

Lesson 20 Sound Sensor Module

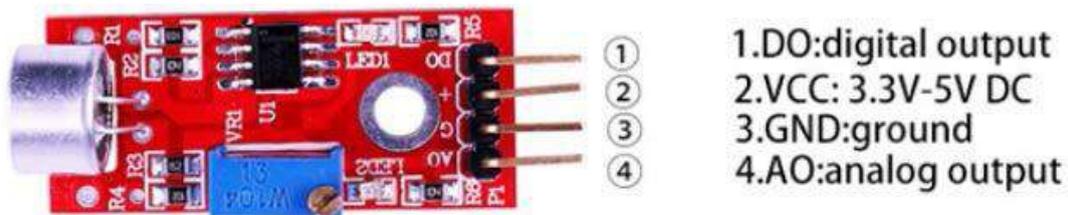
Overview

In this lesson, you will learn how to use a sound sensor module. This module has two outputs:

AO: analog output, real-time output voltage signal of microphone

DO: when the intensity of the sound reaches a certain threshold, the output is a high or low level signal. The threshold sensitivity can be achieved by adjusting the potentiometer.

To make sure the microphone can detect your voice normally, please try to change its sensitivity by turning the blue precise potentiometer on the module. Given to its preciseness, it takes at least 10 circles for you to get some response.



Component Required:

- (1) x Elegoo Uno R3
- (1) x Sound sensor module
- (4) x F-M wires (Female to Male DuPont wires)

Component Introduction

Sound sensor:

The sound sensor module provides an easy way to detect sound and is generally used for detecting sound intensity. This module can be used for security, switch, and monitoring applications. Its accuracy can be easily adjusted for the convenience of usage. It uses a microphone which supplies the input to an amplifier, peak detector and buffer. When the sensor detects a sound, it processes an output signal voltage which is sent to a microcontroller then performs necessary processing.

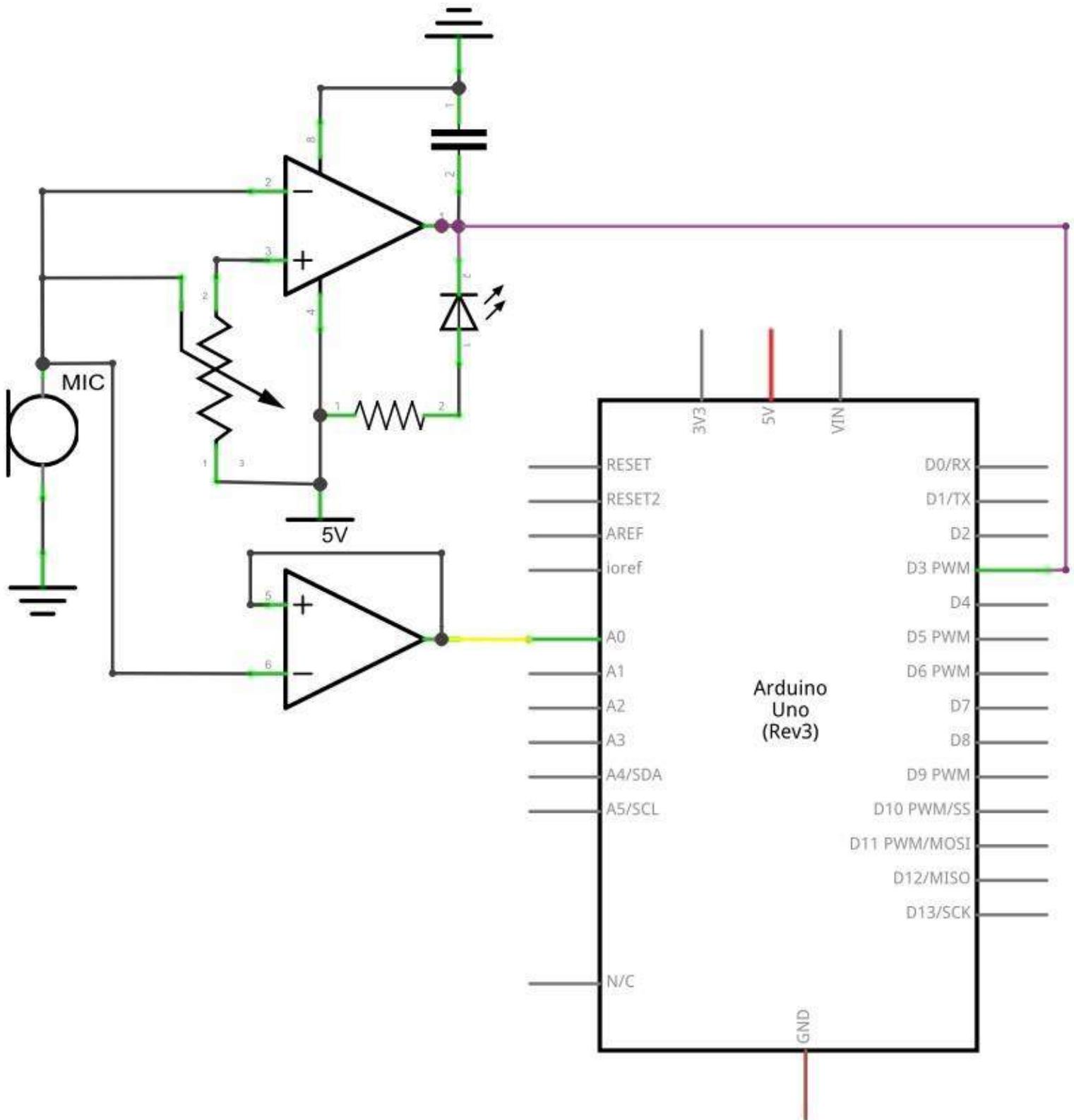


These microphones are widely used in electronic circuits to detect minor sounds or air vibrations which in turn are converted to electrical signals for further use. The two legs as shown in the image above are used to make electrical connection with the circuit.

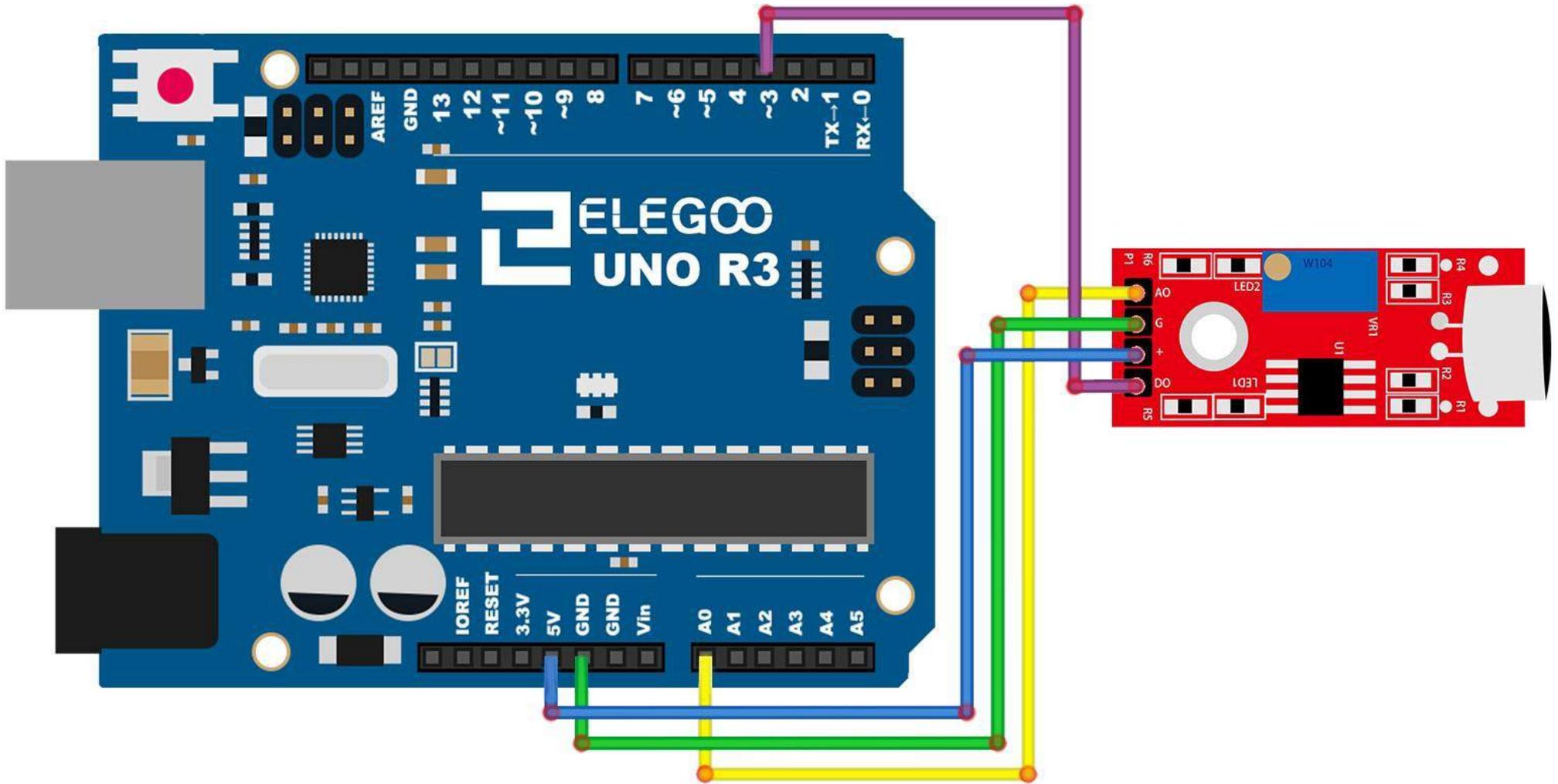


A solid conducting metal body encapsulates the various parts of the microphone. The top face is covered with a porous material with the help of glue. It acts as a filter for the dust particles. The sound signals/air vibrations pass through the porous material and fall on the diaphragm through the hole shown in the image above.

Connection Schematic



Wiring diagram



The code

After wiring, please open the program in the code folder(Lesson 20 SOUND SENSOR MODULE)and click UPLOAD to upload the program.

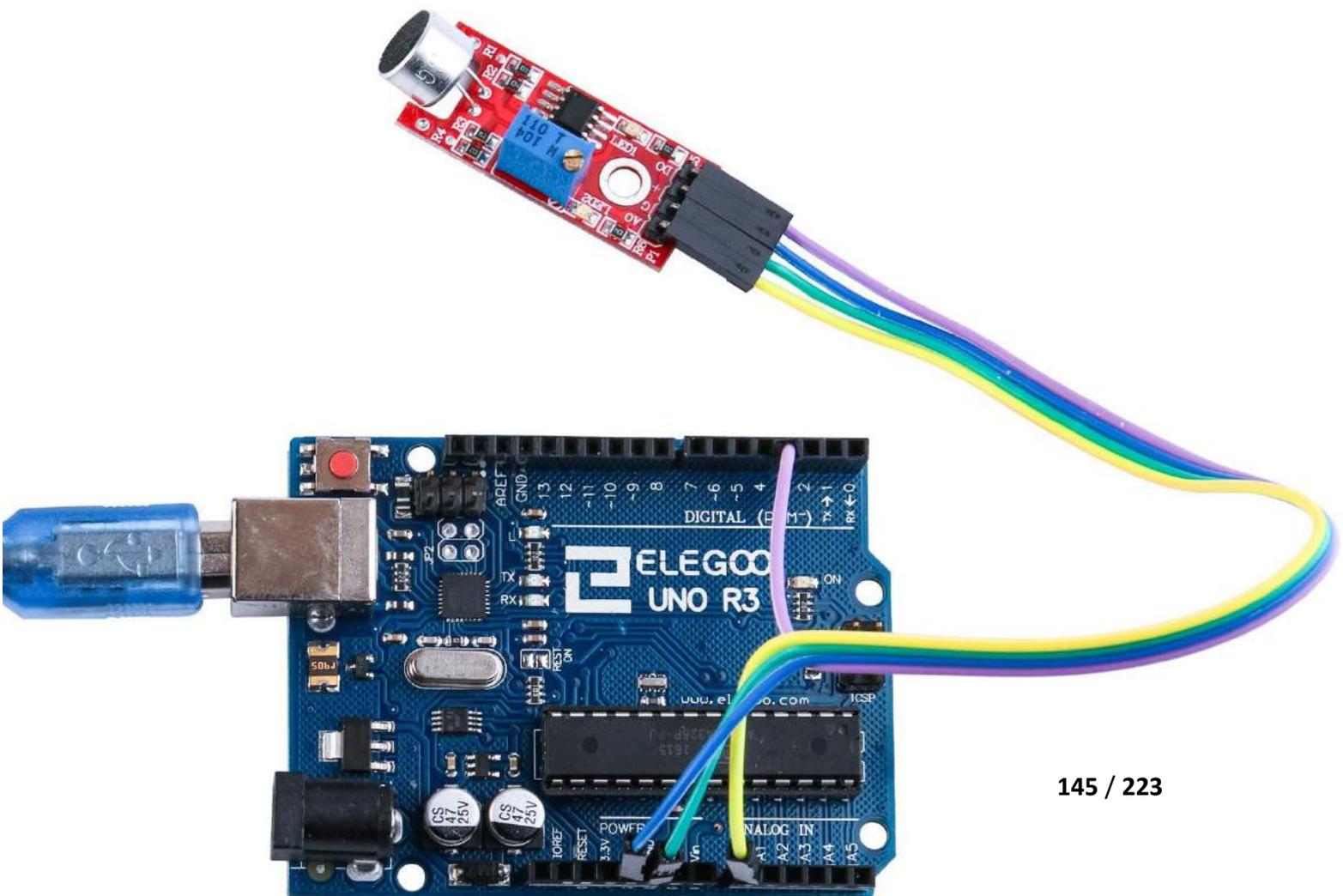
See Lesson 3 for details about program uploading if there are any errors.

