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Building a Breathalyzer with MQ-3 and Arduino

March 7, 2010

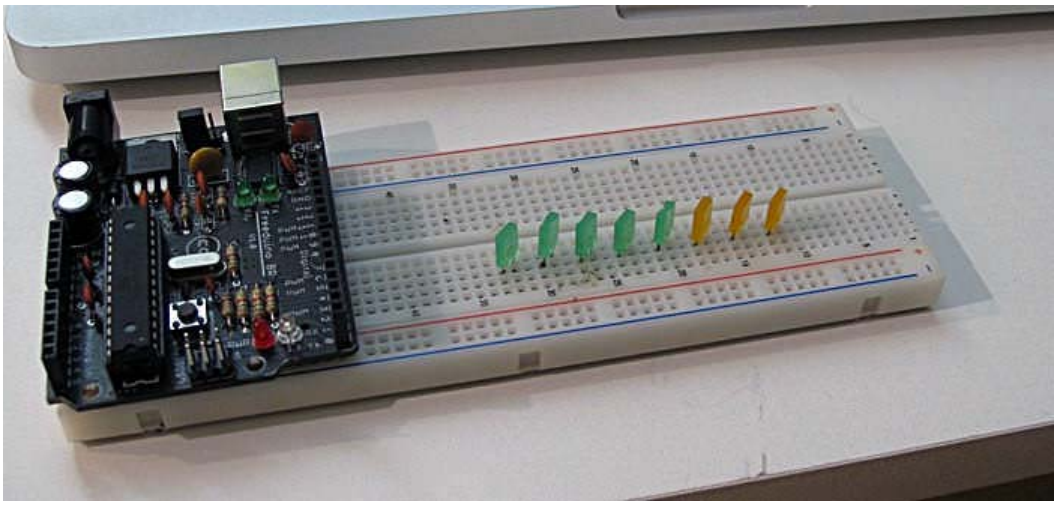
During the First Meeting of Electronic Arts in Florianópolis, we built a Breathalyzer using the Alcohol Gas Sensor MQ-3 and an Arduino Board to use in the last day of the meeting, in which we gave a party. You can see a quick video two posts below. Last days I received many emails asking for the code or how to make one, so I decided to build the sensor again, take pictures/videos and make a tutorial showing how you can make one, so here it is.

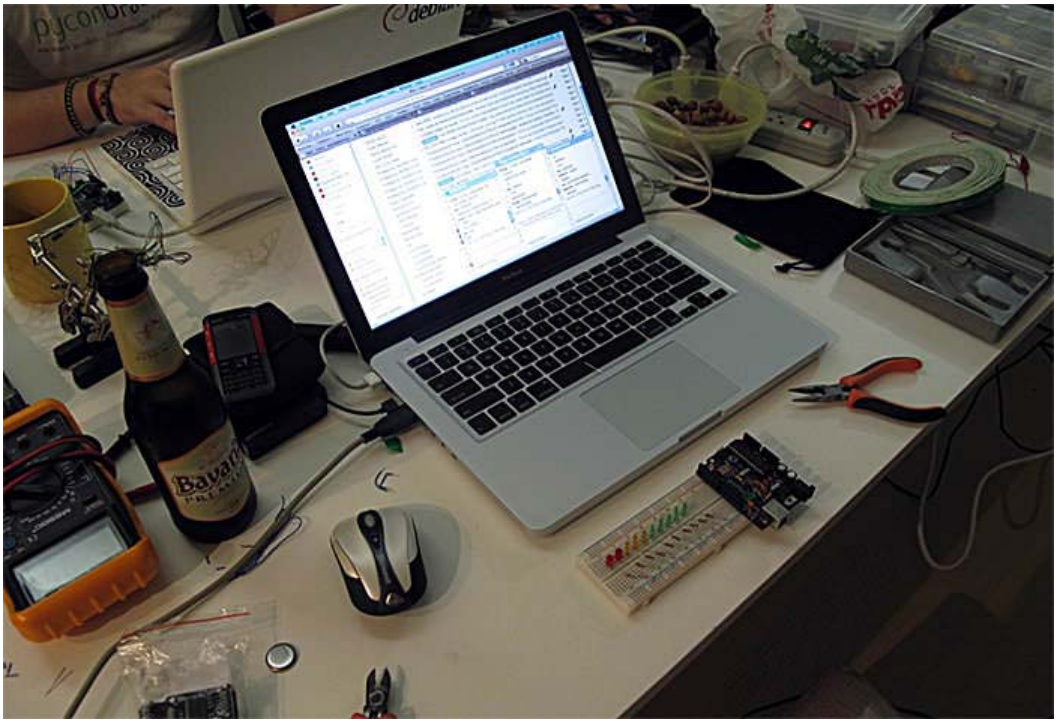
Parts Needed:

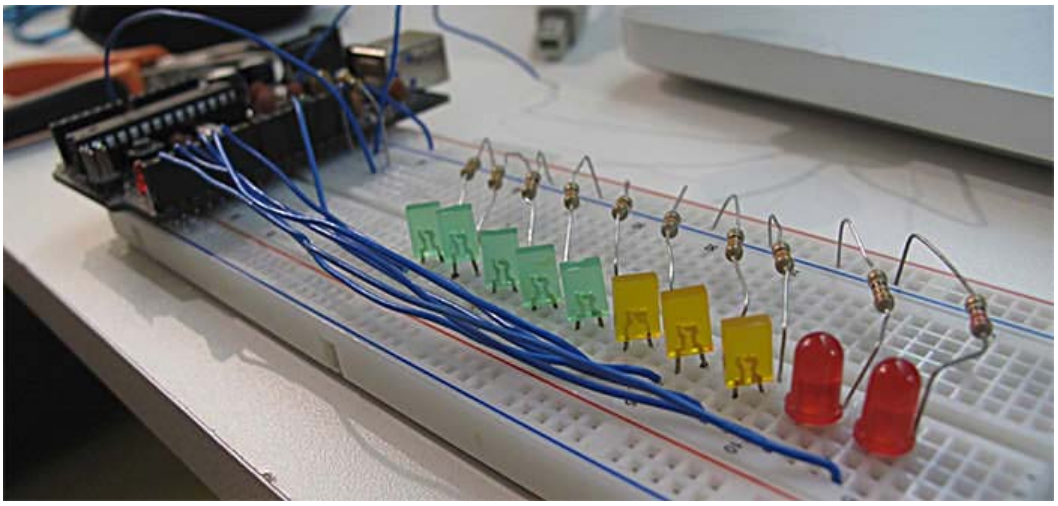
- Arduino Board (http://www.arduino.cc)
- 10x 5mm LEDs (Green, Yellow and Red)
- 100KΩ Potentiometer (to calibrate the sensor)
- 10x ≈ 220Ω Resistor (anything between 220Ω and 470Ω is OK)
- BreadBoard

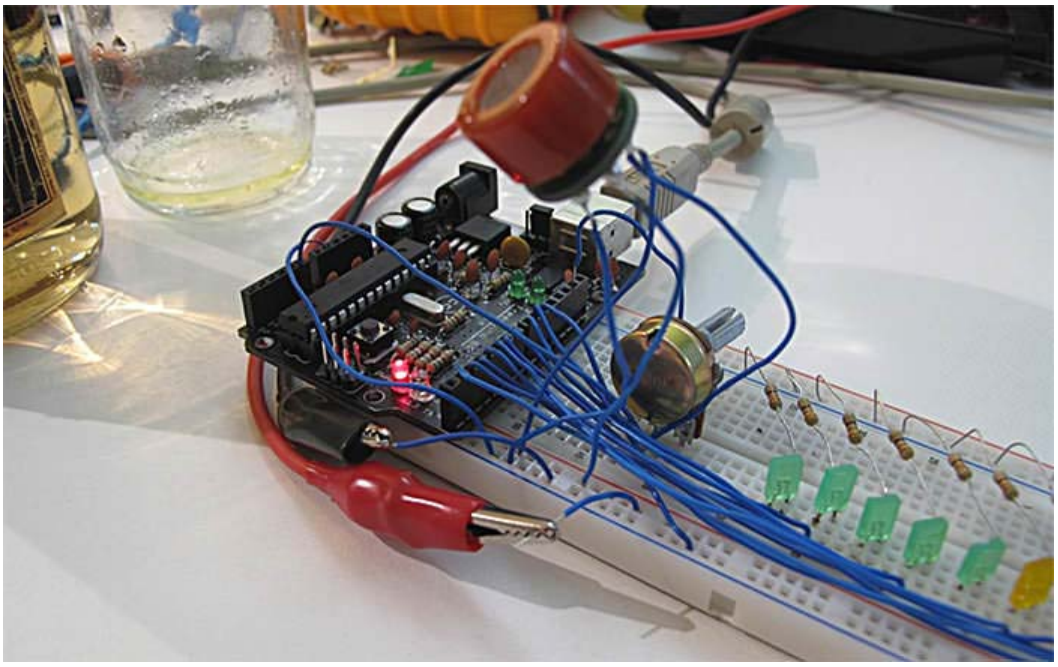
- MQ-3 Sensor from Sparkfun (http://www.sparkfun.com/datasheets/Sensors/MQ-3.pdf)

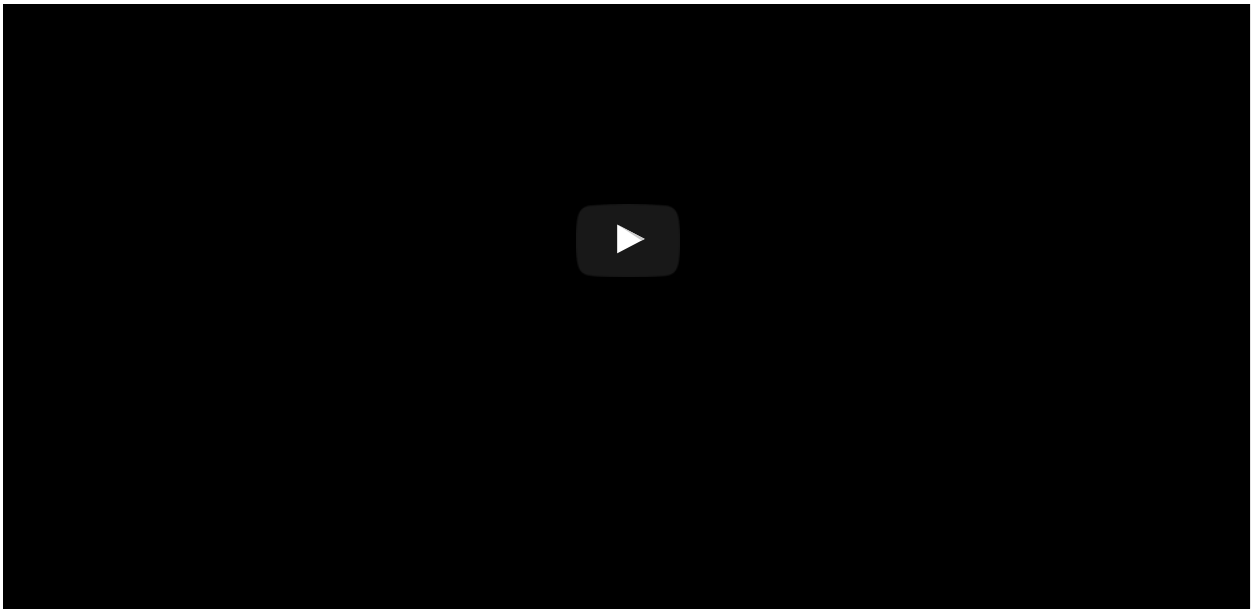
Here are some pictures from the building process:



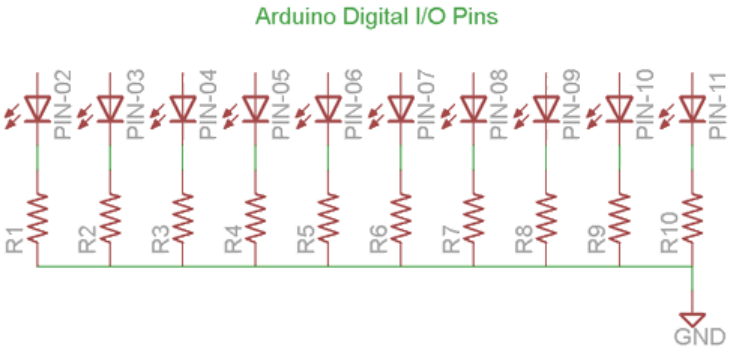






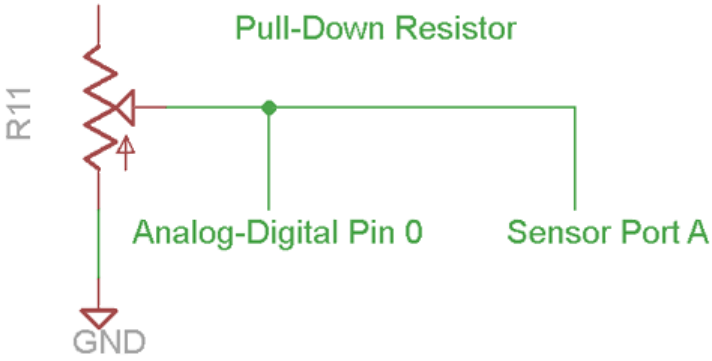


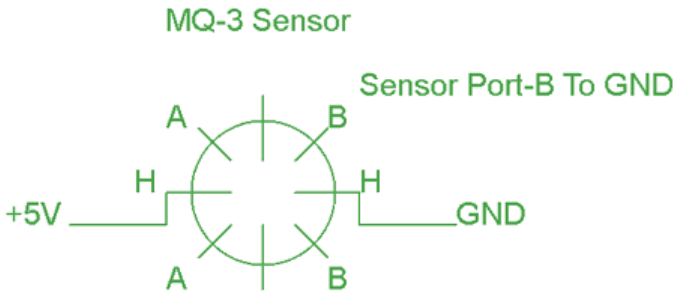
To make the LEDs work, I have connected them in sequence using the Digital Pins 2 till 11 (ten LEDs total). Remember to use a resistor between 220Ω and 470Ω for each LED, like shown on the picture below:



To connect the sensor, you have to connect one of the H pin to +5V Supply (use an external power supply for that, it may be too much current for the arduino) and the other one to Ground.

Pin B (any of them) you connect to Ground. And the A pin (also any of them) you connect to the 100KΩ potentiometer as shown on the picture below. In the same pin where you are connecting the pin A, you need to connect a wire to the Analog/Digital Converter in Arduino, that is where you are going to read the Alcohol information.





This is a quick and easy DIY project, but if you have any problem building it, please feel free to post questions!

You can DOWNLOAD the .PDE file HERE (http://danielandrade.net/files/breathanalyzer.pde).

```
/*

@ Code for interfacing Alcohol Gas Sensor MQ-3 with Arduino
@ Code by Daniel Spillere Andrade and Daniel Amato Zabotti
@ daniel@danielandrade.net / danielzabotti@gmail.com
@     www.DanielAndrade.net

*/


const int analogPin = 0;    // the pin that the potentiometer is attached to
const int ledCount = 10;    // the number of LEDs in the bar graph

int ledPins[] = {
  10,9,8,7,6,5,4,3,2,1 // Here we have the number of LEDs to use in the BarGraph
  };


void setup() {

  for (int thisLed = 0; thisLed < ledCount; thisLed++) {
    pinMode(ledPins[thisLed], OUTPUT);
  }}

void loop() {
  //This is the code to light up LED's
  int sensorReading = analogRead(analogPin);

  int ledLevel = map(sensorReading, 500, 1023, 0, ledCount);


  for (int thisLed = 0; thisLed < ledCount; thisLed++) {

    if (thisLed < ledLevel) {
      digitalWrite(ledPins[thisLed], HIGH);
    }

    else {
      digitalWrite(ledPins[thisLed], LOW);
    }
  }
}
```

Breathalyzer.ino **view raw (https://gist.github.com/dansku/5682877/raw/490a44fa60d73f251083dab590d7958e11b65d8e/Breathalyzer.ino) (https://gist.github.com/dansku/5682877#file-breathalyzer-ino)** hosted with ♥ by **GitHub (https://github.com)**

And now, have a great drinking!!!