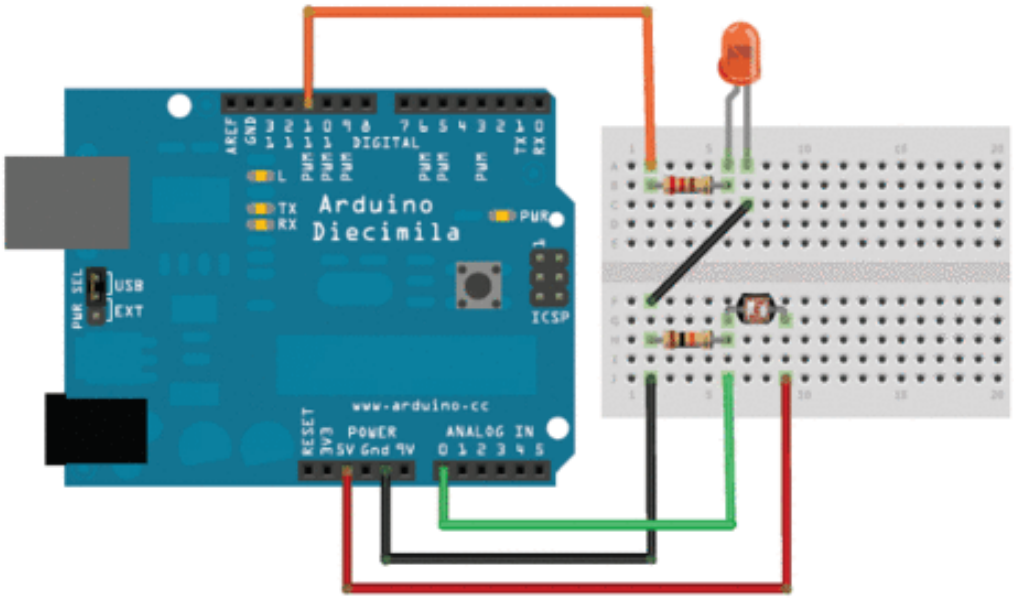
SERIAL COMMUNICATION_ INTERFACING W/ OTHER SOFTWARE

SERIAL READ_DATA INTO ARDUINO

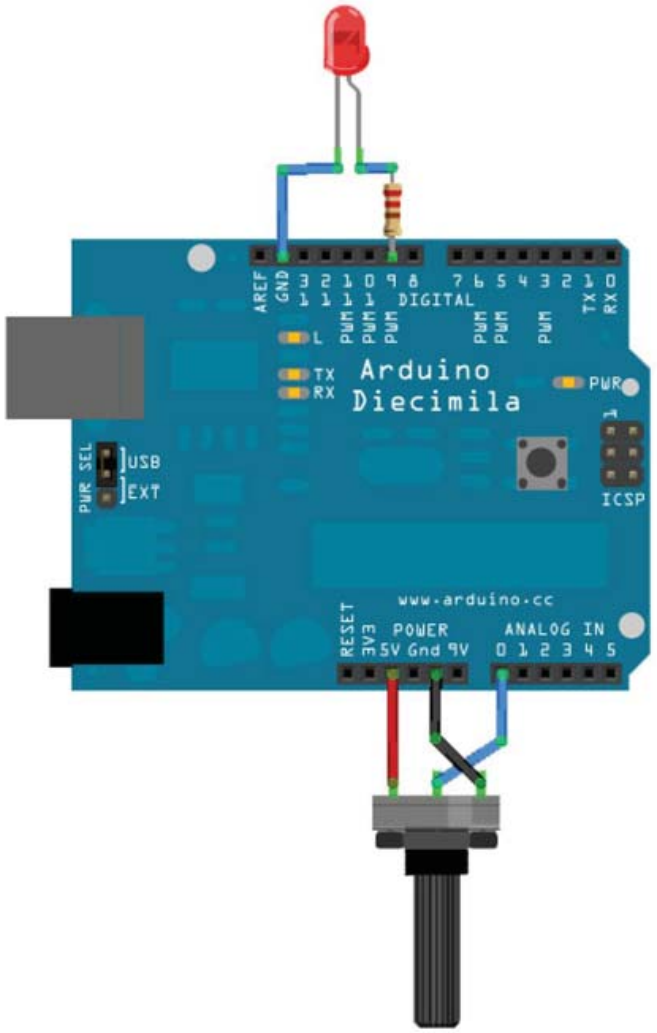
```
int incomingByte = 0; // for incoming serial data
void setup()
{
Serial.begin(9600); // opens serial port, sets data rate to 9600 bps
}
void loop()
{
        // send data only when you receive data:
        if (Serial.available() > 0)
        {
        // read the incoming byte:
        incomingByte = Serial.read();
        // say what you got:
        Serial.print("I received: ");
        Serial.println(incomingByte);
        }
        else {
        Serial.println("Nothing");
        }
}
```

Photocell:



OR

Potentiometer:



SERIAL PRINT_DATA OUT TO PROCESSING

EXAMPLES > LIBRARY> SERIAL> SIMPLE READ

```
import processing.serial.*;
Serial myPort;  // Create object from Serial class
int val;      // Data received from the serial port

void setup()
{
  size(200, 200);
  // I know that the first port in the serial list on my mac
  // is always my  FTDI adaptor, so I open Serial.list()[0].
  // On Windows machines, this generally opens COM1.
  // Open whatever port is the one you're using.
  String portName = Serial.list()[0];
  myPort = new Serial(this, portName, 9600);
}
void draw()
{
  if ( myPort.available() > 0)
  {  // If data is available,
    val = myPort.read();         // read it and store it in val
  }
  background(255);             // Set background to white
  if (val == 0) {              // If the serial value is 0,
    fill(0);                   // set fill to black
  }
  else {                       // If the serial value is not 0,
    fill(204);                 // set fill to light gray
  }
  rect(50, 50, 100, 100);
}
```

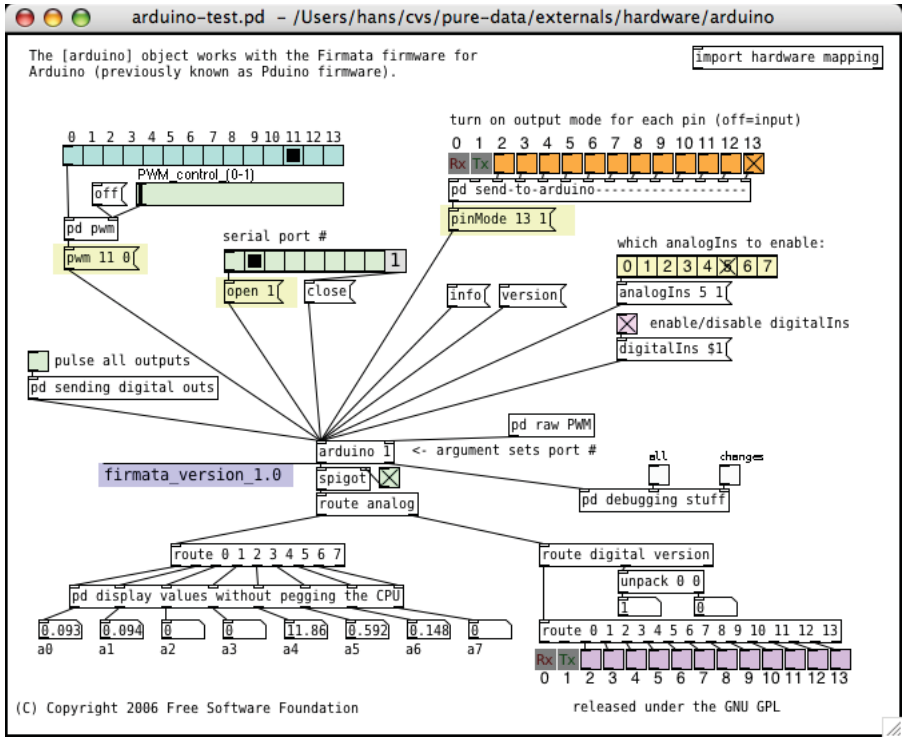
FIRMATA_DATA OUT TO PROCESSING

ARDUINO> EXAMPLES> FIRMATA> UPLOAD STANDARD FIRMATA
PROCESSING> SKETCHBOOK> ARDUINO> EXAMPLES> ARDUINO_INPUT
PROCESSING> EXAMPLES> LIBRARY> MINIM(SOUND)

```
//import libraries
import processing.serial.*;        //serial library
import cc.arduino.*;               //arduino library
import ddf.minim.*;                //minim library_audio
import ddf.minim.signals.*;
//declare objects and varibles
Arduino arduino;
Minim minim;
AudioOutput out;
SineWave sine;

int val = 0;
void setup()
{
 size(512, 200, P2D);
 //println(Arduino.list());  to find com port to use
 //declare arduino object
 arduino = new Arduino(this, Arduino.list()[0], 57600);
 minim = new Minim(this); //declare minim object
 out = minim.getLineOut(Minim.STEREO);
 sine = new SineWave(440, 0.5, out.sampleRate());
 sine.portamento(200);
 out.addSignal(sine);

}
```

```
void draw()
{
 background(0);
 stroke(255);
  //draw the waveforms
  for(int i = 0; i < out.bufferSize() - 1; i++)
  float x1 = map(i, 0, out.bufferSize(), 0, width);
  float x2  = map(i+1, 0, out.bufferSize(), 0, width);
  line(x1, 50 + out.left.get(i)*50, x2, 50 + out.left.get(i+1)*50);
  line(x1, 150 + out.right.get(i)*50, x2, 150 + out.right.get(i+1)*50);
 }

 val = arduino.analogRead(0);
 println(val);
 float freq = map(val, 0, 1023, 1500, 60);
 sine.setFreq(freq);
 float pan = map(val, 0, 1023, -1, 1);
 sine.setPan(pan);
}


void stop()
{
 out.close();
 minim.stop();
  super.stop();
}
```

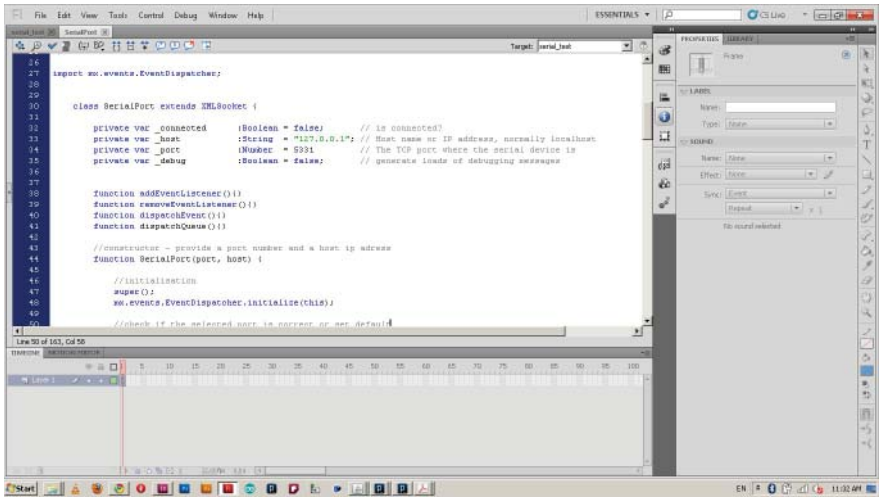
PureData(PD)



Max/MSP

```
max v2;
#N vpatcher 10 59 610 459;
#P user uslider 286 66 18 128 255 1 0 0;
#P window setfont "Sans Serif" 9.;
#P window linecount 1;
#P message 212 192 32 196617 print;
#P newex 286 217 71 196617 serial a 9600;
#P window linecount 2;
#P comment 316 148 100 196617 Slide the fader to dim the LED;
#P comment 69 192 125 196617 Click here to get a list of serial ports;
#P fasten 4 0 2 0 291 215 291 215;
#P fasten 3 0 2 0 217 212 291 212;
#P pop;
```

FLASH



LIBRARIES:
http://www.arduino.cc/playground/Main/InterfacingWithSoftware