**Audrey Long**

**Project 2**

**Serial Transmission of Temperature**

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**Project Description**

Project 2 Serial Transmit of Temperature

* Calibrate a temperature sensor connected to an Arduino. See “A Quick Guide to Temperature Sensors and Calibration.pdf” for some techniques.
* Using a Round Robbin with Interrupts design, get the Arduino to capture the temperature and convert to Fahrenheit
* After the temperature has stabilized, start recording the Arduino temperature at a periodic rate of around 10s at room temperature, continue to record periodic temperatures after placing the Arduino in the refrigerator for 5 minutes, and continue to record periodic temperatures after removing from refrigerator and staying in the room for 5 minutes.
* Transmit the time and temp across a Serial bus like USB to your Host, others could be SPY or I2C if your Host had one of those busses.
* Export as a comma separated value file, read into a spreadsheet program and plot the temperature vs time.
* Submit per directions in “Project Submission.docx”

**Requirements**

* Download DHT library and import into Arduino sketch project
  + <https://www.brainy-bits.com/dht11-tutorial/>
* Set up embedded system with correct wiring
* Capture data from PWM input from the Arduino
* Capture temperate from sensor attached to the embedded system
* Convert the temperature to Fahrenheit
* Calibrate the sensor
* Create temperature stabilization threshold
* Create a periodic timer which does the following in 10s intervals
  + Record at periodic rate
  + Create a message containing time and temperature
  + Send across serial bus (USB)
* Create python script to get serial data and add timestamp
* Export the data to a CSV file
* Plot temperature vs. time graph

**Embedded System Design**

**Additional Information**

**Code Base**

Please refer to my GitHub:

<https://github.com/cheesemuffinish/Embedded_Projects/tree/master/Project2_Serial_Temperature>

**Video**

Please refer to my YouTube:

<https://www.youtube.com/watch?v=dK5PeJXIZyw>