Bonus Lab (Lab15): WSN

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Arduino code:

```
int sensorPin = A0;
int ledPin = 13;
int sensorValue = 0;
long double val;
void setup() {
  Serial.begin(9600);
}

void loop()
{
  delay(2000);
  sensorValue = analogRead(sensorPin);
  val = (sensorValue*(long double)((long double)5000/(long double)1024))/(long double)10;
  Serial.println((int)val);

}
```

Processing code:

```
import processing.serial.*;

import java.io.BufferedWriter;

import java.io.File;

import java.io.FileWriter;

import java.io.IOException;

import java.io.PrintWriter;

import java.text.SimpleDateFormat;

import java.util.Date;


Serial myPort;  // Create object from Serial class
```

```
String input;  //to store received value from arduino
int temp;    //to store sound value from input


void setup(){


  size(1280, 800);              // set the window size to be 1280*800


  myPort = new Serial(this, "COM5", 9600);      // Initialise COM port to connect to Arduino
  myPort.bufferUntil('\n');              //buffer the input received from serial connection till \n


}


void draw(){


}
void serialEvent(Serial p){


  input = p.readStringUntil('\n');


  if(input !=null){
    println(input);
    println("here");
  }
  input = input.replace("\n","");
  input = input.replace(" ","");
  temp = Integer.parseInt(input);


  //call functions for controlling audio output and volume control



  writeIntoFile(temp);
```

```java
    delay(1000);



}


void writeIntoFile(int temp){
    BufferedWriter bw = null;
    FileWriter fw = null;
    File file = new File("C:\\Users\\prasanna\\Documents\\Studies\\Semester 6\\Wireless sensor
networks\\CSD_337_WSN\\bonus lab\\temp.csv");
    // if file doesnt exists, then create it
    if (!file.exists()) {
     try {
        file.createNewFile();
     } catch (IOException e) {
        // TODO Auto-generated catch block
        e.printStackTrace();
     }
    }
    try {
     fw = new FileWriter(file.getAbsoluteFile(), true);
     bw = new BufferedWriter(fw);
     PrintWriter pw = new PrintWriter(bw);
     Date dNow = new Date( );
     SimpleDateFormat ft = new SimpleDateFormat ("hh:mm:ss");
     pw.println(ft.format(dNow)+","+temp);
     pw.flush();
     System.out.println("Done");
     pw.close();
    } catch (IOException e) {
     // TODO Auto-generated catch block
     e.printStackTrace();
```

```
    }
}
```

Code for plotting graph:

import pandas as pd

import matplotlib.pyplot as plt

data = pd.read_csv("temp.csv")

data.plot()

plt.show()

Screenshots:

	A	B	C	D	E	F
1	02:57:36	32	25/04/2017			
2						
3	02:57:37	29	25/04/2017			
4						
5	02:57:38	33	25/04/2017			
6						
7	02:57:39	33	25/04/2017			
8						
9	02:57:40	33	25/04/2017			
10						
11	02:57:41	32	25/04/2017			
12						
13	02:57:42	29	25/04/2017			
14						
15	02:57:43	33	25/04/2017			