High-sensitive Voice Sensor has two output:

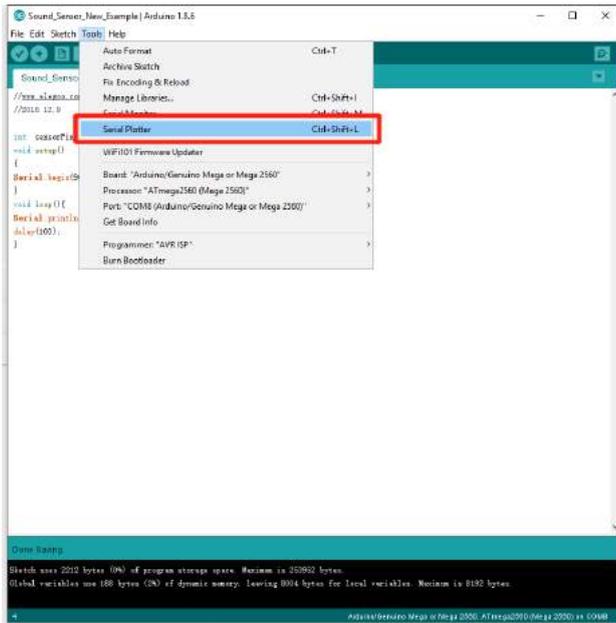
AO: analog output, real-time output voltage signal of microphone

DO: digital output when the intensity of the sound to reach a certain threshold, the output high and low level signal, the threshold-sensitivity can be achieved by potentiometer adjustment period. .

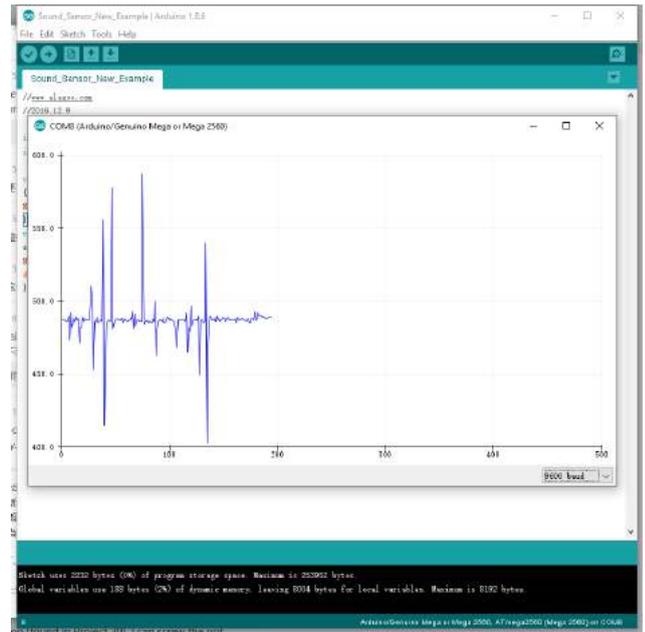
Please note that you need to spin the screw counterclockwise by a screwdriver until the LED 2 goes out, and then use the screwdriver to adjust the 10K potentiometer.



Open Serial Plotter:



Serial Plotter Example:



When you speak into the microphone or inflate, you can observe that our waveforms have changed

The following is the procedure required to use this experiment and notes to explain:

```
void setup()
{
  Serial.begin(9600);           // The IDE settings for Serial Monitor/Plotter (preferred) must match this
  speed
  pinMode(sensorDigitalPin,INPUT); // Define pin 7 as an input port, to accept digital input
  pinMode(Led13,OUTPUT);        // Define LED13 as an output port, to indicate digital trigger reached
}

void loop(){
  analogValue = analogRead(sensorAnalogPin);
                                     // Read the value of the analog interface A0 assigned to digitalValue
  digitalValue=digitalRead(sensorDigitalPin);
                                     // Read the value of the digital interface 7 assigned to digitalValue
  Serial.println(analogValue);
                                     // Send the analog value to the serial transmit interface

  if(digitalValue==HIGH) // When the Sound Sensor sends signla, via voltage present, light LED13 (L)
  {
    digitalWrite(Led13,HIGH);
  }
  else
  {
    digitalWrite(Led13,LOW);
  }

  delay(50); // Slight pause so that we don't overwhelm the serial interface
}
```