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CPE 301
Professor Bashira Akter Anima
12/08/2023

Final Project Report

Design Overview

The goal of this project is to create an evaporation cooling system. Throughout the design process, I've so far written and designed an Arduino program that serves as a monitoring system for temperature, humidity, and water level. I incorporated a DHT11 sensor for temperature and humidity readings, a liquid crystal display (LCD) for visual output, and LEDs to indicate the water level status. I utilized a few essential libraries, such as LiquidCrystal for interfacing with the LCD and DHT for working with the DHT11 sensor.

In the setup function, I initialized the DHT sensor and configured the LCD with the correct dimensions. The program displays a "Booting Up..." message on the LCD to serve as an initialization point for the user to view.

The main loop continuously executes, with a one-second delay at the beginning to give the temperature and humidity sensor a chance to set up. During each iteration, I read the temperature and humidity from the DHT sensor. The water level is determined by replacing the analogRead() library with the ADC to read from pin A5. The water level value is stored in the variable "waterLevel" to be used later on in the loop function.

The program then checks the water level and updates the LCD display to accurately convey the readings. If the water level is 100 or below, indicating a low level, the LCD is cleared, and temperature and humidity information is re-displayed. The red LED is turned on, while the yellow and green LEDs are turned off.

For water levels between 100 and 250, a low water level, the program displays a "Water Level Low" message on the LCD's top row. The yellow LED is turned on, and the red and green LEDs are turned off.

If the water level exceeds 250, signaling a sufficient level, the LCD is cleared, and the green LED is turned on. The red and yellow LEDs are turned off.

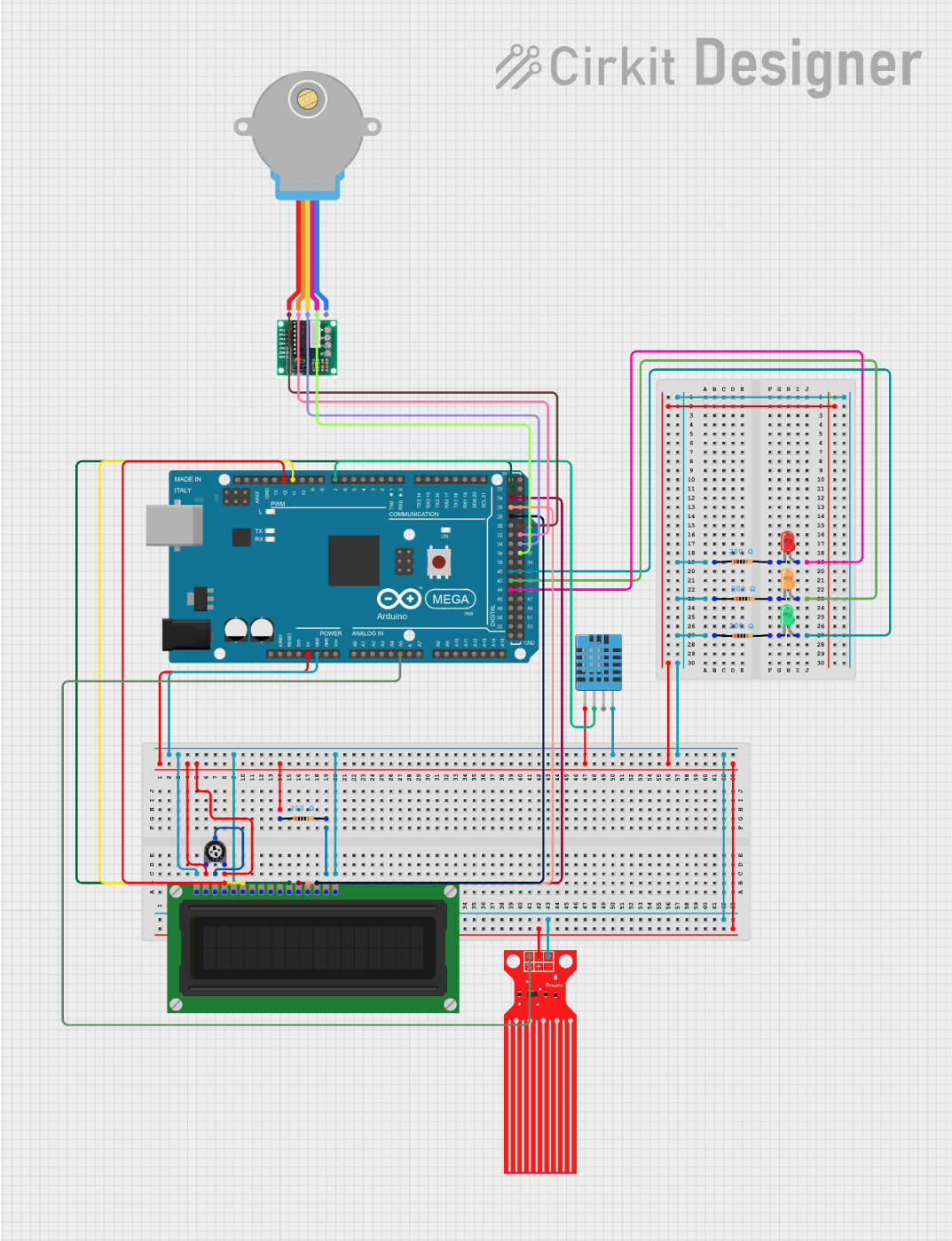
GitHub Link: https://github.com/Anna-Desorcy/Swamp-Cooler

Specification Sheets:

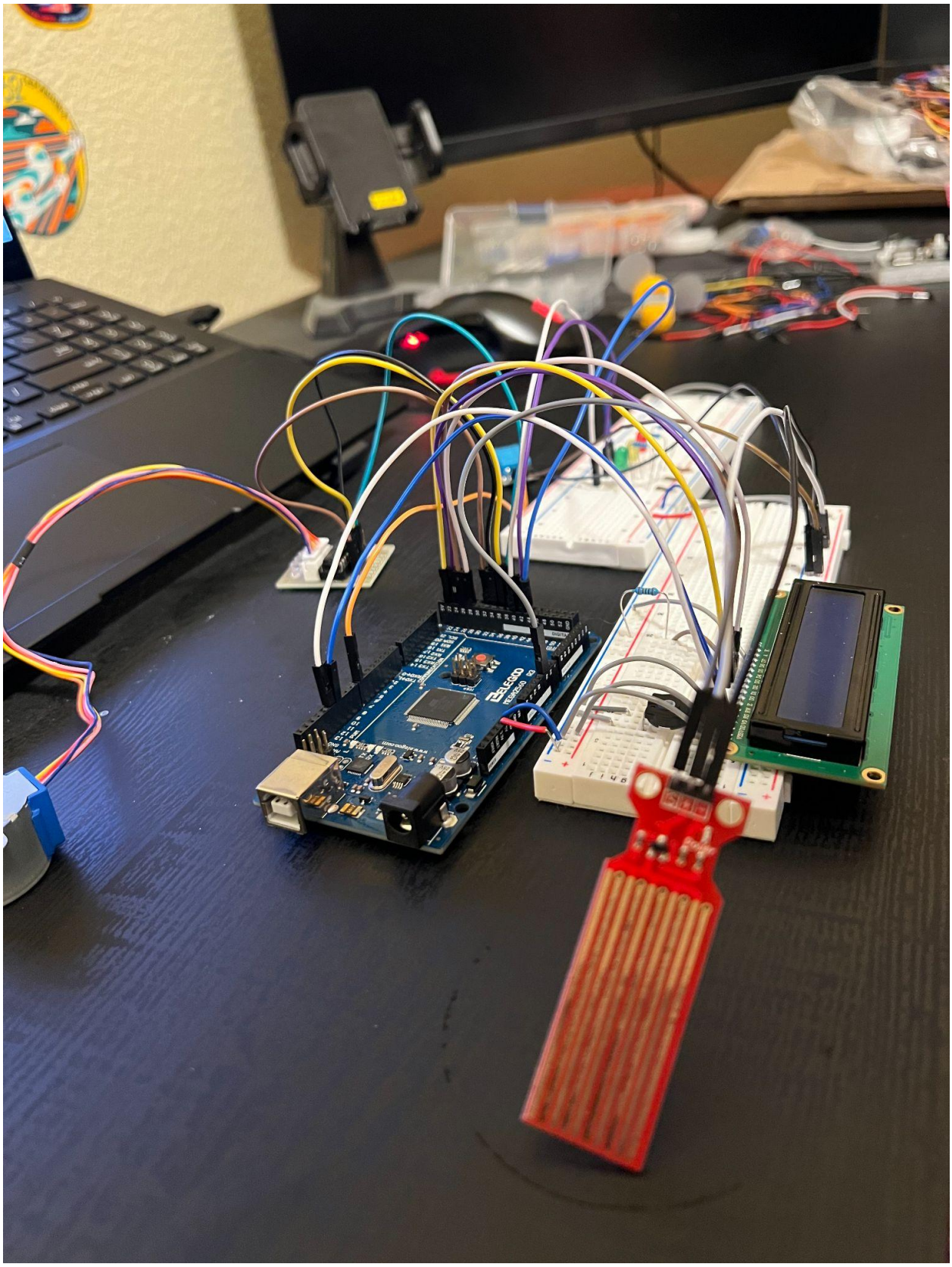
https://www.mouser.com/datasheet/2/758/DHT11-Technical-Data-Sheet-Translated-Version-1143054.pdf

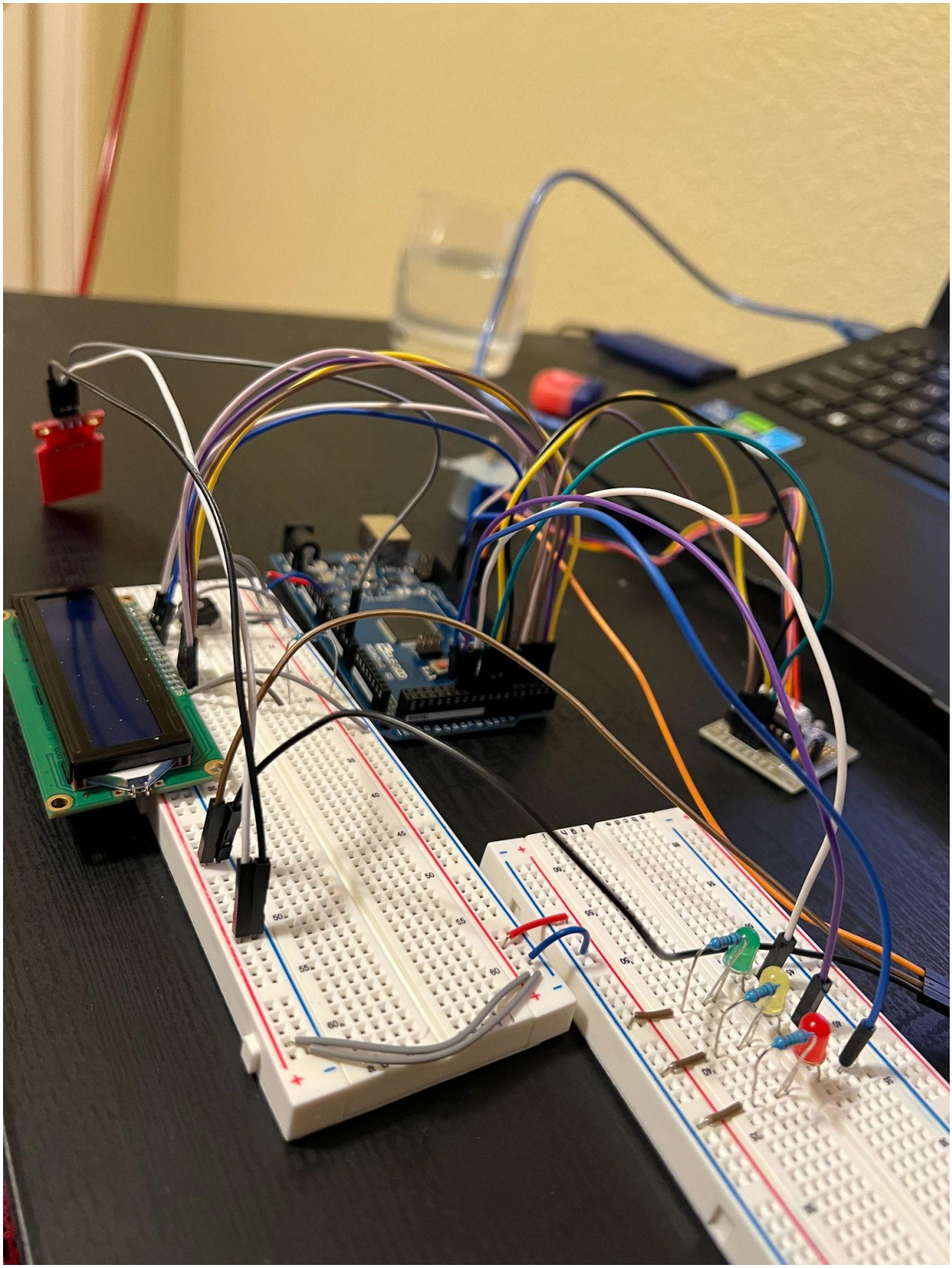
https://ww1.microchip.com/downloads/en/devicedoc/atmel-2549-8-bit-avr-microcontroller-atmega640-1280-1281-2560-2561_datasheet.pdf

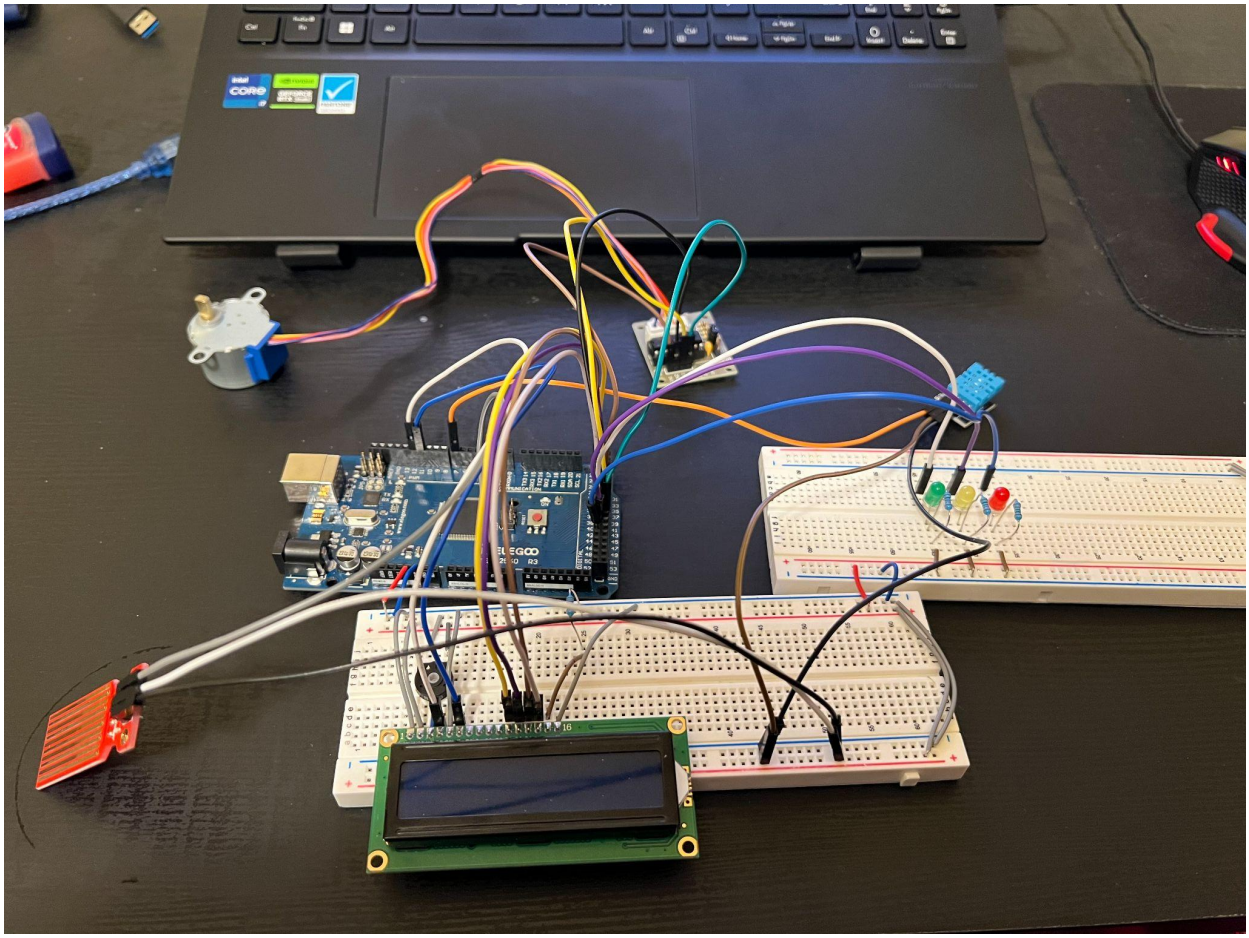
Schematic



Pictures







Video Link

https://drive.google.com/drive/folders/12Zs-UHlzkTcUCBb5pcE94cTy6n2gBcyE?usp=sharing