Final Project - Swamp Cooler

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CPE 301 Lab Section 1102

I. DESIGN

The design of this system allows for the implementation of each component to be placed in a manner that allows for the proper function of each component. The addition of the smaller breadboards allow for the state descriptions to be separate from the rest of the crowded larger breadboard so that there is better visibility. Lastly, the buttons for the stopper motor are also on a separate smaller breadboard, allowing for easier accessibility.

II. CONSTRAINTS

Some of the constraints we had included the logic behind the disabling system. Making sure it was wired correctly and in a convenient manner was difficult due to there being a large amount of components. Additionally, we had issues with getting the LCD to work properly, but eventually getting it to work accordingly. Lastly, due to the sheer number of components and wires on the breadboard, it was hard to make sure things were placed in a way that was functional and easy to follow. We ended up just using multiple breadboards so that the one main board was not overcrowded. In terms of the power supply, it was difficult to make the power supply module work correctly with the breadboard and arduino when trying to configure it all and when implementing the DC motor. In terms of the temperature, some constraints of the device limit the idle state of the temperature to ranges that are below 72 degrees, while the device error state is triggered when the water level sensor reads a value that is below 400. Though we eventually got the LCD to work properly, the circuit turned off when it reached the threshold and we were not sure why as the code did not display any errors. This could be due to some wiring on the board although everything else worked. In the video, it was mentioned that everything else worked which includes the disabled function with the yellow LCD. There is a brief section in the beginning when it is shown. The final thing was the heater. Neither of us had a heater on hand so a hairdryer was used instead which may have caused problems. One last quick note, in the photos, you will see that the temperature is above 72 even though it was stated that it shut off when it reached 72. This is because the photos were taken before threshold was moved to 72, threshold here is still 73.

III. PICTURES OF FINAL SYSTEM

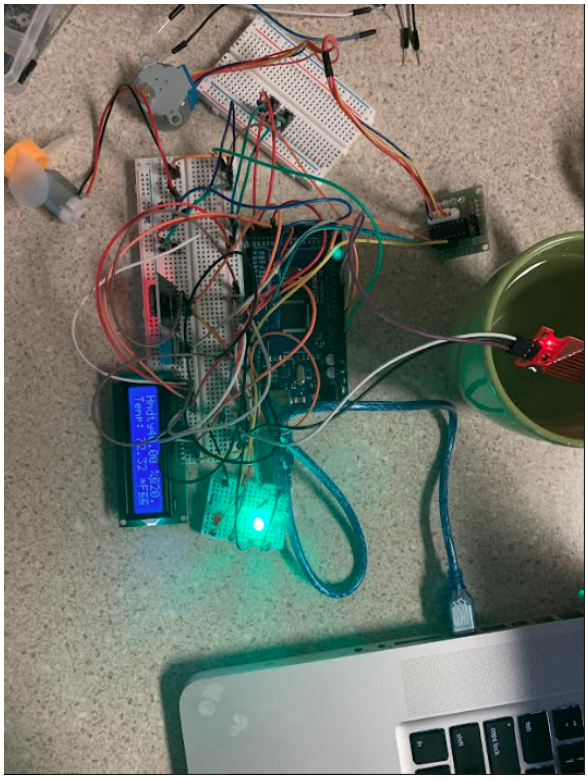

Figure 1: Top View of Physical Circuit

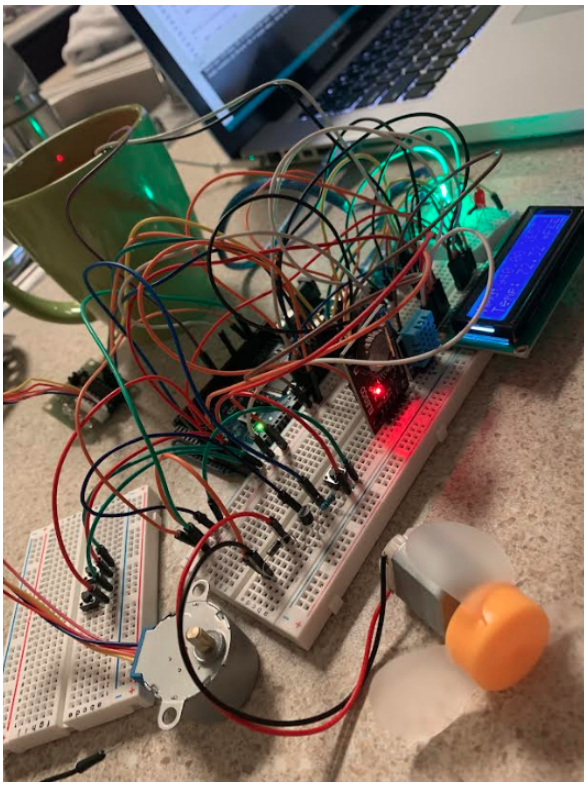

Figure 2: Side View of Physical Circuit

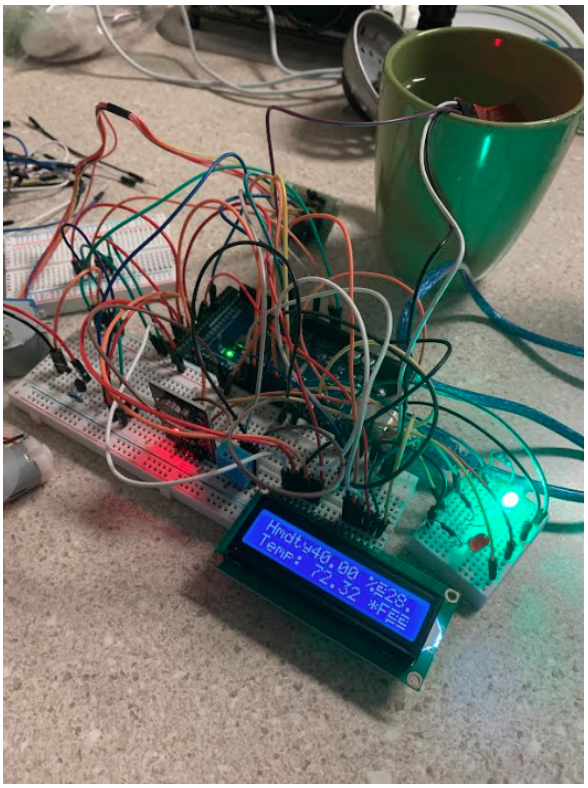

Figure 3: LCD Screen Reading

IV. VIDEO OF THE SYSTEM IN OPERATION

https://youtu.be/4jBQuyl7QLs

V. SCHEMATICS

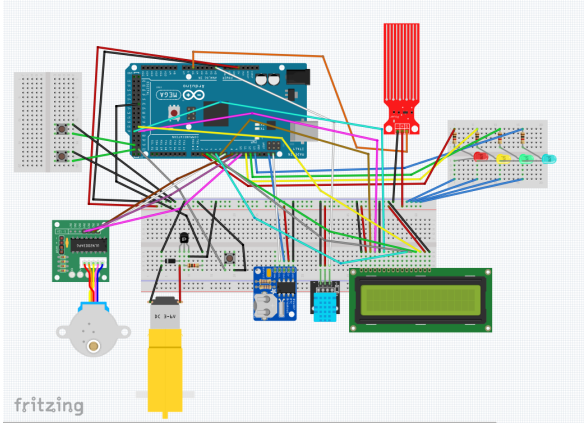

Figure 4: Breadboard Schematic

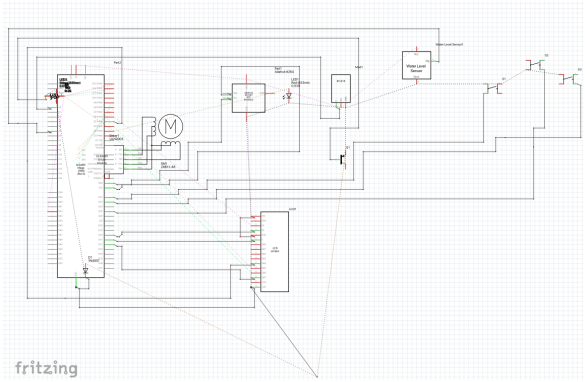

Figure 5: Schematic

VI. LINK TO GITHUB REPOSITORY

https://github.com/lee-mara/MaraL-AngeloC-CPE301-Final