Assignment 3: Part 3 (Logging Temperature Data)

Code used to collect data and log it to a database:

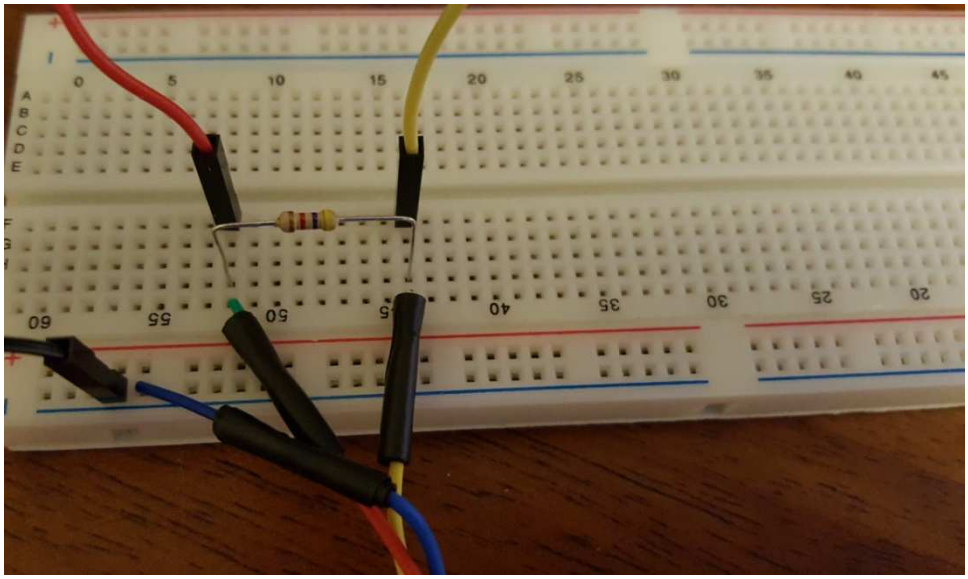
```
#!/usr/bin/python
import os
import time
import sqlite3 as mydb
import sys

# The function uses a temperature sensor to detect the temperature is degrees
#  Celsius. The temperature is convered to Fahrenheit. Both measurements are
#  returned along with the time of the measurement
def readTemp():
  tempfile = open("/sys/bus/w1/devices/28-000008ab85a7/w1_slave")
  tempfile_text = tempfile.read()
  currentTime = time.strftime('%x %X %Z')
  tempfile.close()
  tempC=float(tempfile_text.split("\n")[1].split("t=")[1])/1000
  tempF=tempC*9.0/5.0+32.0
  return [currentTime, tempC, tempF]

# This function calls readTemp and stores the time and temperature data into
#   a database. The function records 20 total measurements, pausing for 30
#   seconds in between each.
def logTemperature():
  con = mydb.connect('/home/pi/Assignments/Temp_Sensor2/TempData.db')
  with con:
    for i in range(0,20):
      try:
        [t,C,F]=readTemp()
        print "Measurement: " + str(i+1) + " = %s F" %F
        cur = con.cursor()
        cur.execute('insert into TempData values(?,?,?)',(t,C,F))
        print "Temperature logged"
      except:
        print "Error!!"
      time.sleep(30)


logTemperature()
```

Device setup:



Taped Wires (sensor): Red = Power, Blue = Ground, Yellow = Data

Bare wires (connection to Pi): Red = Power, Black = Ground, Yellow = Data

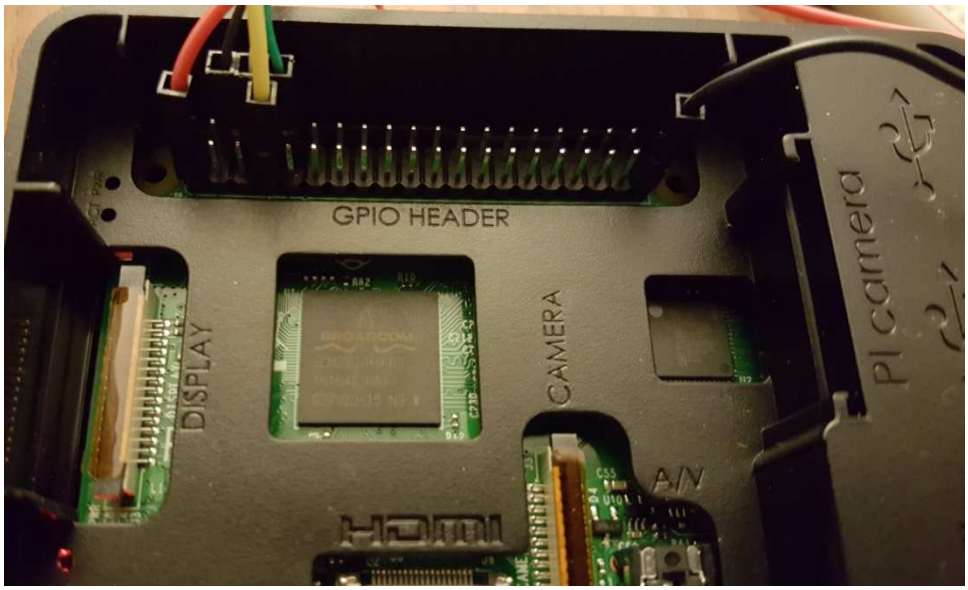


Table and Graph Data:

date_time	tempC	tempF
03/06/17 19:24:47 EST	21.937	71.4866
03/06/17 19:25:18 EST	29.312	84.7616
03/06/17 19:25:49 EST	31.812	89.2616
03/06/17 19:26:20 EST	32.625	90.725
03/06/17 19:26:50 EST	33	91.4
03/06/17 19:27:21 EST	33.187	91.7366
03/06/17 19:27:52 EST	33.312	91.9616
03/06/17 19:28:23 EST	33.437	92.1866
03/06/17 19:28:54 EST	33.5	92.3
03/06/17 19:29:25 EST	33.562	92.4116
03/06/17 19:29:55 EST	31.75	89.15
03/06/17 19:30:26 EST	30	86
03/06/17 19:30:57 EST	28.625	83.525
03/06/17 19:31:28 EST	27.562	81.6116
03/06/17 19:31:59 EST	26.687	80.0366
03/06/17 19:32:30 EST	26	78.8
03/06/17 19:33:01 EST	25.437	77.7866
03/06/17 19:33:31 EST	24.937	76.8866
03/06/17 19:34:02 EST	24.5	76.1
03/06/17 19:34:33 EST	24.125	75.425