HECK YEA, IT'S CCLAB!

A note about homework repositories:

All of your homework should be in one repository and the link to that repository should be the link you submitted to me on the form.

Some of you haven't submitted the link yet.
Your homework is incomplete until you do.

http://bit.ly/ZctvlB

Get your homework up and running.

Today’s slides are available in the repo.

(CCLabClassCode > Git Pull)

Arduino OUTPUTS

OUTPUTS

RGB LEDS

SPEAKER

EL WIRE

MOTORS

SERIAL DISPLAY

IGNITER

Go to **sparkfun.com/sikcode**

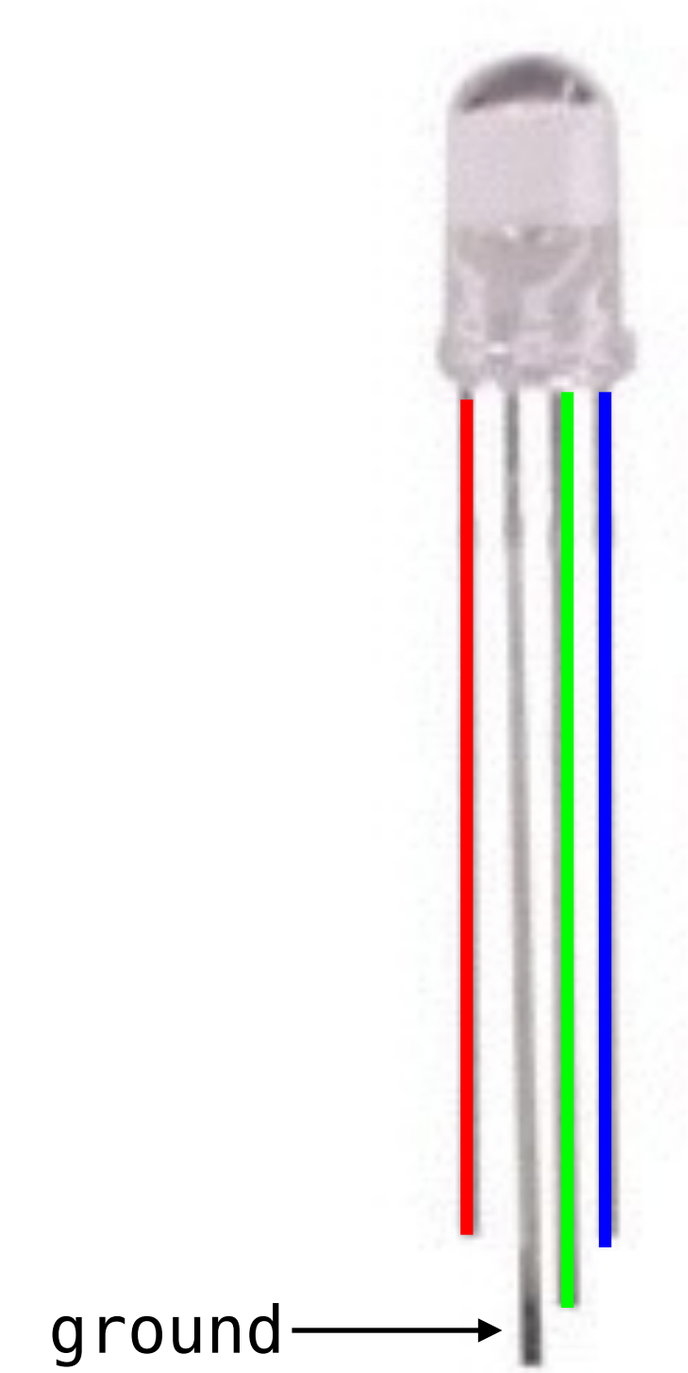
(it will start downloading automatically)

Move the entire folder to your **Arduino folder**.

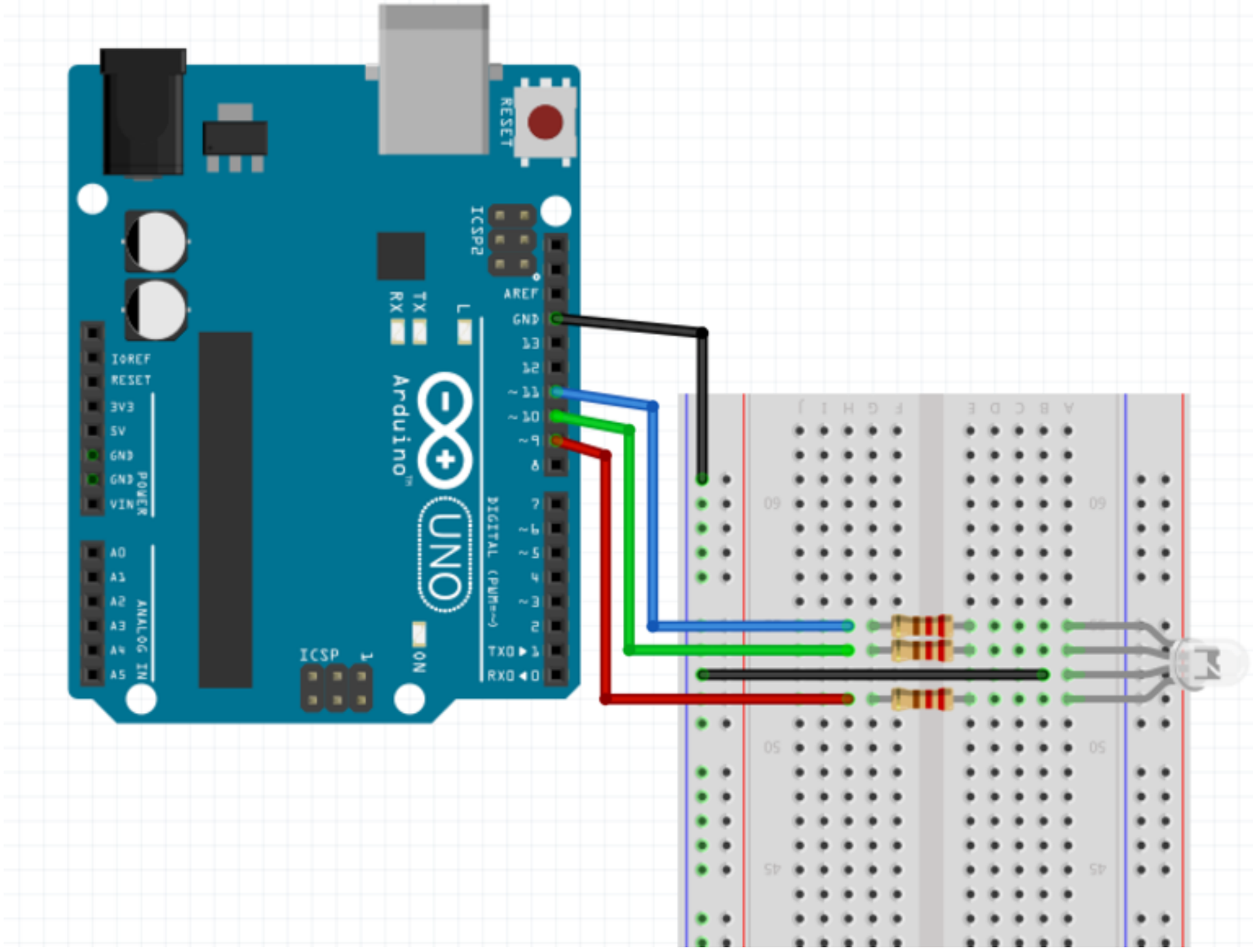
(Documents > Arduino)

RGB LEDS

RGB LEDS



RGB LEDS


RESET
ICSP2
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM~)
TX
RX
L
Arduino
UNO
ON
ICSP
IOREF
RESET
3V3
5V
GND
GND
VIN
POWER
A0
A1
A2
A3
A4
A5
ANALOG IN

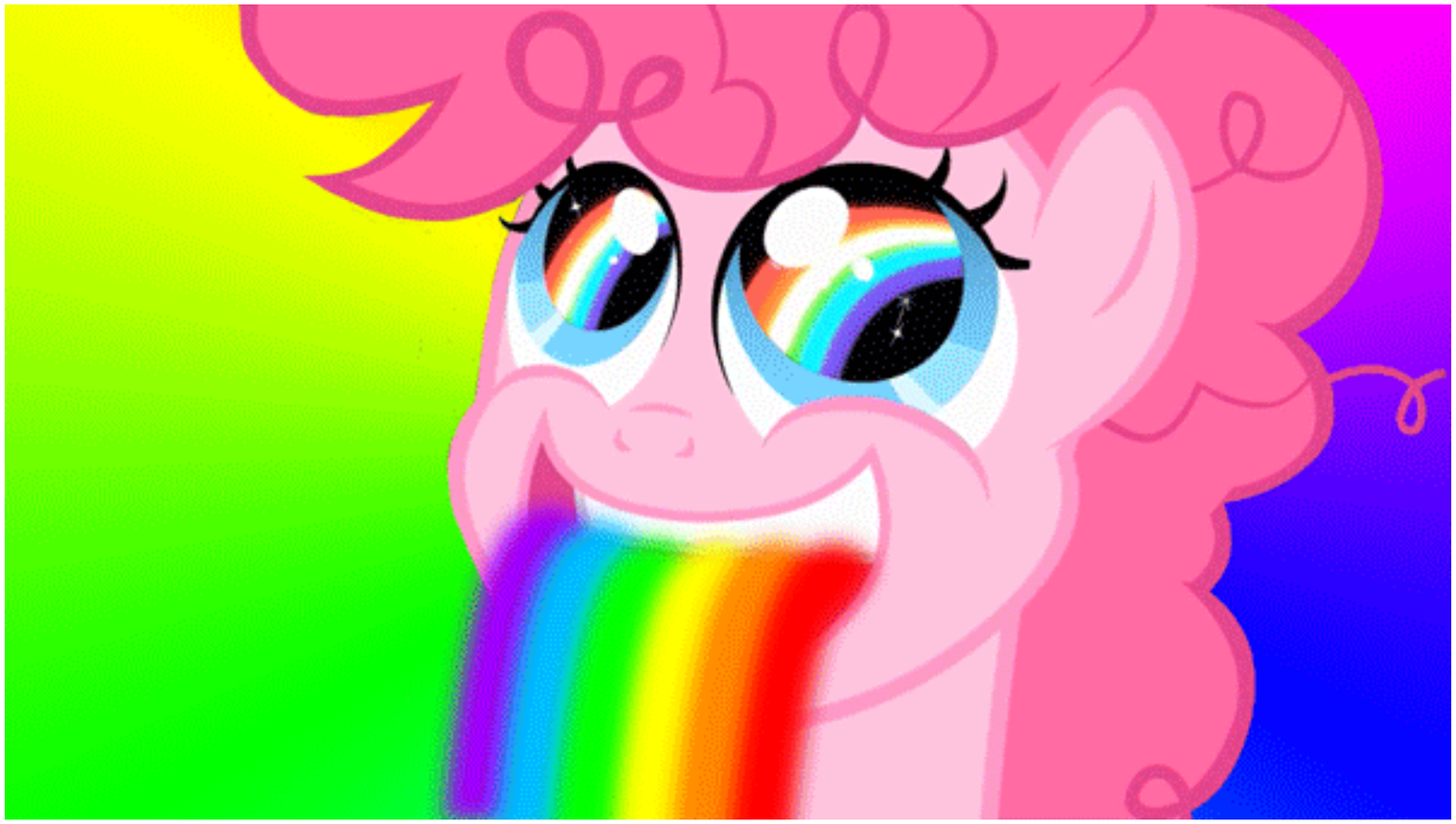
Open up the SIK Circuit03 code.

(FILE > SIK Guide Code > Circuit03)

So, what's going on?

Upload it!

RGB LEDS



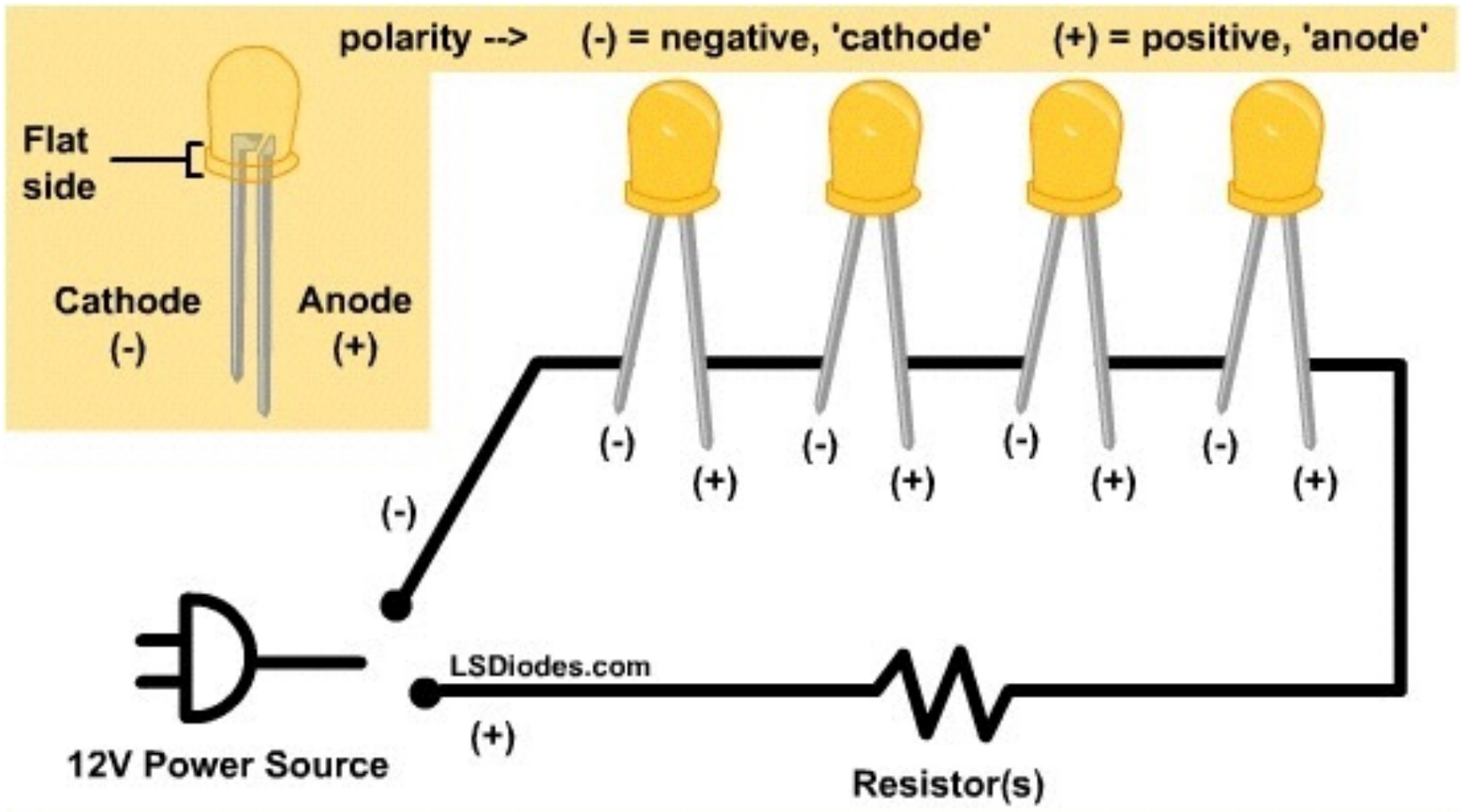
LEDS++

A few ways to do it.

LEDS++

single input: SERIES CIRCUIT

LEDS++

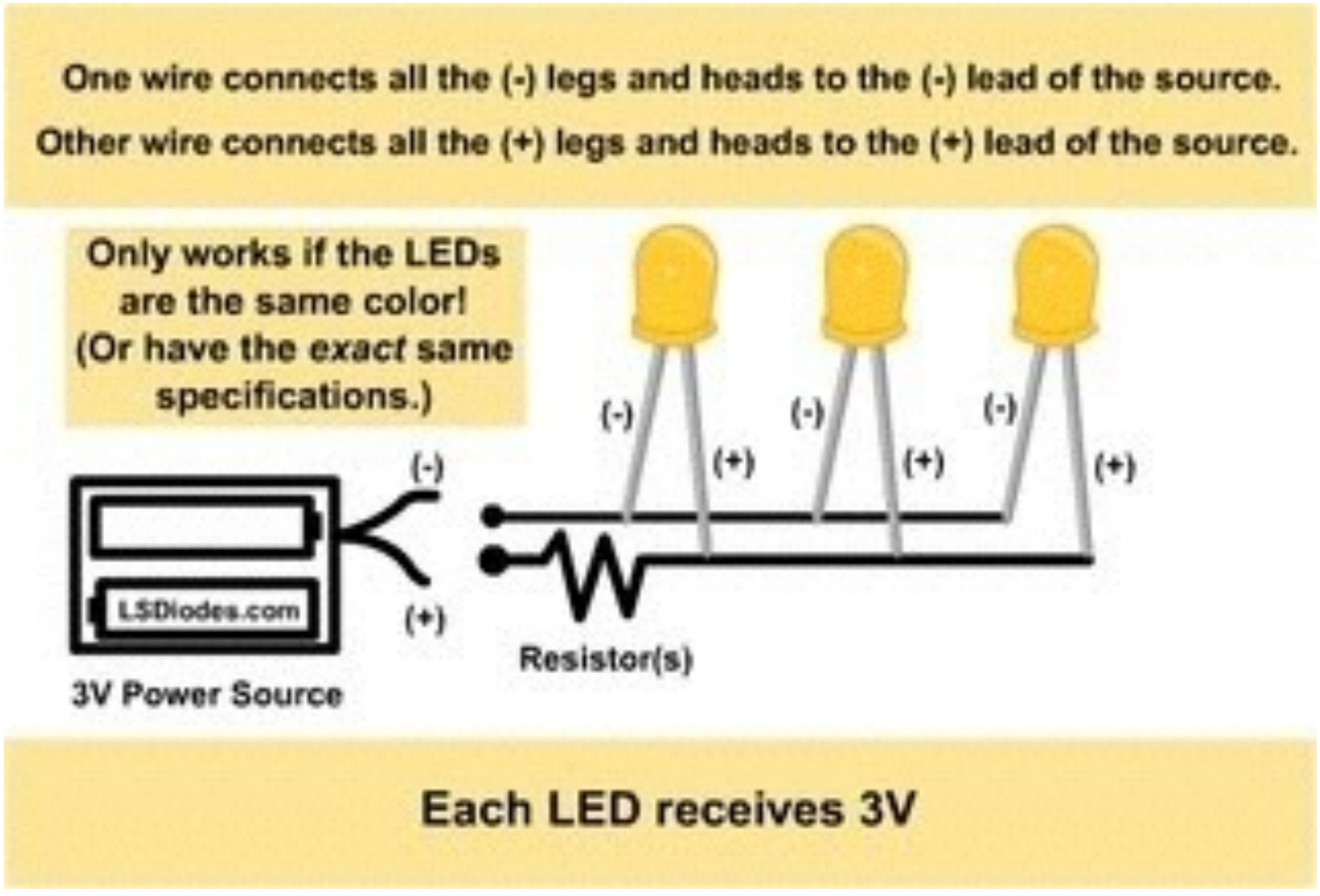


$$\frac{\text{Volts}}{\text{LEDs}} = \frac{12}{4} = 3\text{V going through each LED}$$

LEDS++

single input:
PARALLEL CIRCUIT

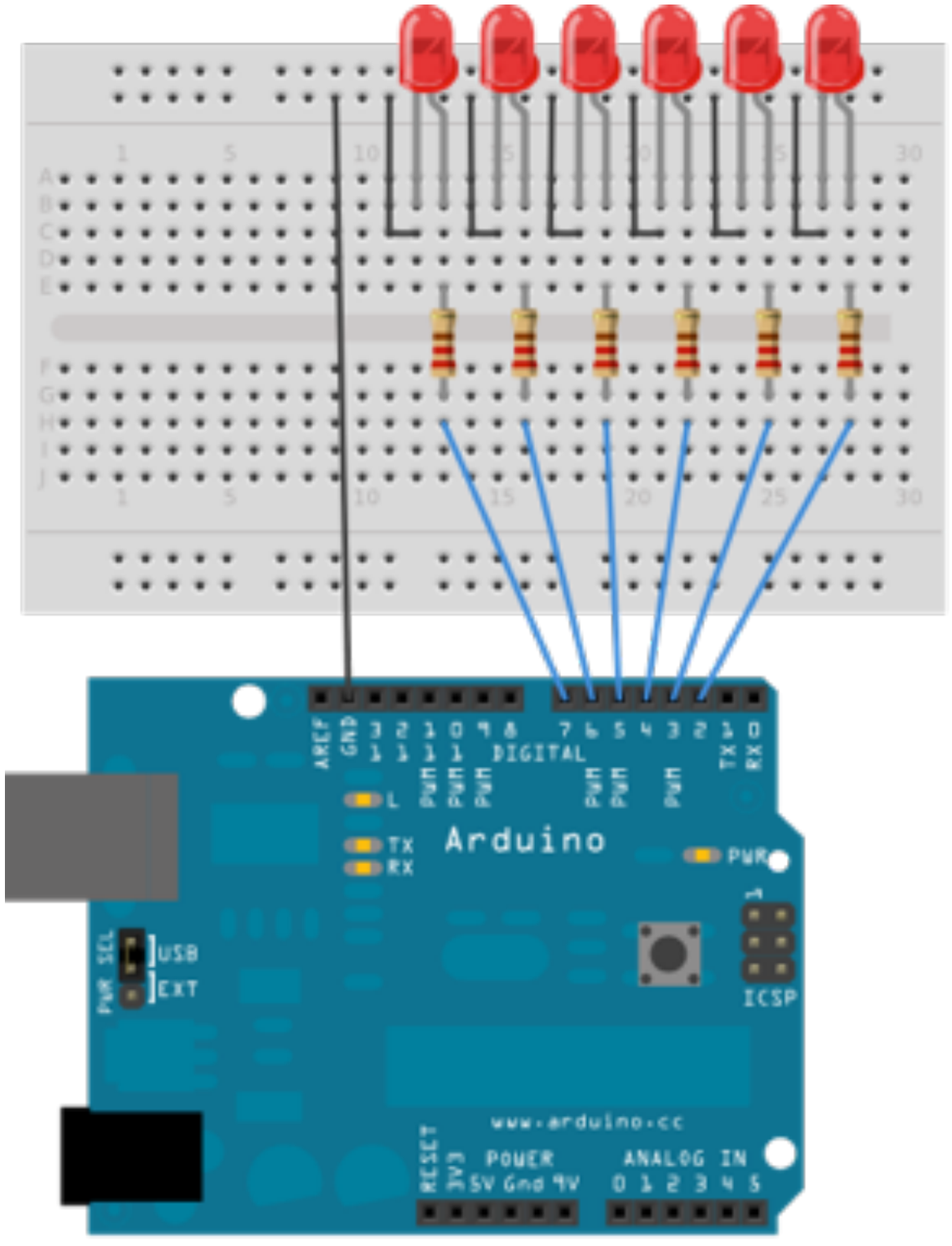
LEDS++


One wire connects all the (-) legs and heads to the (-) lead of the source.
Other wire connects all the (+) legs and heads to the (+) lead of the source.
Only works if the LEDs are the same color! (Or have the exact same specifications.)
(-)
(+)
(-)
(+)
(-)
(+)
(-)
(+)
LSDiodes.com
3V Power Source
Resistor(s)
Each LED receives 3V

LEDS++

multiple input:
MULTIPLE CIRCUITS

LEDS++

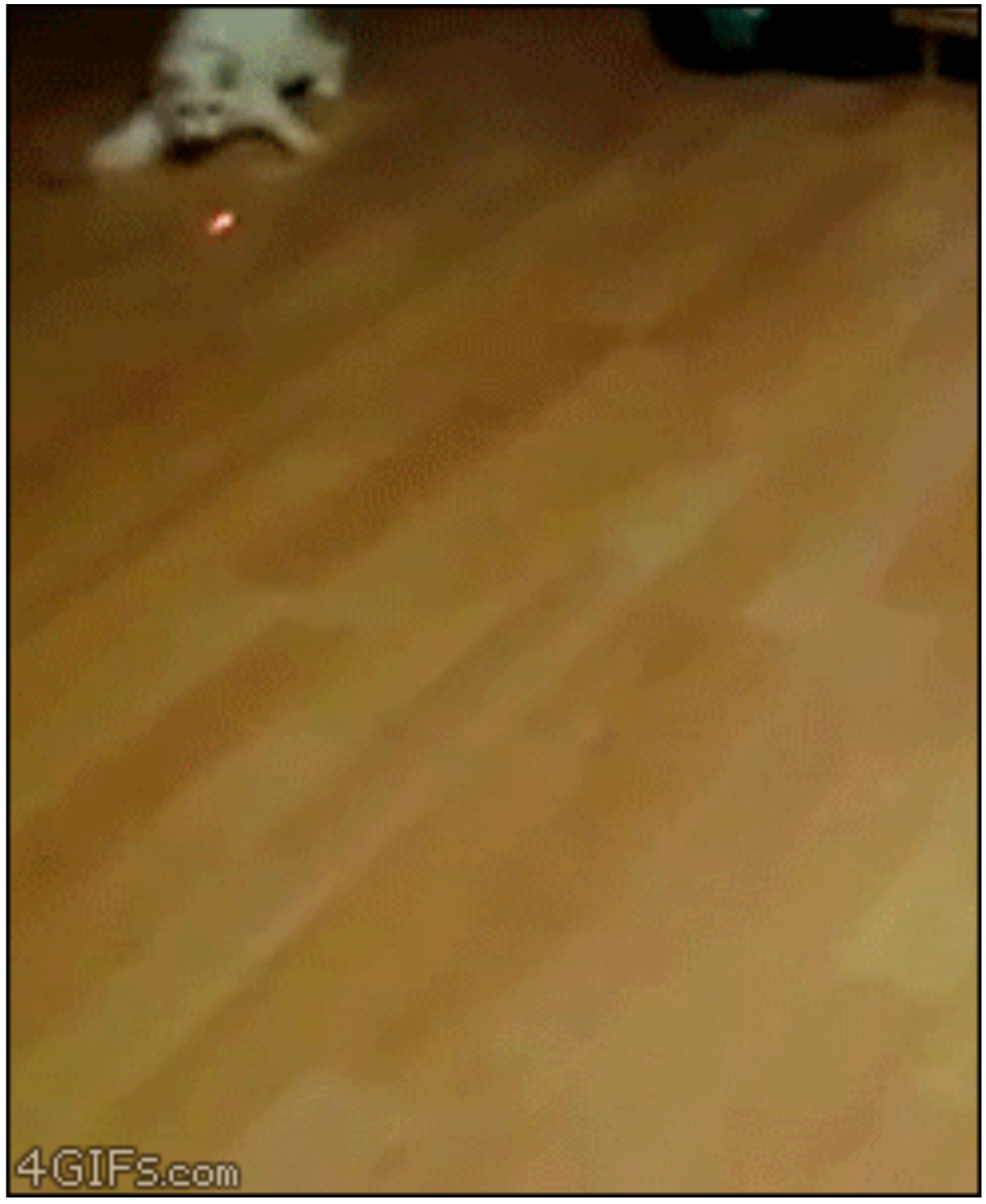

AREF
GND
DIGITAL
PWM
L
TX
RX
Arduino
PWR
ICSP
PWR SEL
USB
EXT
www.arduino.cc
RESET
POWER
ANALOG IN

LEDS++

```
int timer = 100;           // The higher the number, the slower the timing.
int ledPins[] = {
  2, 7, 4, 6, 5, 3 };       // an array of pin numbers to which LEDs are attached
int pinCount = 6;           // the number of pins (i.e. the length of the array)

void setup() {
  // the array elements are numbered from 0 to (pinCount - 1).
  // use a for loop to initialize each pin as an output:
  for (int thisPin = 0; thisPin < pinCount; thisPin++)  {
    pinMode(ledPins[thisPin], OUTPUT);
  }
}

void loop() {
  // loop from the lowest pin to the highest:
  for (int thisPin = 0; thisPin < pinCount; thisPin++) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], HIGH);
    delay(timer);
    // turn the pin off:
    digitalWrite(ledPins[thisPin], LOW);

  }

  // loop from the highest pin to the lowest:
  for (int thisPin = pinCount - 1; thisPin >= 0; thisPin--) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], HIGH);
    delay(timer);
    // turn the pin off:
    digitalWrite(ledPins[thisPin], LOW);
  }
}
```

