V-9V
3.3V 5V
GND
Vb
Made in China

Operation of System:

https://youtu.be/D_IvRZvRC4k?feature=shared

Schematic:



Github Repository:

[Shyhelmoon/Group-46-Swamp-Cooler]