

Wireless Sensor Networks Non Graded Lab 4

Group 4

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Code:

Arduino Code:

```
const int ledRedPin = 8;    // the number of the pushbutton pin
const int ledYellowPin = 9; // the number of the LED pin
const int buttonPin = 2;
const int red2 = 12;
const int pir = 11;
const int green1 = 13;
volatile int which = 0;
void setup() {
    // put your setup code here, to run once

    // initialize the LED pin as an output:
    pinMode(ledRedPin, OUTPUT);
    pinMode(ledYellowPin, OUTPUT);
    pinMode(red2, OUTPUT);
    pinMode(green1, OUTPUT);
    pinMode(buttonPin, INPUT); digitalWrite(buttonPin, HIGH);
    digitalWrite(ledRedPin, LOW);
    digitalWrite(ledYellowPin, LOW);

    Serial.begin(9600);

    Serial.println("Sensor Calibration");
    delay(1000);
    Serial.println("Sensor Ready");
    delay(1000);
    attachInterrupt(0, ISR, FALLING);
}

void loop() {
    // put your main code here, to run repeatedly:
    unsigned long int tempValue = analogRead(A1);

    unsigned long int voltPin = tempValue*(double)(5000.0/1024.0);
    unsigned long int temp = (double)voltPin/10.0;
    //Serial.println(temp);
    int cr = 0, cy = 0; //count number of blinks
    int y = 0;
    if(temp<30){
```

```
digitalWrite(ledRedPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);
cr+=2;
}
else if(temp >30 && temp >40){

digitalWrite(ledRedPin,HIGH);digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledRedPin,LOW);digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledRedPin,HIGH);digitalWrite(ledYellowPin,HIGH);
        cr+=4;cy+=4;y=1;
}else if(temp>40){
    digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledYellowPin,HIGH);
delay(100);
digitalWrite(ledYellowPin,LOW);
delay(100);
digitalWrite(ledYellowPin,HIGH);
delay(100);
```

```

digitalWrite(ledYellowPin, LOW);
delay(100);
digitalWrite(ledYellowPin, HIGH);
    cy+=6; y=1;
}
Serial.print(temp);
Serial.print(" ");
Serial.print(cr);

Serial.print(" ");
Serial.print(cy);

Serial.print(" ");
if(y==1)
Serial.println("Y");
else Serial.println("N");

delay(2000);
}

void ISR(){
    if(which ==0){
        int val = digitalRead(pir);
        if(val == 1){
            digitalWrite(red2, HIGH);
            delayMicroseconds(1000000);
        }
        which =1;
    }
    else if(which ==1){
        int ldrval = analogRead(A2);
        int tres = 700;
        if(ldrval>700){

            digitalWrite(green1, HIGH);
            delayMicroseconds(500000);

            digitalWrite(green1, LOW);
            delayMicroseconds(500000);

            digitalWrite(green1, HIGH);
            delayMicroseconds(500000);

            digitalWrite(green1, LOW);
            delayMicroseconds(500000);

            digitalWrite(green1, HIGH);
            delayMicroseconds(500000);

```

```

        digitalWrite(green1,LOW);
        delayMicroseconds(500000);
    }else{
        delayMicroseconds(1000000);
    }
    which = 2;

}
else{

}

}
}

```

Processing Code:

```

import java.util.Date;
import java.text.SimpleDateFormat;
import processing.serial.*;

Serial myPort;      // The serial port

int posX1,posY1,w1,h1,isLDR=0;
String outString = "",sensorName="";
SimpleDateFormat df=null;
int rectX, rectY;    // Position of square button
int rectSizeX = 110; // Diameter of rect
int rectSizeY = 50;  // Diameter of rect
color rectColor;
color rectHighlight;
color currentColor;
boolean rectOver = false;
String buttonText="Button";
int accessTime=2;

void setup() {
    size(640, 360);
    noStroke();
    background(255);
    fill(135);
    stroke(255);
    fill(0);
    fill(255);

```

```

rectColor = color(255);
rectHighlight = color(220);
rectX = 265;
rectY = 30;

    d= new Date();
    df = new SimpleDateFormat("hh:mm:ss dd:mm:yyyy");
    //myPort = new Serial(this, "COM3", 9600);
    //myPort.bufferUntil('\n');
}
void serialEvent (Serial myPort) {
    // get the ASCII string:
    String inString = myPort.readStringUntil('\n');

    if (inString != null) {
        // trim off any whitespace:
        inString = trim(inString);
        d = new Date();

    }
}
Date d = null;
void draw() {
    // keep draw() here to continue looping while waiting for keys
    update(mouseX, mouseY);
    if(isLDR==1)
        sensorName="LDR";
    else
        sensorName="PIR";

    outString = sensorName + " sensor was last accessed at "+ df.format(d) + " for "+
    accessTime +"s";
    if (rectOver) {
        fill(rectHighlight);
    } else {
        fill(rectColor);
    }
    background(255);
    stroke(0);
    rect(rectX, rectY, rectSizeX, rectSizeY);

```

```

fill(255);
fill(0);
text(buttonText,rectX+30,rectY+30);
text(outString, 20,100,600,600);
stroke(0);
}

void update(int x, int y) {
if ( overRect(rectX, rectY, rectSizeX, rectSizeY) ) {
    rectOver = true;
} else {
    rectOver = false;
}
}

```

```

void mousePressed() {

    if (rectOver) {
        myPort.write('1');
    }
}

```

```

boolean overRect(int x, int y, int width, int height) {
    if (mouseX >= x && mouseX <= x+width &&
        mouseY >= y && mouseY <= y+height) {
        return true;
    } else {
        return false;
    }
}

```

Screenshots:



Circuit Snapshot:

