CPE 301 Final Project
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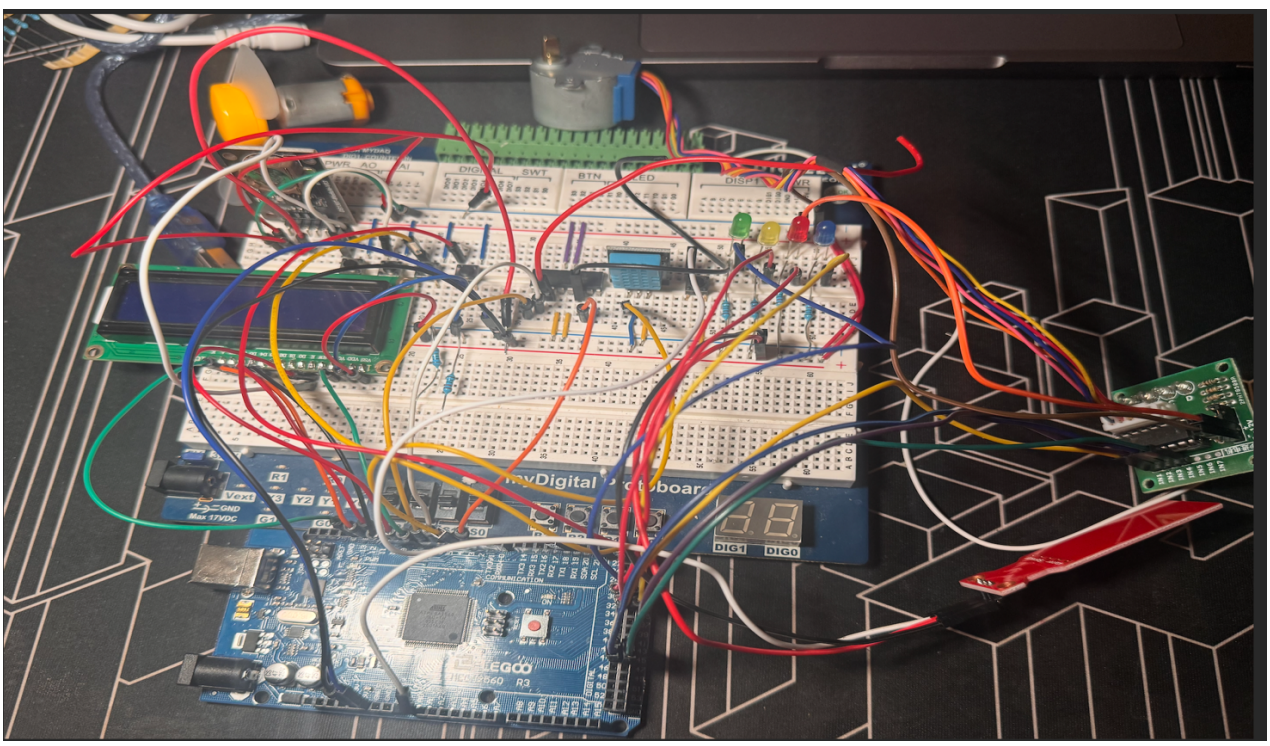
GitHub Repository:

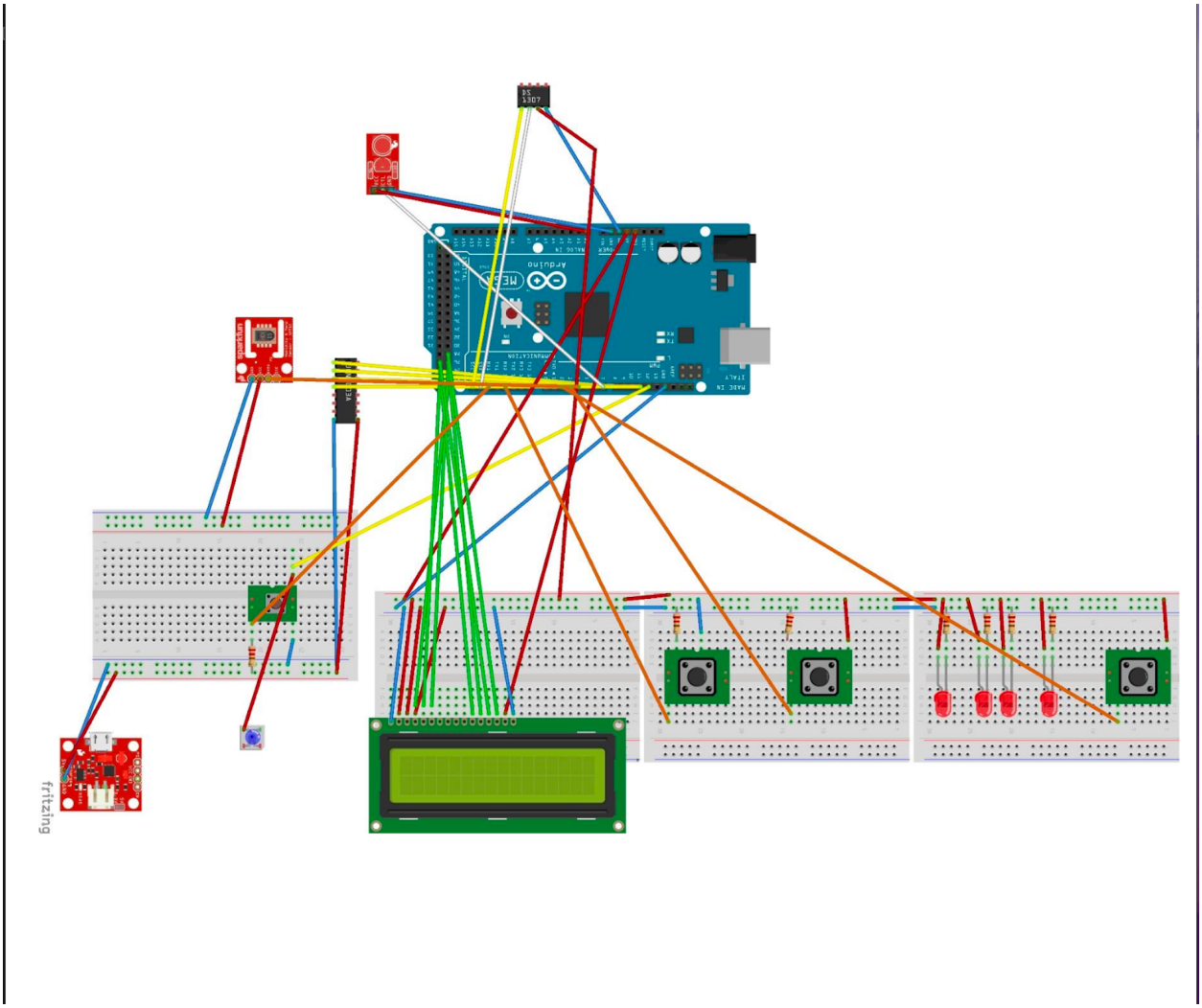
The final project involves designing an evaporative cooling system, commonly referred to as a swamp cooler. This system offers an energy-efficient alternative to traditional air conditioners in arid, hot climates. It operates by drawing outside air through a water-saturated pad, where evaporation cools and humidifies the air.

Key project requirements include monitoring water levels, displaying real-time air temperature and humidity, controlling the fan motor, adjusting vent angles, enabling or disabling the system, and recording motor operation timestamps.

The system transitions between various operational states, with changes triggered by user actions or environmental factors such as temperature variations. These states—DISABLED, IDLE, ERROR, and RUNNING—are defined by specific functionalities and LED indicators. For instance, the system must utilize a real-time clock for timestamping, continuously monitor humidity and temperature, respond to vent position adjustments, and manage LED signals corresponding to the current state.



1. Project Setup



2. Schematic

Device Specification

DHT11 Temperature & Humidity Sensor: https://components101.com/sensors/dht11-temperature-sensor

DS1307-Module-V03 Real-Time Clock: https://arduinogetstarted.com/tutorials/arduino-ds1307-rtc-module

Water Sensor: https://curtocircuito.com.br/datasheet/sensor/nivel_de_agua_analogico.pdf

LCD1602 Module: https://create.arduino.cc/projecthub/najad/interfacing-lcd1602-with-arduino-764ec4

28BYJ-48 Stepper Motor with ULN2003 Driver: https://www.makerguides.com/28byj-48-stepper-motor-arduino-tutorial/

Fan Motor: https://create.arduino.cc/projecthub/ingo-lohs/first-test-super-starterkit-from-elegoo-motor-3-6v-dc-5b199d

External Power Module: https://components101.com/modules/5v-mb102-breadboard-power-supply-module