Wireless Sensor Networks Non Graded Lab 4

Group 4
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Code:
Arduino Code:

```arduino
int pushButton = 8;
int sound=3,motion=4;
int ledPin=7;

void setup() {
  Serial.begin(9600);
  pinMode(sound,INPUT);
  pinMode(motion,INPUT);
  pinMode(ledPin,OUTPUT);
  digitalWrite(ledPin,LOW);
}
int soundState,motionState;

void loop() {
  soundState = digitalRead(sound);
  motionState = digitalRead(motion);

  if((soundState == 1)&&(motionState == 1))
    digitalWrite(ledPin,HIGH);
  else
    digitalWrite(ledPin,LOW);
  Serial.println((soundState == 1)&&(motionState == 1));
  //Serial.print("Sound ");Serial.print(soundState);
  //Serial.print("\tMotion ");Serial.println(motionState);
  delay(100);

}
```

Processing Code:

```
import processing.serial.*;

Serial myPort;  // Create object from Serial class
int val;        // Data received from the serial port
int rectX, rectY;     // Position of square button
int rectSizeX = 100,rectSizeY = 40;     // Diameter of rect
color rectColor;
color rectHighlight;
boolean rectOver = false;


void setup()
{
  size(800, 500);

  myPort = new Serial(this, "COM3", 9600);
  background(255);
  fill(0);
  text("BABY MONITOR",350,40);

  rectColor = color(10);
  rectHighlight = color(51);
  rectX = 650;
  rectY = 230;
}
int temp = 0;
void draw()
{
  update(mouseX, mouseY);
    if (rectOver) {
    fill(rectHighlight);
  } else {
    fill(rectColor);
  }
  stroke(255);
  rect(rectX, rectY, rectSizeX, rectSizeY);
  fill(225);
  text("DONE",680,257);

  if ( myPort.available() > 0) {  // If data is available,
    val = myPort.read();          // read it and store it in val
    println(val);
  }
              // Set background to white
  if (val-'0' == 1) {             // If the serial value is 1,
    fill(255,0,0);                // set fill to red
    rect(100, 50, 400, 400);
    //text("1",20,25);
    temp = 1;
```

```
  }
  else if(temp!=1){      // If the serial value is not 0,
    fill(0);                      // set fill to light black
    rect(100, 50, 400, 400);
//text("0",20,20);

  }
  //rect(50, 50, 100, 100);
}

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

void mousePressed() {

  if (rectOver) {
    temp=0;
  }
}

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;
  }
}
```
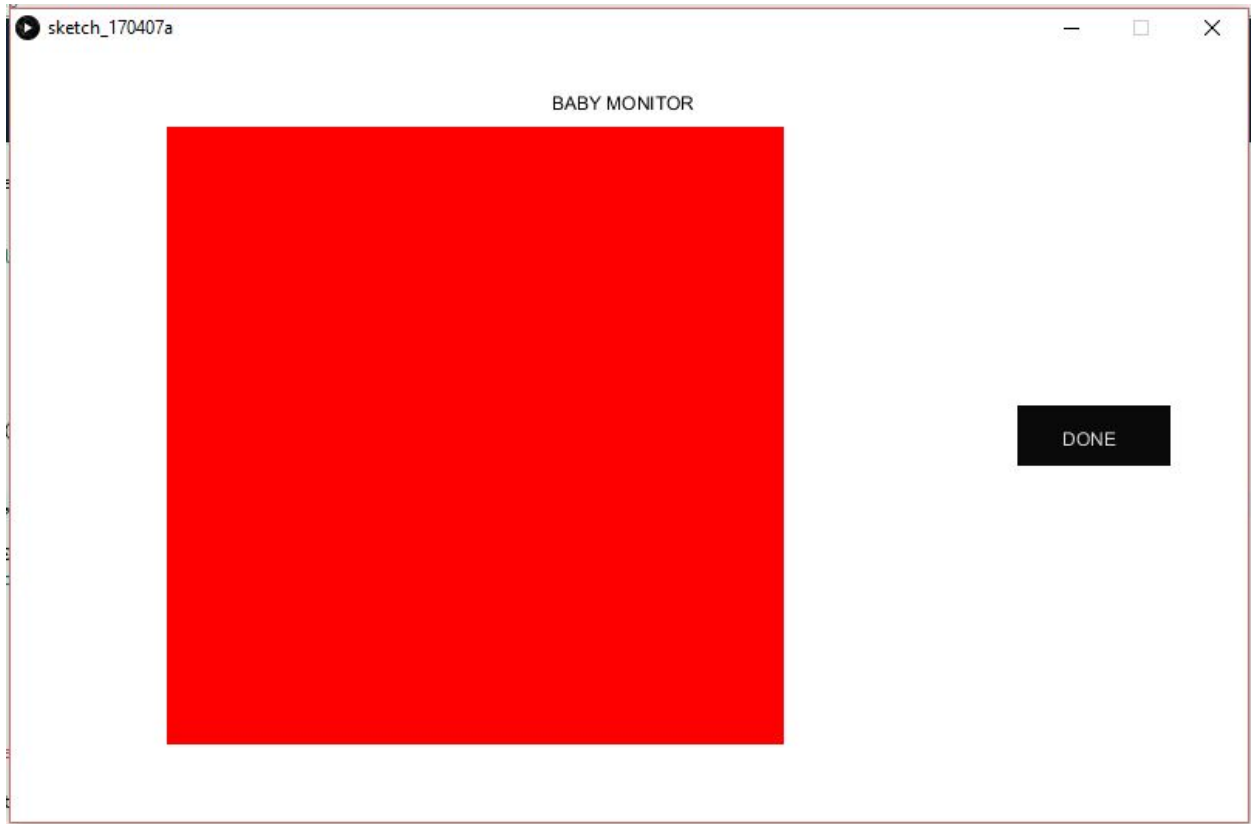
About the application:
The application we have made and submitted is a baby monitor. This uses the sound and the motion sensor. This is useful to alert the parent of the baby when the baby is agitated from its sleep. If the baby cries and moves simultaneously, a red LED glows and the processing gui will have a rectangle that will glow red. This can only be turned off by pressing the button in the gui. We chose to give an alert message only when both the sensors give a 1, because we could think of various situations where the baby could just make sound or just move and these situations according to us do not need parent's attention. Given that the sensitivity of our sensors are very restrictive, it will have its best effects if this was placed near the baby while it is sleeping. For example, if this was placed in the cradle where the baby is put to sleep, whenever the baby wakes up, the parent will be alerted. This will also help in detecting others presence in the room, who could be with the baby, in which case the parent could just click the button in the gui to not get any alert.

Screenshots:

Baby Asleep
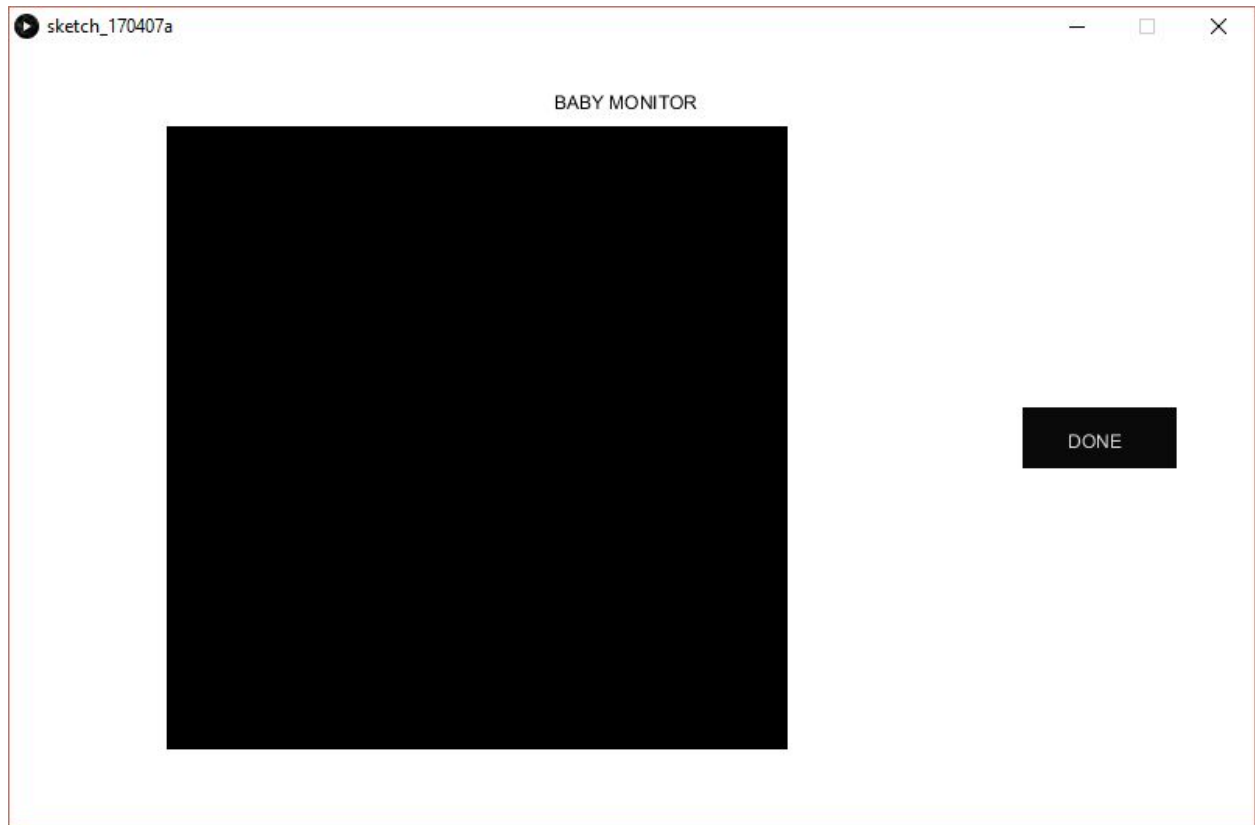
Baby Agitated

Circuit Snapshot: