# Final Project: Swamp Cooler

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Romina Mendez

Alex Robinson

Anmol Sandhu

Objective:

       For our project we had to build a swamp cooler with everything at our disposal using things we have learned from previous labs while also making it use multiple states of function. The project has four established states: Idle, Running, Error, and Disabled. The Disabled state is when the cooler is off, Idle is when it is waiting for a command or waiting for the correct threshold to be met, Running is when the cooler is activated and working with certain readings being met, and error is when a reading reaches over a threshold or an internal source stop functioning shutting off any electronics. When the machine first activates it automatically runs in Idle and will not be activated unless the temperature reaches a certain point on the Temp/Humidity Sensor. Once reached the cooler will transition into the running state activating the fan and water systems to blow out cool air consistently to cool down the surrounding area and lighting a blue LED to show the user that it is in fact working and powered. Now if the water being used reaches a higher threshold than the water sensor used then it will flick to the Error state, shutting off all electronics and lighting a red LED to signify an internal error. Once that happens and the error is corrected a reset button can then be pushed to reset it back into Idle. If at any point the machine is turned off via button or given a stop command that is when the machine goes to disabled until further notice shutting down all parts of the machine. All these readings will be available with the use of an LCD Display unit that reads the temperature of the room and as well as the water level reading. The stepper motor acts as the motor managing the ventilation of the project keeping the air flow in the cooler.
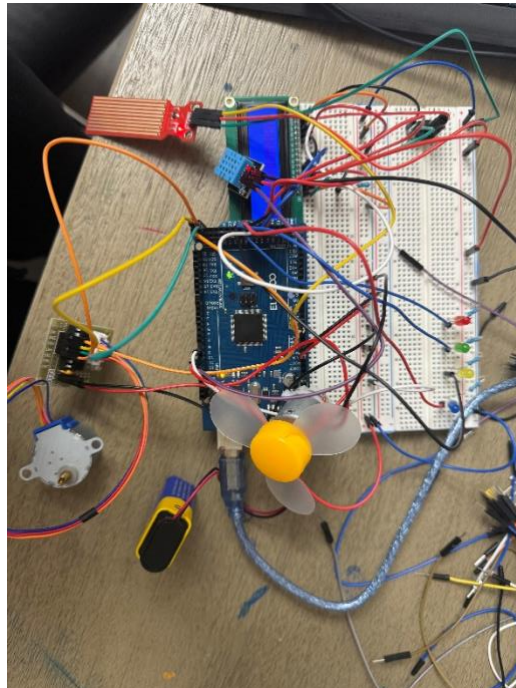
Equipment Used:

EQUIPMENT/COMPONENT
Water Level Sensor
Stepper Motor
LCD display
Temp/Humidity Sensor DHT11
Kit Motor and Fan Blade
Arduino Mega Controller Board

System Implications:

Unfortunately, we were not able to get the DHT library to work with our sensor. We had all our group members replicate the circuit and code and taking it through our own debugging process and nothing was proving to work. As a final resort we took the code to an AI that also could not define the issue we were facing no matter what the specifications we gave it. Everything else in the code seemed to function correctly but we weren't able to test the functionality fully without having the temperature sensor working.

Swamp Cooler Schematic: