

Arduino VU Meter

By [yhtomitsy \(/member/yhtomitsy/\)](#) in [Technology \(/technology/\)](#) > [Arduino \(/technology/arduino/\)](#)

36,281

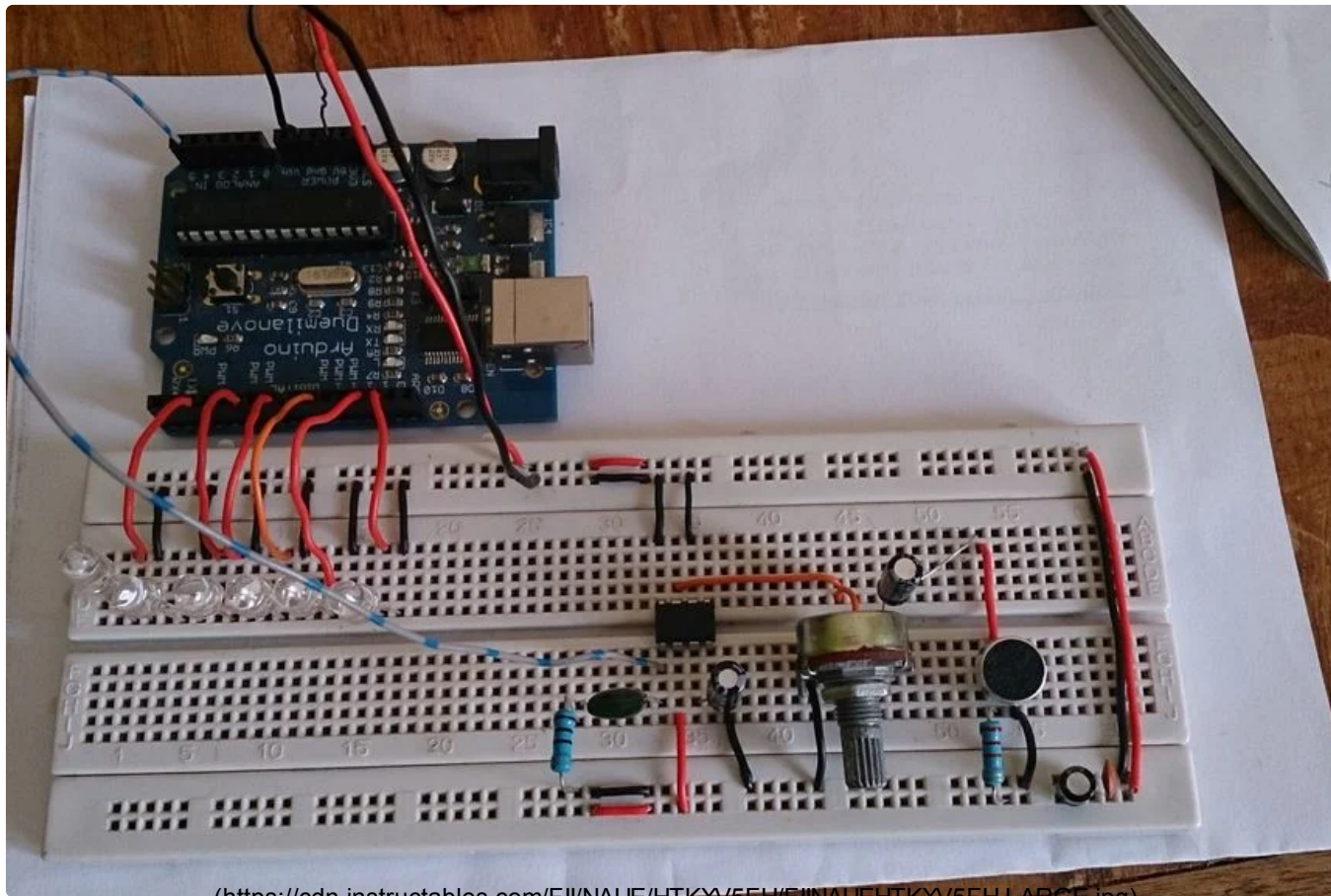
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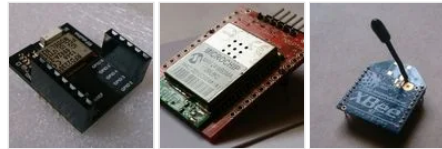
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By **yhtomitsy**
(/member/yhtomitsy/)

Arduino Hacks
(<http://www.arduino-hacks.com>)

More by
the author:



About: I am an electrical engineer and an Arduino and electronics enthusiasts. I believe working with electricity should be fun as well as beneficial to engineers and the world at large. Twitter handle: @arduinoha... More About yhtomitsy » (/member/yhtomitsy/)

Lets make a simple Arduino VU meter!!!



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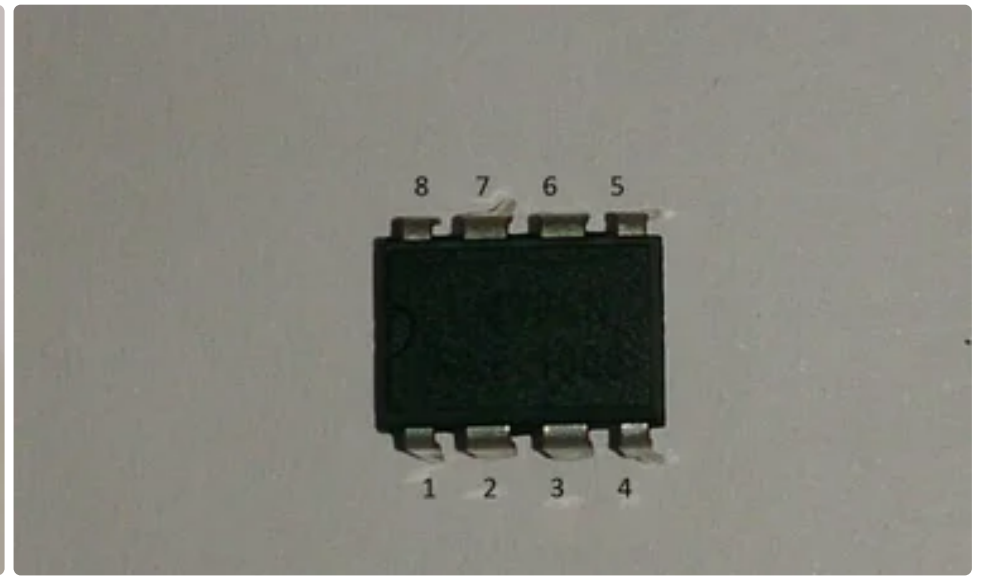


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Step 1: Components

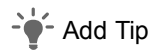




- LM386 operational amplifier
- Electret microphone condenser
- Arduino duemilanove
- 10k potentiometer
- Capacitors: 47 nF, 1uF, 10uF, 100uF, 100nF
- Resistors: 10 Ω , 22k
- 6 LEDs

To distinguish between the electret positive and negative terminal, perform a continuity test. Measure the resistance between each pin/terminal and the outer casing of the electret. The resistance between the negative pin and the casing should be zero, since they are connected.

Also make sure you understand the LM386 pin configuration as shown in the diagram



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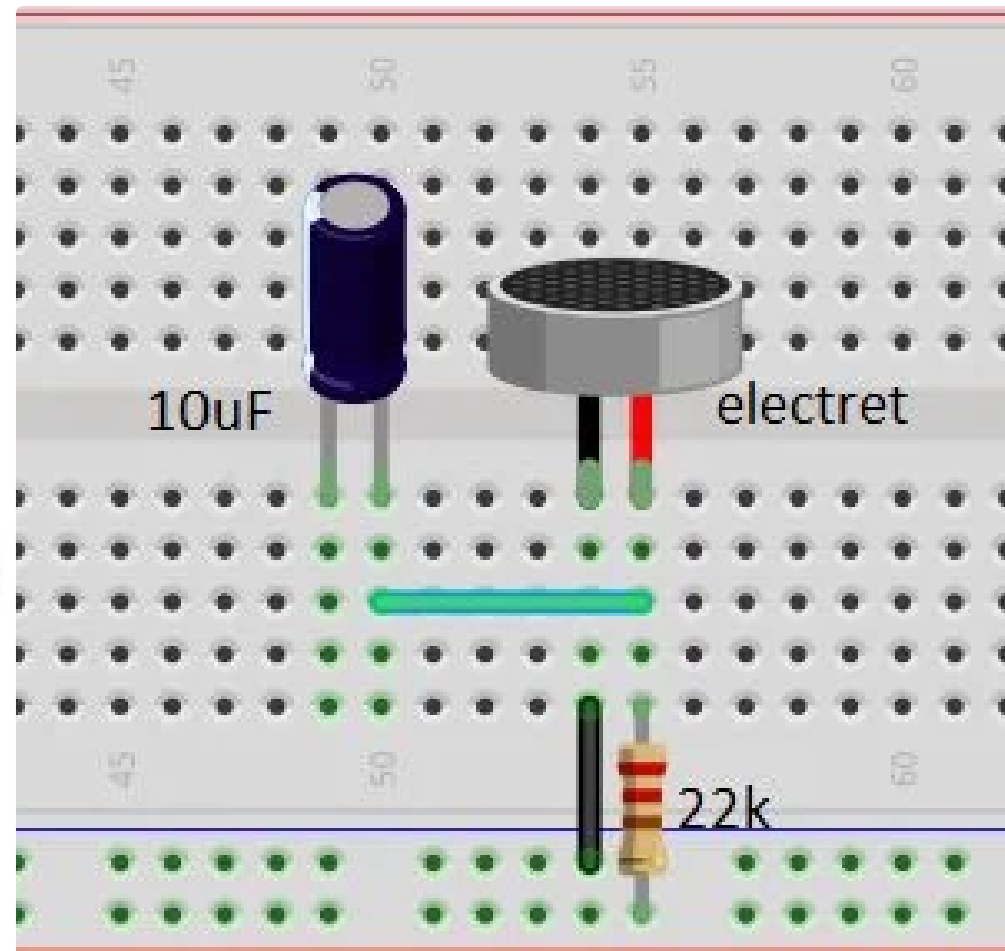
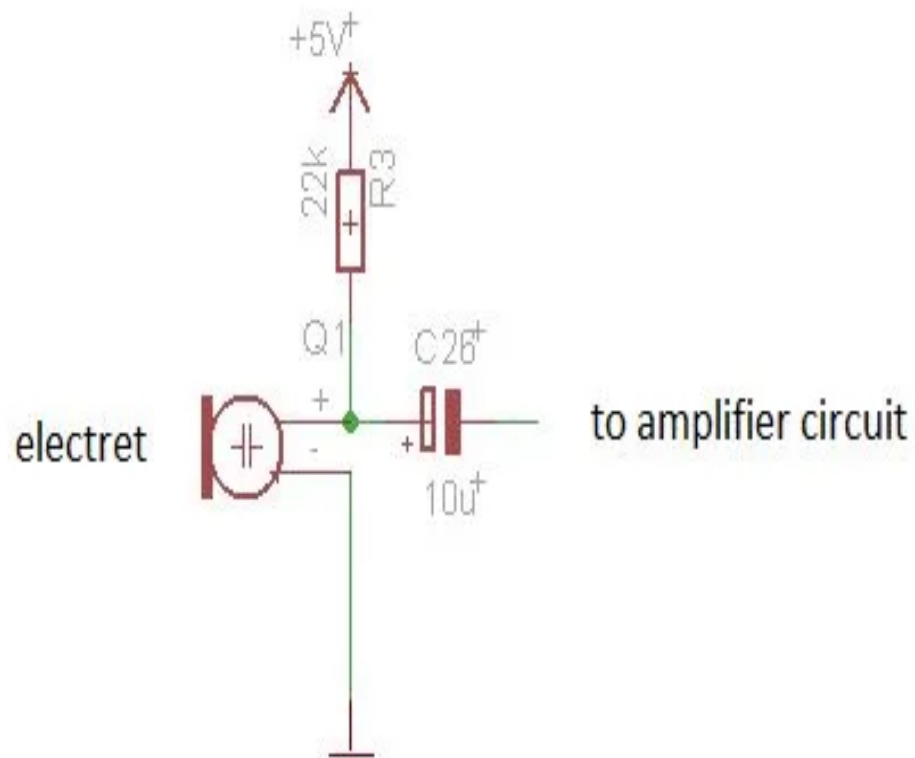
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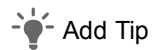
Step 2: Electret Circuit



(<https://cdn.instructables.com/FM1/ELCE/UTKY/5CH/FM1ELCEUTKY/5CH/LARGE.jpg>)

Connect the positive pin of the electret to a 22k resistor and then to the 5v of the arduino.

Connect a capacitor in parallel with the 22k resistor. The capacitor cathode should then connect to the amplifier circuit



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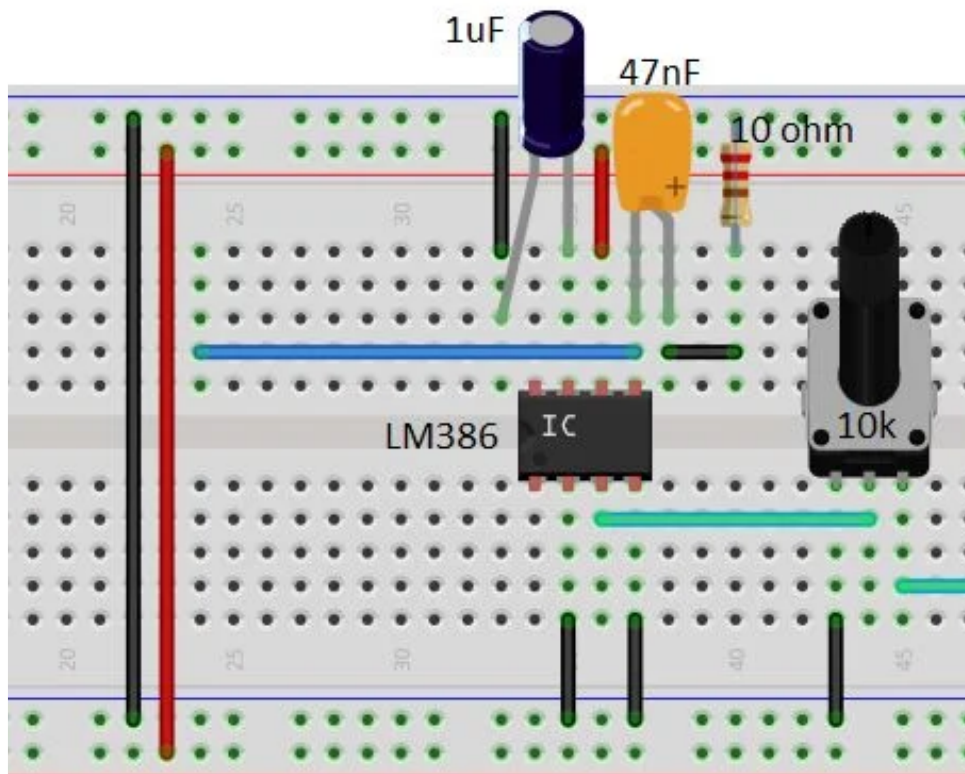
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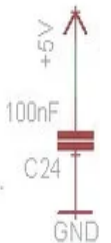
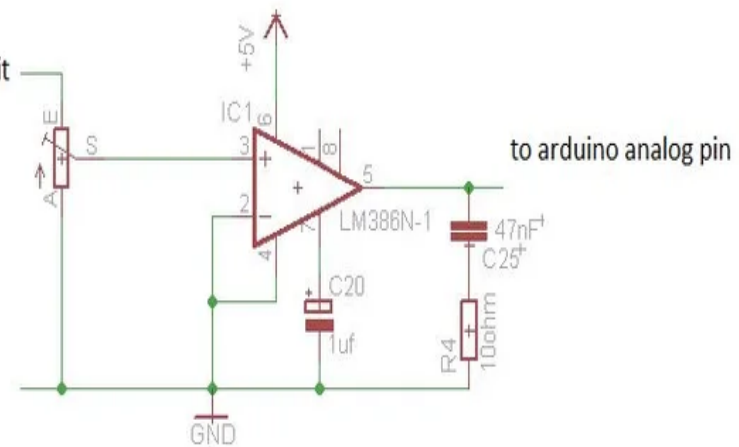
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Step 3: Amplifier Circuit



tret circuit



The connection is done as shown above. That is why it is important for you to learn the LM386 pin numbers that i showed you in a previous image.

Pin 1 and 8 are not connected to anything, since i will be using the default gain (20x)

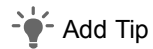
Pin 2 and 4 are connected to ground

Pin 3 is the input and is connected to the input (10k potentiometer slider)

Pin 5 is the output. Its connected to a 47nF capacitor (current bank) and a 10 ohm pulldown resistor. The output is tapped from the pin before the current bank connection.

Pin 6 is connected to 5v

Pin 7 is connected to a 1uF cap and then to ground



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Step 4: Video

arduino VU meter



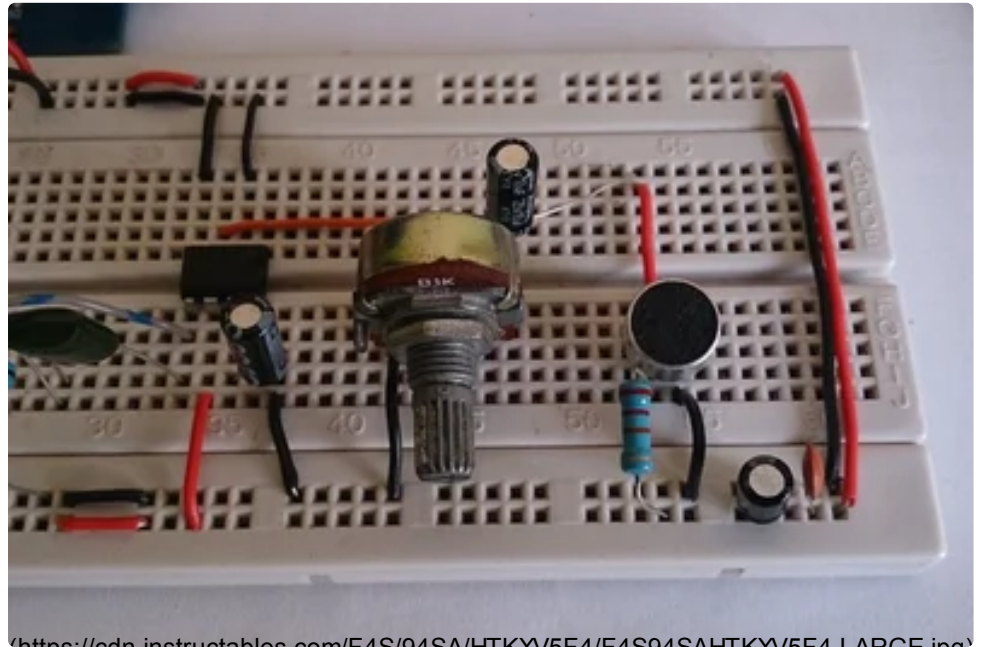
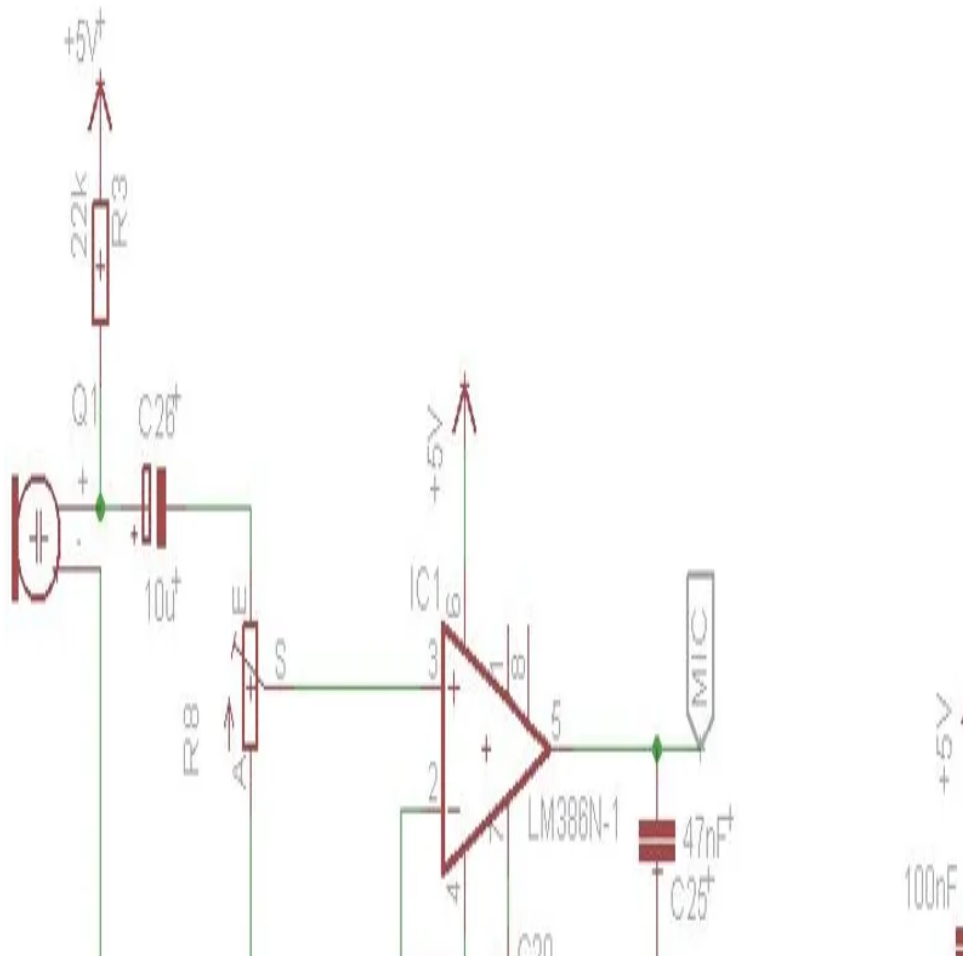
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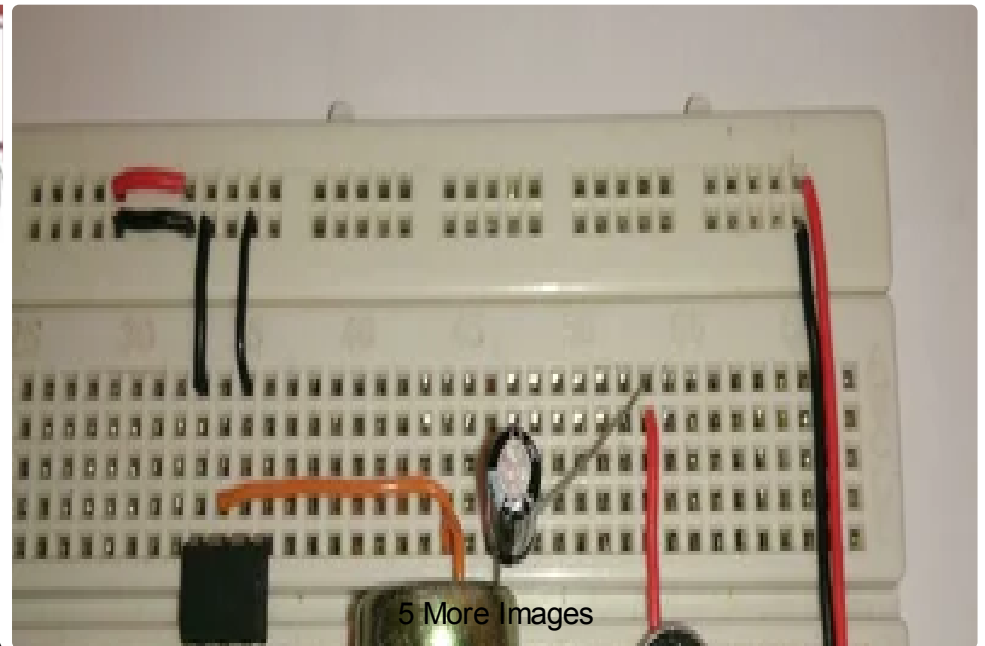
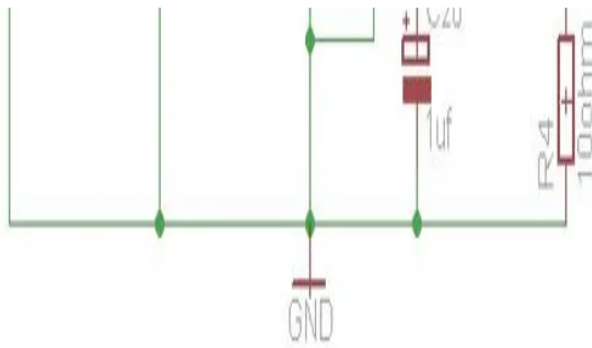
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Step 5: Complete Setup





(https://cdn.instructables.com/EE1/7B71/HTKX/5CB/EE1/7B71/HTKX/5CB/LARGE.jpg)

Here is the complete setup. Upload the code below and enjoy the show.

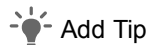
To learn more about the arduino VU meter and LM386+electret circuit, please visit the link below:

<http://www.arduino-hacks.com/arduino-vu-meter-lm386electret-microphone-condenser/> (<http://www.arduino-hacks.com/arduino-vu-meter-lm386electret-microphone-condenser/>).



VU_meter_code.ino

(https://cdn.instructables.com/ORIG/F76/JC1X/HTKXV7SE/F76JC1XHTKXV7SE.ino)
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Magnetic 3rd Hand (/id/Magnetic-3rd-Hand/)

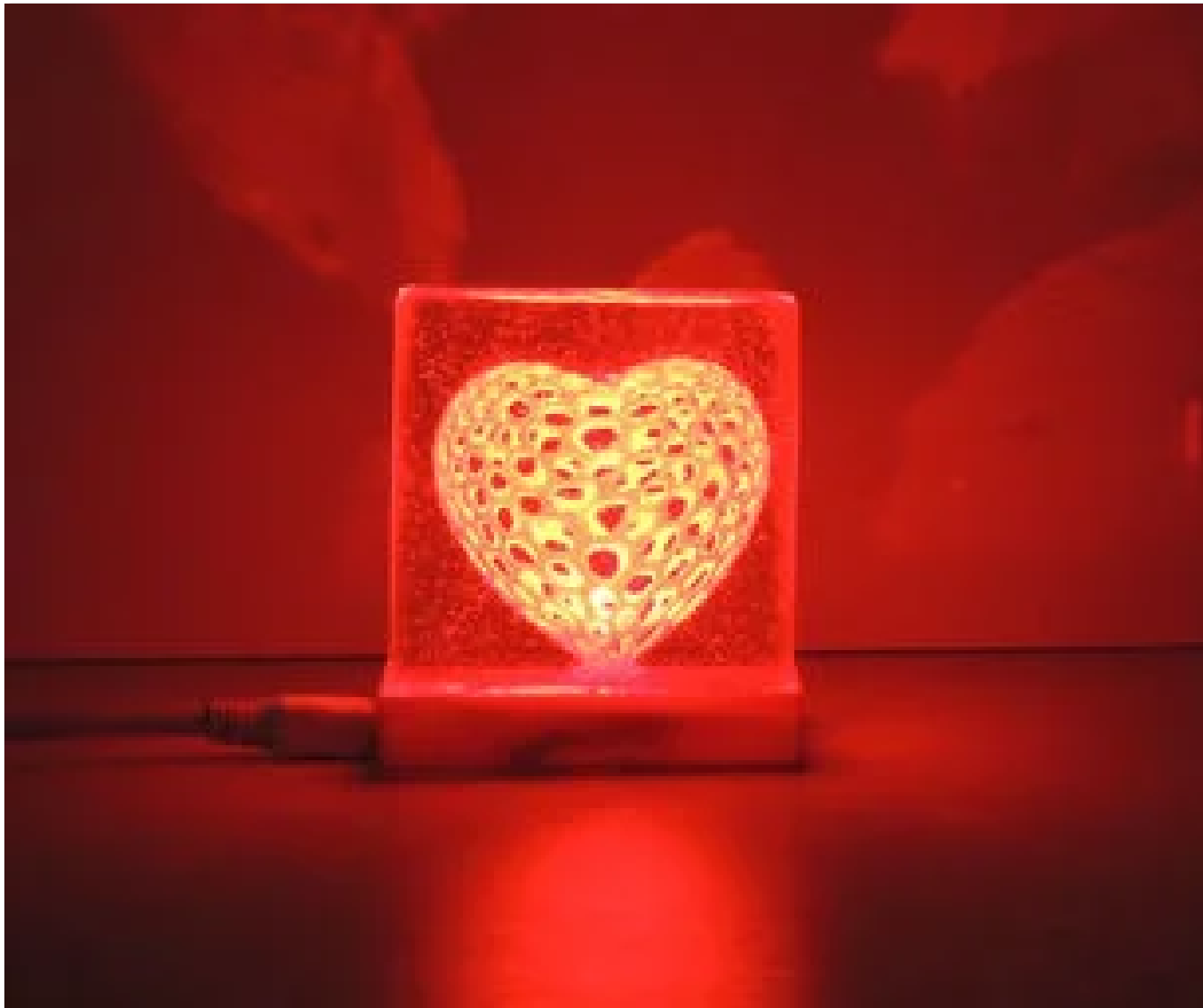
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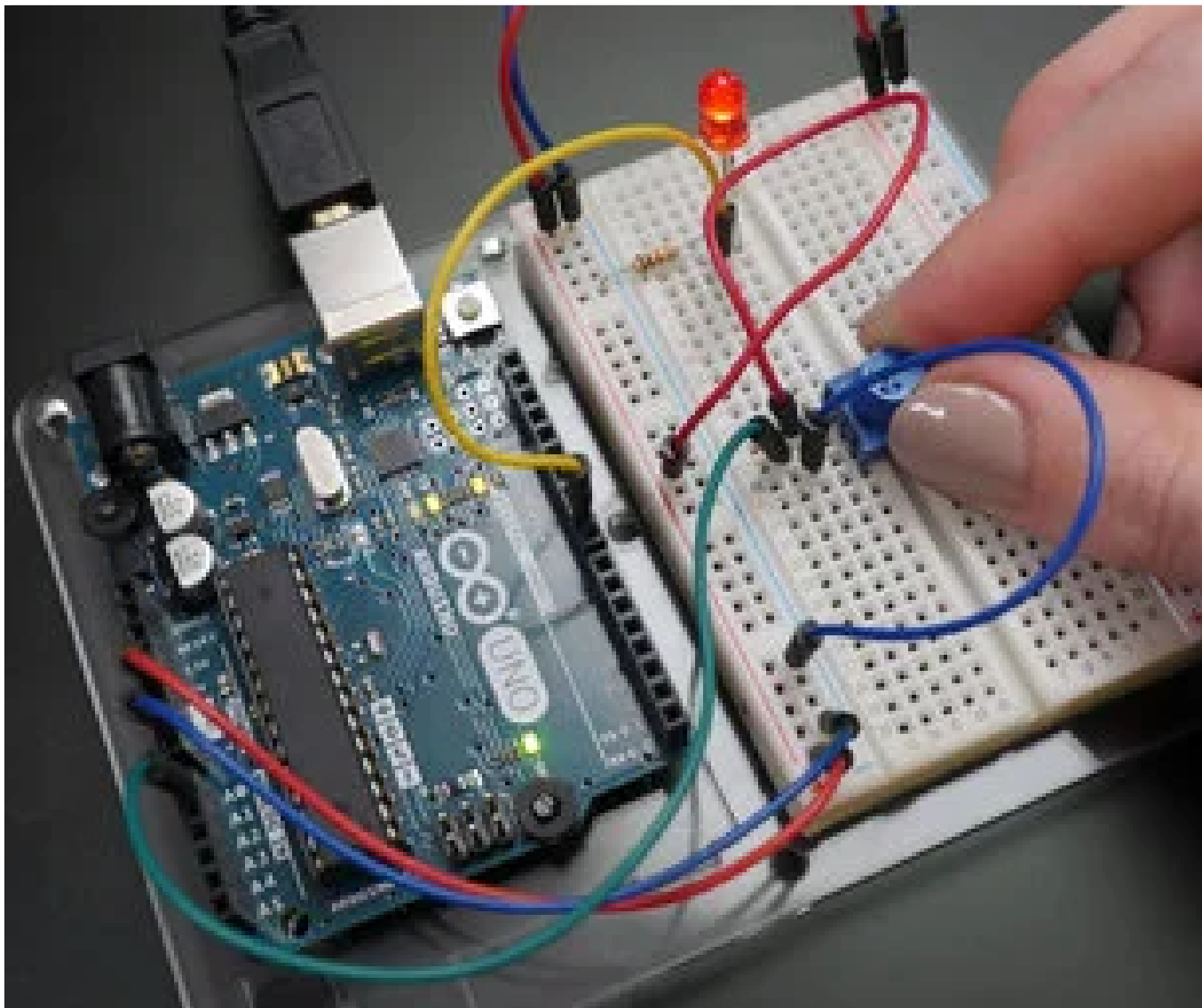
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Please be positive and constructive.

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(/member/BenH261/) BenH261 (/member/BenH261/) 7 months ago

Reply

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you have included 'Serial.begin(9600);'
but what is being shown in the serial monitor??



(/member/AndriusK1/) AndriusK1 (/member/AndriusK1/) 3 years ago

Reply

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I just put extra 270ohm resistors for leds and did some delay in a code. To fade out more natural, more analog console way. Fun build! Thanks!

2 replies ▼



(/member/Guilherme+Crespo/) Guilherme Crespo (/member/Guilherme+Crespo/) 2 years ago

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can i conect the eletrect directly to the LM386 without the potentiometer ?



(/member/LunaticoGalindo/) LunaticoGalindo (/member/LunaticoGalindo/) 2 years ago

Reply

▲ Upvote

will this work with an arduino leonardo?



(/member/PierrotT/) PierrotT (/member/PierrotT/) 3 years ago on Introduction

Reply

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I will adapt your instructables on my Led Cube 8x8x8
Thanks ;)
<https://www.instructables.com/id/8x8x8-RGB-led-cube-By-Pierrot/>



(/member/J.W.N.R./) J.W.N.R. (/member/J.W.N.R./) 4 years ago on Introduction

Reply

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Hi ythomitsy. Thanks for the instructable. I have hooked up (what appears to be) your circuit on a breadboard, but i can't get it to work... Using the pot i can get the LED's to light up properly, but there is no sound sensitivity at all. Instead it somehow works like a proximity meter with the display going up, as i move my hand near the board. I have ensured that the electret is positioned right, of course. Do you have any idea, what i could have done wrong?

1 reply ▼



(/member/etetik1/) etetik1 (/member/etetik1/) 4 years ago on Introduction

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Nice job. Do you know how to convert electret adc value to decibel(dB) ?

1 reply ▼



(/member/HavocRC/) HavocRC (/member/HavocRC/) 4 years ago on Introduction

Reply

▲ Upvote

Very nicely done! Can the electret mic be hooked up to the Arduino without a amplifier? Man I was just getting into the song when my internet failed :)

2 replies ▼



Danger is my middle name
(/member/Danger+is+my+middle+name/) (/member/Danger+is+my+middle+name/)

4 years ago on Introduction

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Neat project! Thanks for including the video too!

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