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CPE 301
December 9th, 2022

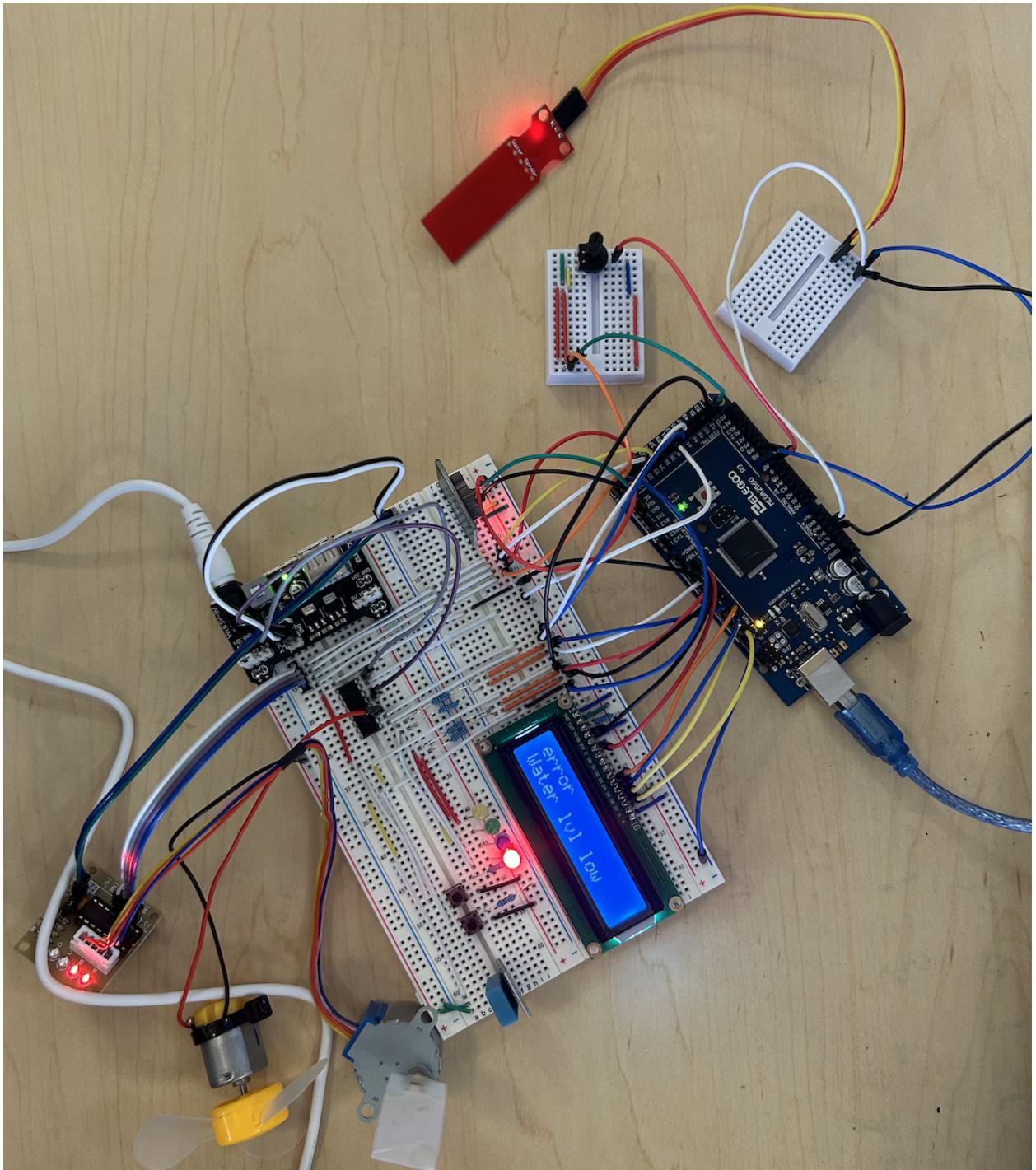
Swamp_Cooler_Report

Project Overview:

This project's goal was to create a swamp cooler (evaporation cooling system). This swamp cooler is used to take the warm outside air, running it through wet evaporative cooler pads and then it is blown into the room desired to be cooled. This swamp cooler only works in dry climates as it is not effective in humid climates. To start the system press the start button, which will send the system from the "Disabled" stage to the "Idle" stage. The swamp cooler starts with the LCD reading the temperature over the desired amount. Then, the system switches from the Idle to the "Running" state, which turns on the fan and starts the cooling process. Once the fan cools enough and the temperature goes back below the preferred amount, the system switches from the Running state back to the Idle state and the cycle repeats. When the water level gets too low, the system will go to the "Error" state and an error message will display telling the user to fill the water level. Once complete the system will return to its Idle state when on. The machine can be stopped from any of the 3 stages, Idle, Running, Error using the stop button. All fan motors have a power supply separate from the built in arduino power supply to accommodate power operating requirements. And the system is built to operate within ambient room temperatures.

Also requires RTClib library by adafruit for RTC module.
Requires DHT Sensor library by adafruit.

Picture of completed system:

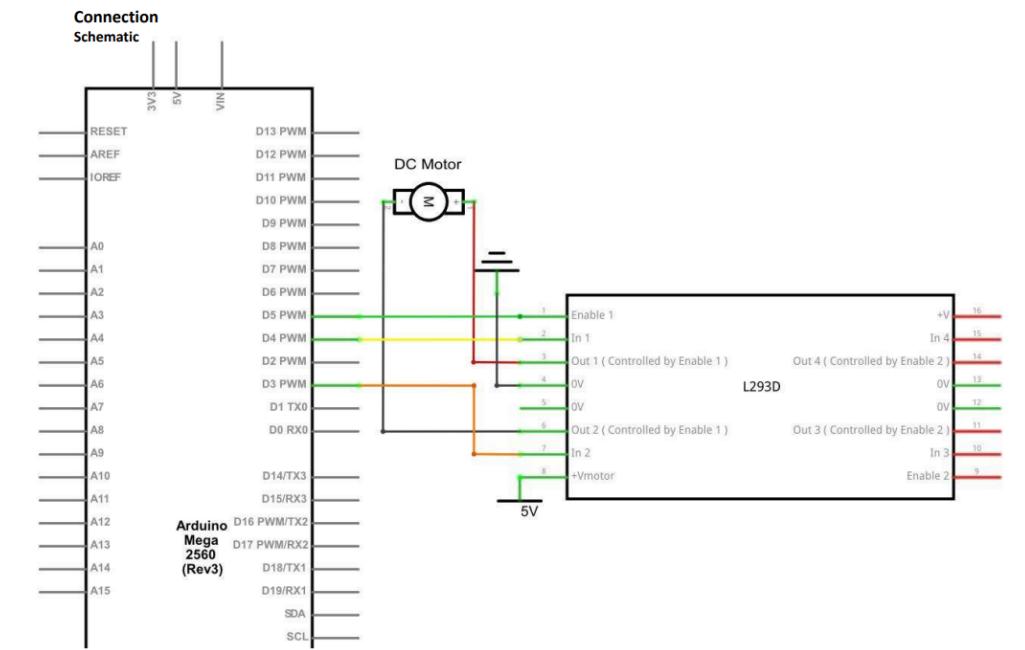


Link to video: <https://www.youtube.com/watch?v=qSQ5r0JtjQ8>

Github link to repository: <https://github.com/302-Brown-Dennis/CPE-FINAL>

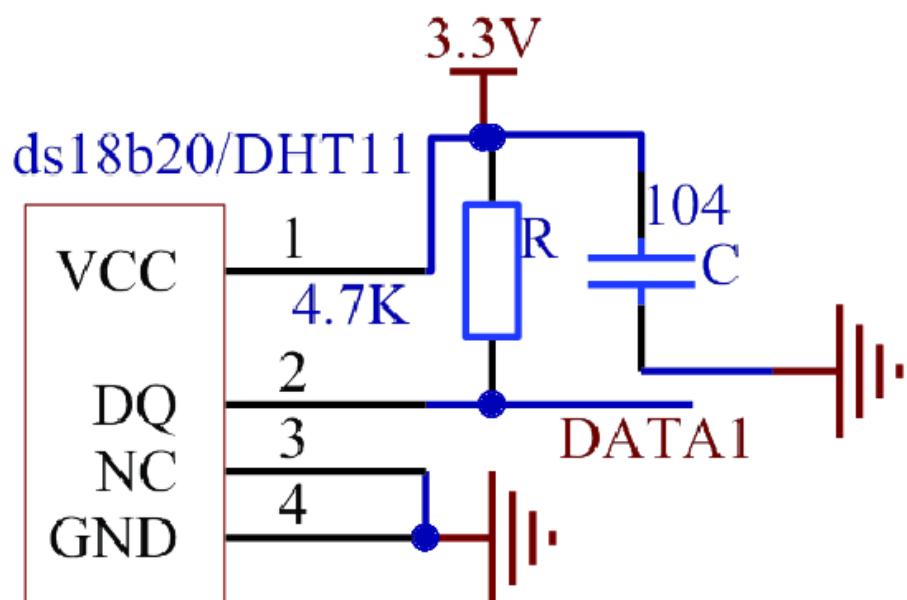
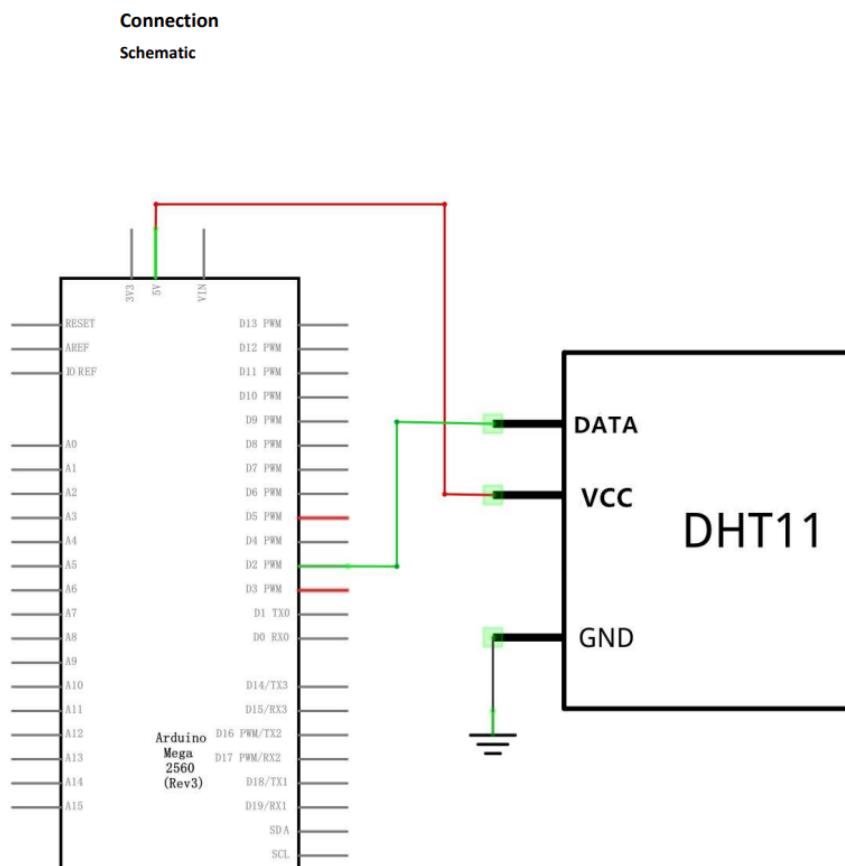
Schematics:

a. Kit Motor:



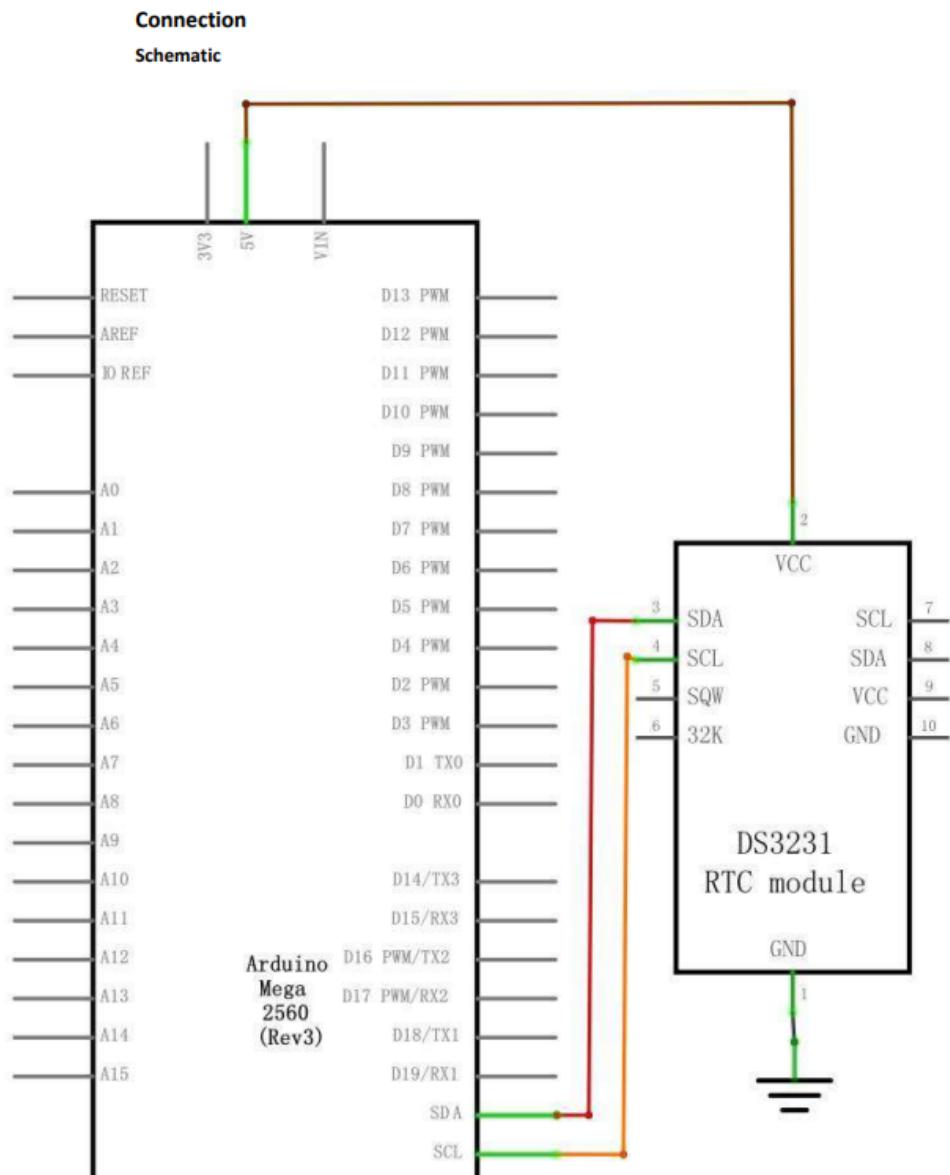
https://www.tutorialspoint.com/arduino/arduino_dc_motor.htm

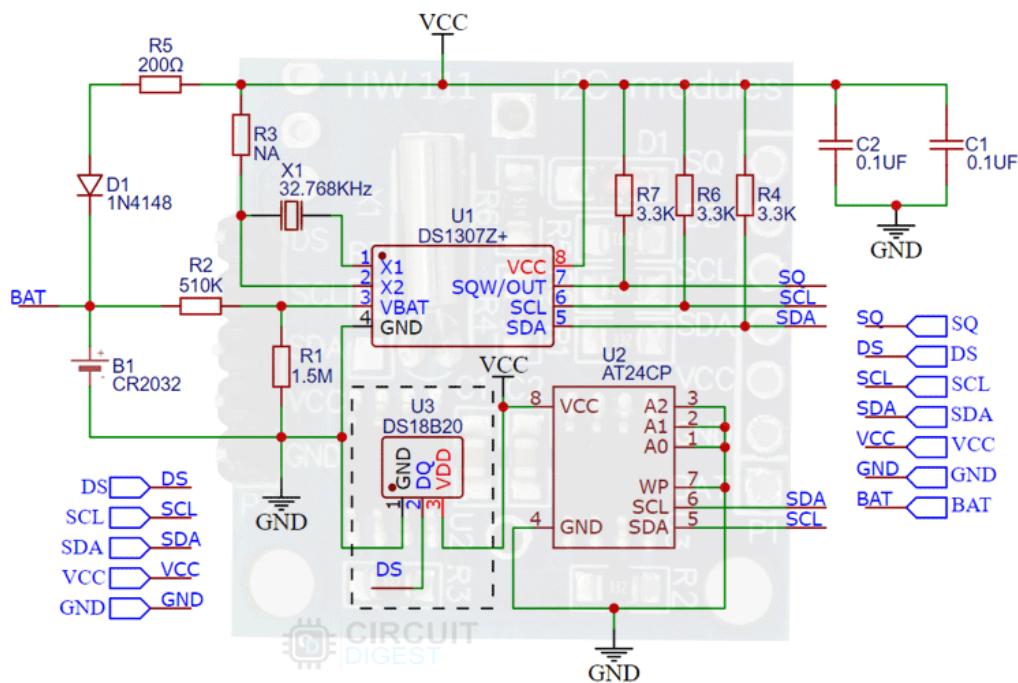
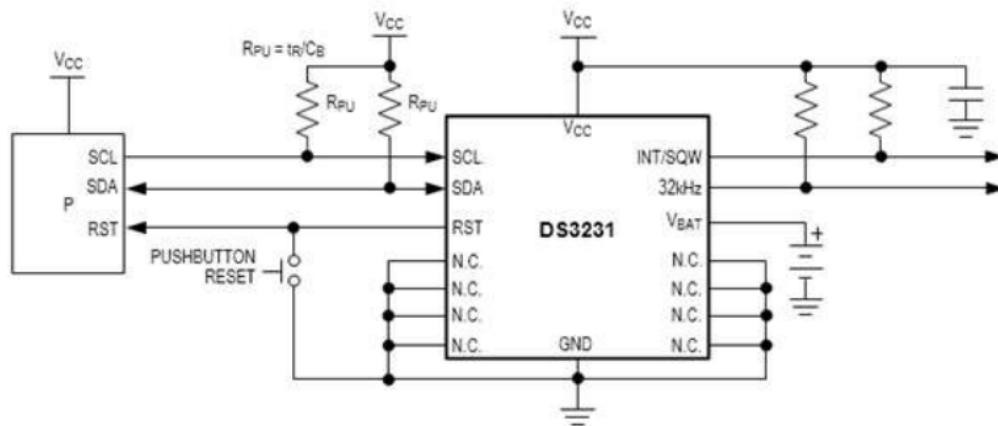
b. Temp/Humidity sensor (DHT11):



https://www.researchgate.net/figure/DHT11-and-DS18B20-circuit-schematic_fig4_322794833

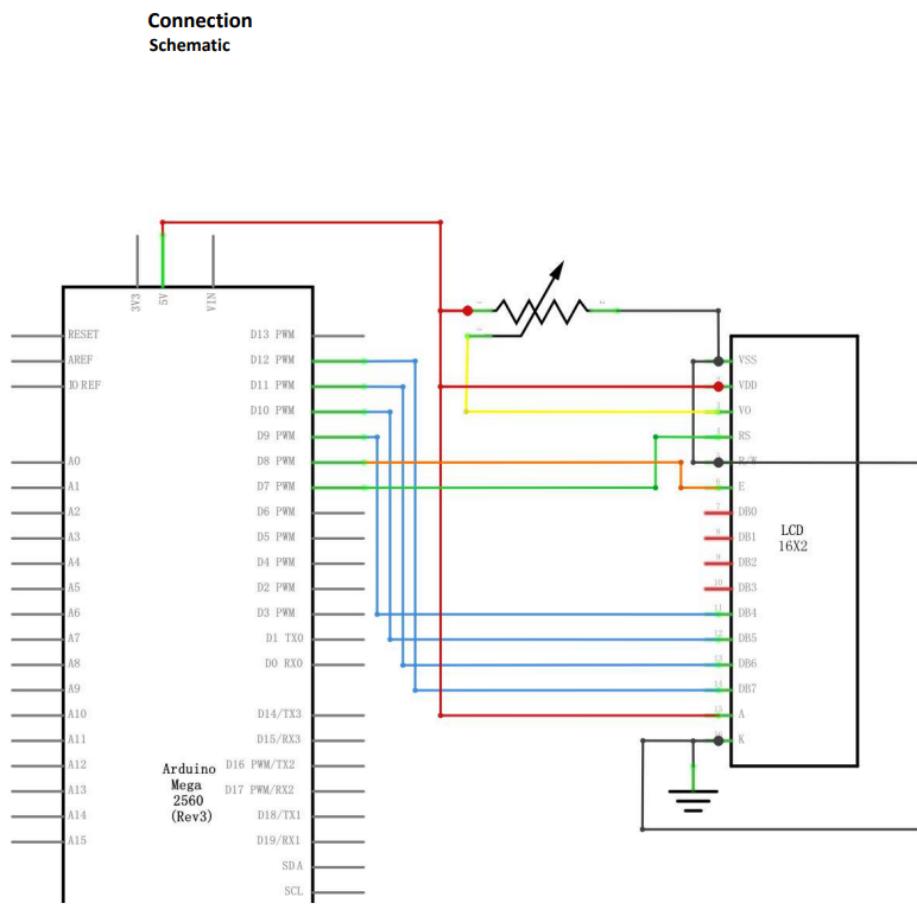
c. Real time clock module:





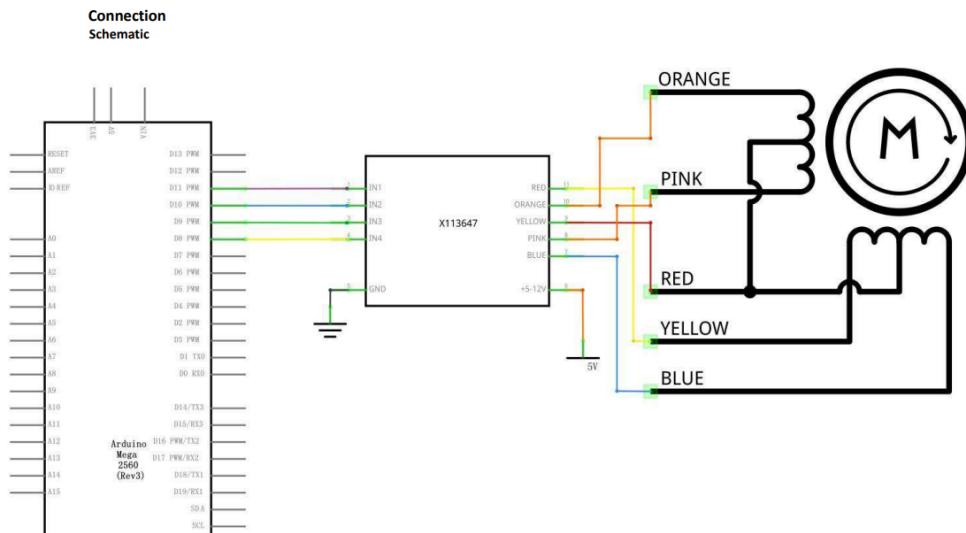
<https://www.sparkfun.com/datasheets/Components/DS1307.pdf>

d. LCD1602 Module:



<https://create.arduino.cc/projecthub/najad/interfacing-lcd1602-with-arduino-764ec>

e. Stepper Motor:

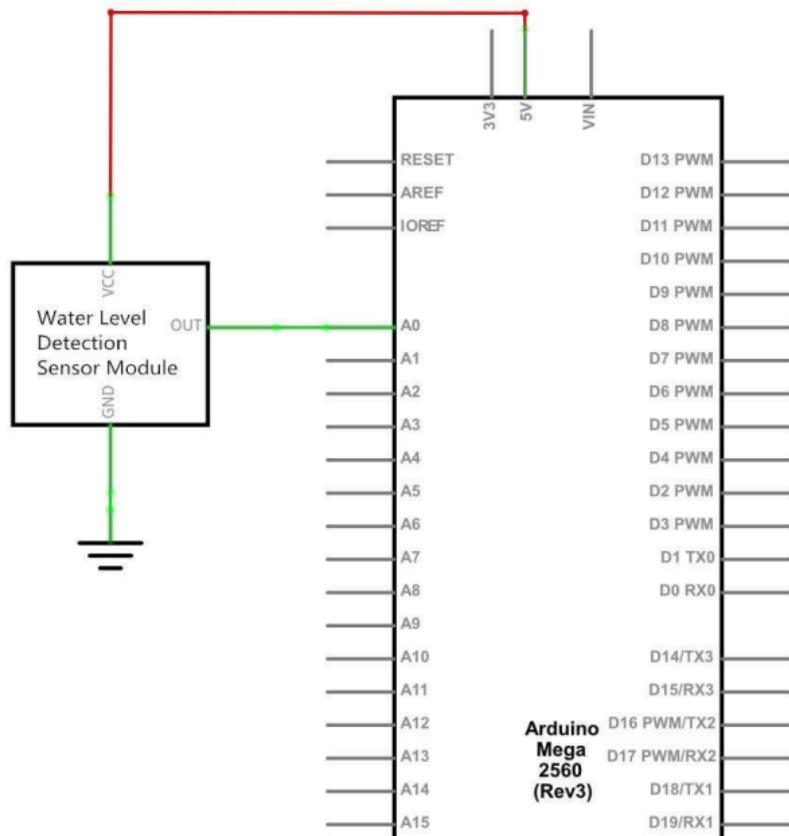


<https://docs.arduino.cc/learn/electronics/stepper-motors>

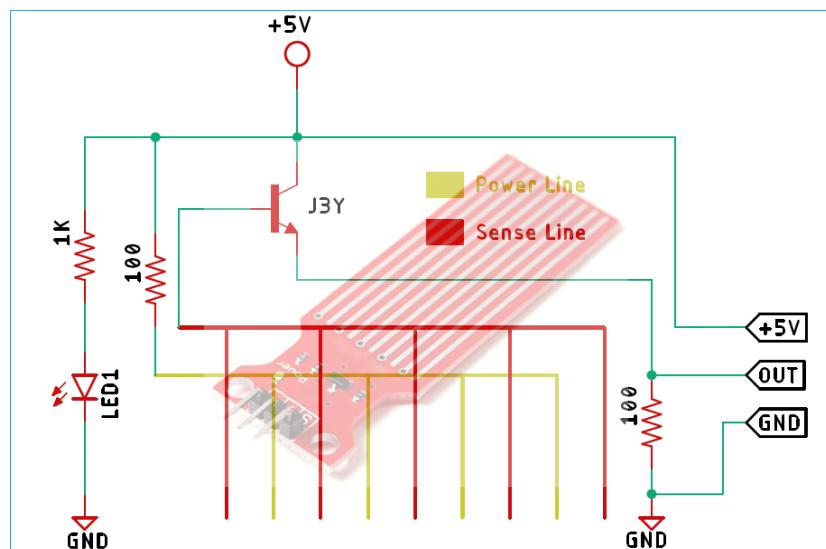
f. Water level detection sensor:

Connection

Schematic



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<https://circuitdigest.com/microcontroller-projects/interfacing-water-level-sensor-with-arduino>