**Set-up:**

* Download the Arduino IDE Software:
  + Go to the following link: <https://www.arduino.cc/en/software>
  + Download the latest software.
* Once downloaded, connect the Arduino to the computer.
* Inside the application, click on select board if a board is not chosen directly. Once prompted to choose, choose **Arduino Nano**.

**Standard operation:**

* Plug in power supply to thermocouple control box.
* Plug in USB cable to PC with Arduino IDE software installed.
* Click on the serial monitor from the top right corner.
* Once in the serial monitor:
  + Choose “No Line Editing” from the drop-down menu.
  + Choose “Toggle Timestamp” to see the time next to each reading.
  + Then, type 1 (any key works but 1 for the simplicity) and press enter. The code will then run and should take about 5 seconds for the first entry to be seen in the serial monitor (the code averages multiple readings over 5 seconds and prints the output)
* It will take some time for the thermocouple to reach equilibrium.
* Note: Once multiple readings are within + 0.1° C, Equilibrium has reached.
  + For example: 1st reading could be 34.985, 2nd could be 35.05, 3rd could be 34.973, 4th could be 35.06. This is safe to assume that the equilibrium has reached around 35° C.
* Note: Due to the inability of the Arduino Nano not being able to read negative voltages, temperatures only above the cold reference junction (i.e., at room temperature) will be able to be read properly. Therefore, temperatures below room temperature will not be resolved.
* Note: Due to limitation of Arduino Nano being able to take voltages from 0-5 V, the temperature of above 50° C should not be measured as it will create a voltage of over 5 V, which can harm Arduino.

**Updating the Code:**

* If making any changes to the code, before uploading, verify (checkmark) the code.
  + To verify, click the verify button (checkmark) on the top left corner
* If verified successfully, it will say “Done Compiling.”
* Then upload the code to the Arduino.
* Once it says, “Done Uploading”, click on the serial monitor from the top right corner.
* Once in the serial monitor:
  + Choose “No Line Editing” from the drop-down menu.
  + Choose “Toggle Timestamp” to see the time next to each reading.
  + Then, type 1 (any key works but 1 for the simplicity) and press enter. The code will then run and should take about 5 seconds for the first entry to be seen in the serial monitor (the code averages multiple readings over 5 seconds and prints the output)

**Trouble Shoot Errors:**

1. Nothing Happens:
   * If nothing happens once you type 1 in serial monitor, upload the code again and type 1 in the serial monitor.
2. USB not recognized:
   * Unplug the USB from the computer end and re-plug it.
   * If that does not work, unplug the USB from the computer and Arduino. And verify that the cable works properly.
   * If cable does not work properly, then try again with a new cable.