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### Final Project: Swamp Cooler

For the final project of CPE301, the task was to create a swamp cooler. The cooler cycles between four states: disabled, idle, error and running. The Serial monitor will provide a timestamp for each state change, and what state the cooler changed to.

In the disabled state, the yellow LED will be powered on and all processes aboard the circuit will cease temporarily—no temperature or humidity data will be collected, nor water level, and the fan will be turned off if it was previously on. The LCD will display to the user that it is disabled.

While in idle state, the green LED will be powered on and the circuit will collect information about the current temperature, humidity, and water level. If any of the three variables are found to not be within parameters, then the program will change state as deemed necessary.

The error state occurs when the water level drops too low, and is indicated by the red LED being powered on and the LCD displaying an error and directing the user to add more water. The error state is usually seen when the water level drops too low.

Finally, the running state occurs when the temperature and/or humidity sensors detect that the environment is too hot or exceeds parameters for humidity. In response, the blue LED will turn on and so will the fan.

At any point during the swamp cooler's operation, the stepper motor controlling the "vent" on the cooler can be adjusted. Additionally, the cooler also has a start button which can turn the system on and off. For both of these, I chose to use an ISR.

