Brandon Foy
CPE 301, Shawn Ray
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Project Overview

This project was made with a single Arduino Atmega 2560 and one large and one small breadboard. It is meant to mimic a Swamp Cooler, or rather, an “Evaporative Cooling System”. The other components of this project are the green, red, blue, and yellow LEDs, an LCD, a Real Time Clock, a fan, a stepper motor, an L293D IC, a button, a DHT11 Temperature and Humidity Sensor, a Power Supply Module, an AND gate, and a Water Level Detection sensor module.

To run, one has to first compile the program. This may seem obvious, but the button doesn’t work, so to reset the program compilation is necessary. The yellow LED will flash, signifying a disabled state. The board will then switch to either green or red, depending on the water level. If the board flashes blue that means that the temperature threshold has been reached and the fan will start. Unfortunately, the stepper motor is not functional, but not for a lack of trying.

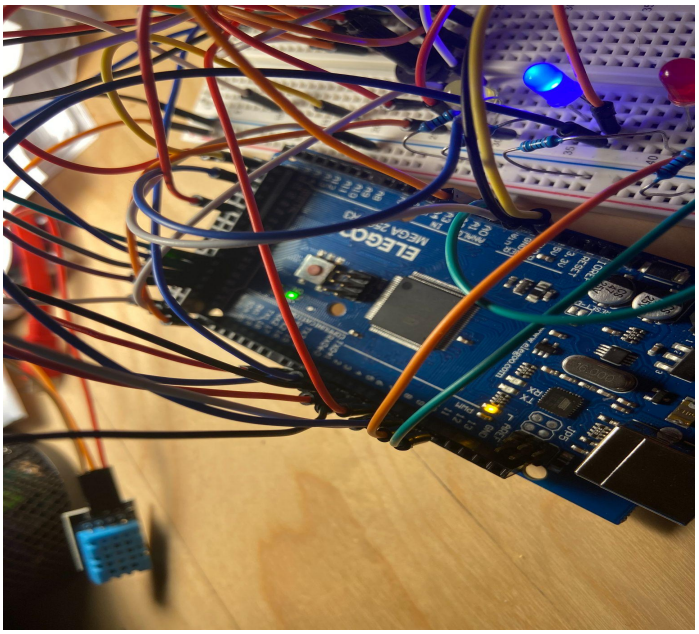
To run the fan, the Temperature and Humidity Sensor must detect an outside temperature of 80 degrees fahrenheit and the Water Level Detection Module must sense at least 80 (units). To initiate the error state, the water level must be less than 80. To run the idle state, the temperature must be less than 80 degrees and the water level must be less than 80. To initiate the disabled state, one must simply tinker with the parts as the program is being run.

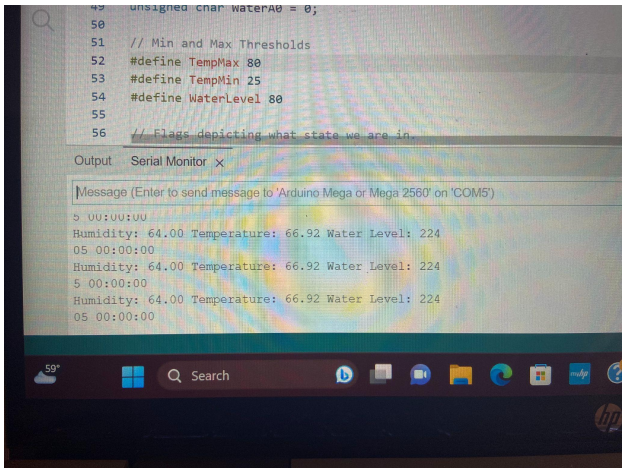
For my design, a constant voltage of 5 volts must be delivered to both sides of the large breadboard at all times, and only one side of the small breadboard needs to be powered. Of course, all powered sides of the breadboards must also be grounded.

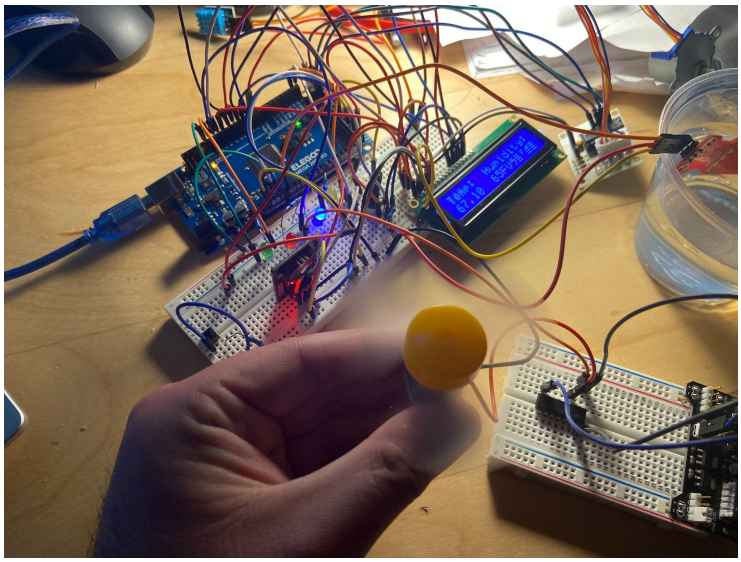
Video Link

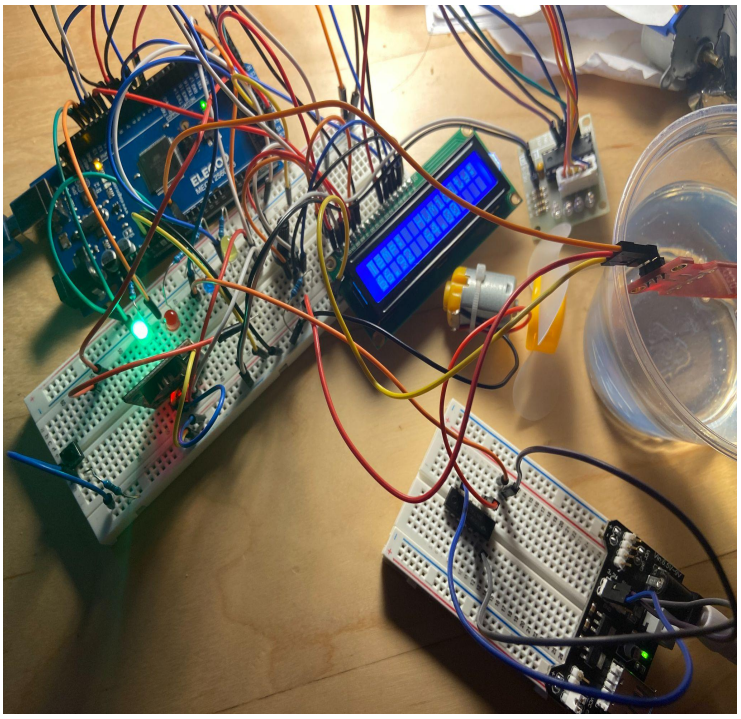
https://www.youtube.com/watch?v=hjuGdGq0C9E

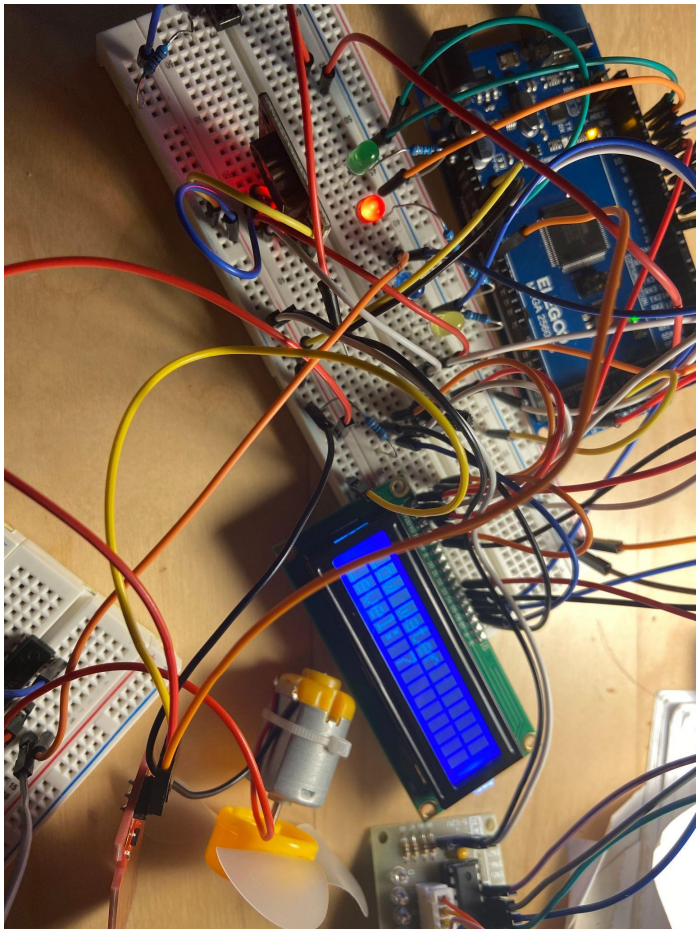
Pictures



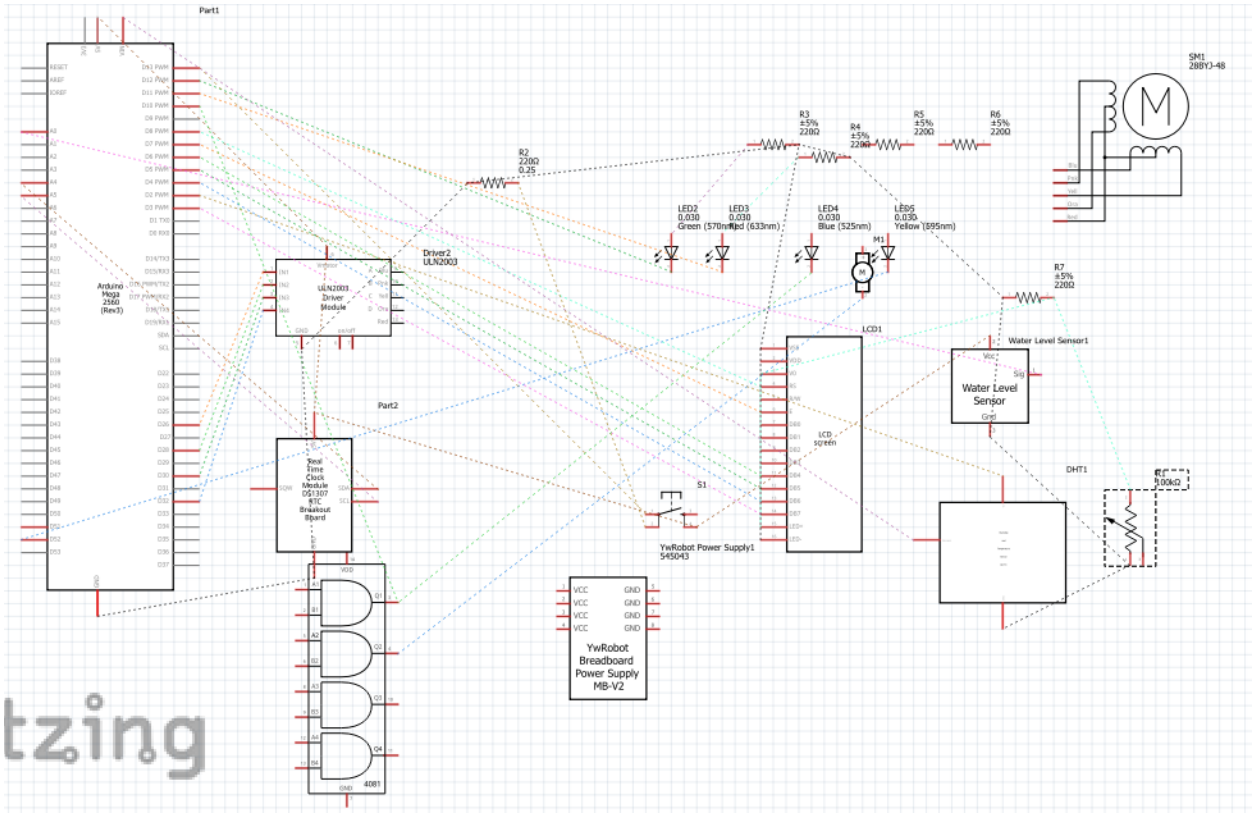








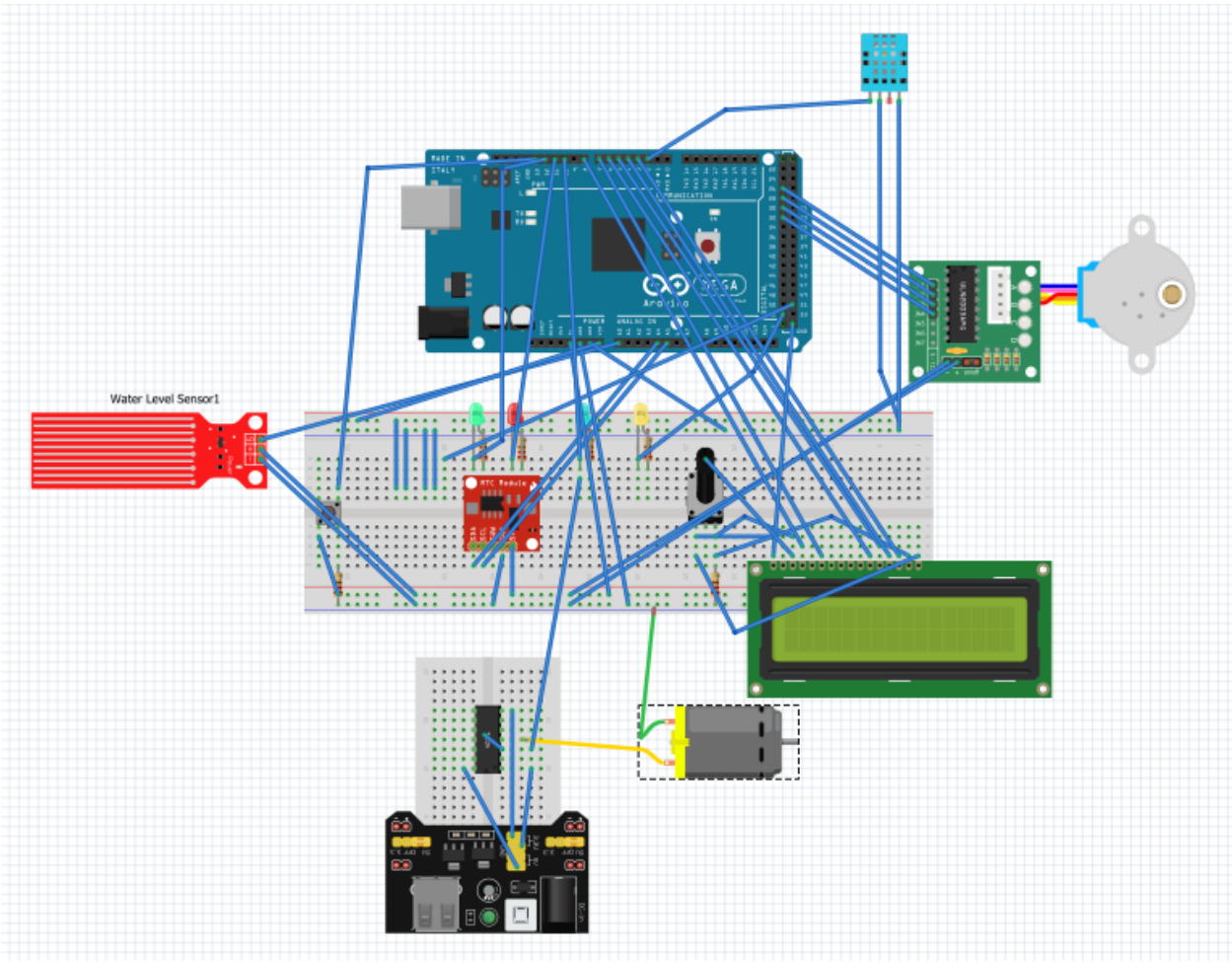
Schematics



Specification Sheets

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

https://www.mouser.com/datasheet/2/758/DHT11-Technical-Data-Sheet-Translated-Version-1143054.pdf (DHT11 Datasheet


Water Level Sensor1