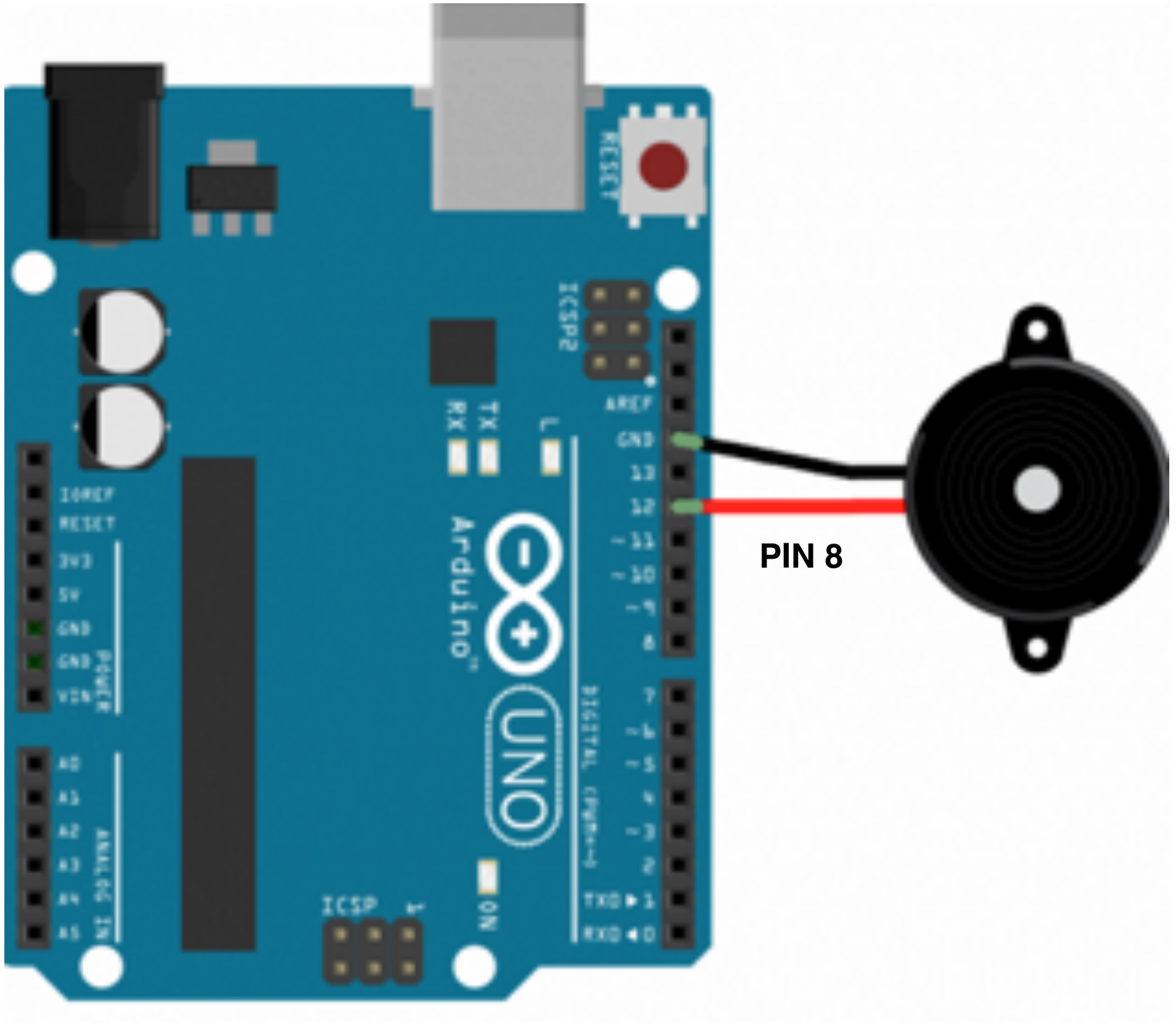
Upload it!

LEDS++



MUSIC (KINDA)

MUSIC


RESET
ICSP2
AREF
GND
13
12
~ 11
~ 10
~ 9
8
7
~ 6
~ 5
4
~ 3
2
TXD ▶ 1
RXD ◀ 0
DIGITAL (PWM~)
TX
RX
L
ON
ICSP
IOREF
RESET
3V3
5V
GND
GND
VIN
POWER
A0
A1
A2
A3
A4
A5
ANALOG IN
Arduino
UNO
PIN 8

Open up “toneMelody”.

(FILE > EXAMPLES > 02.Digital > toneMelody)

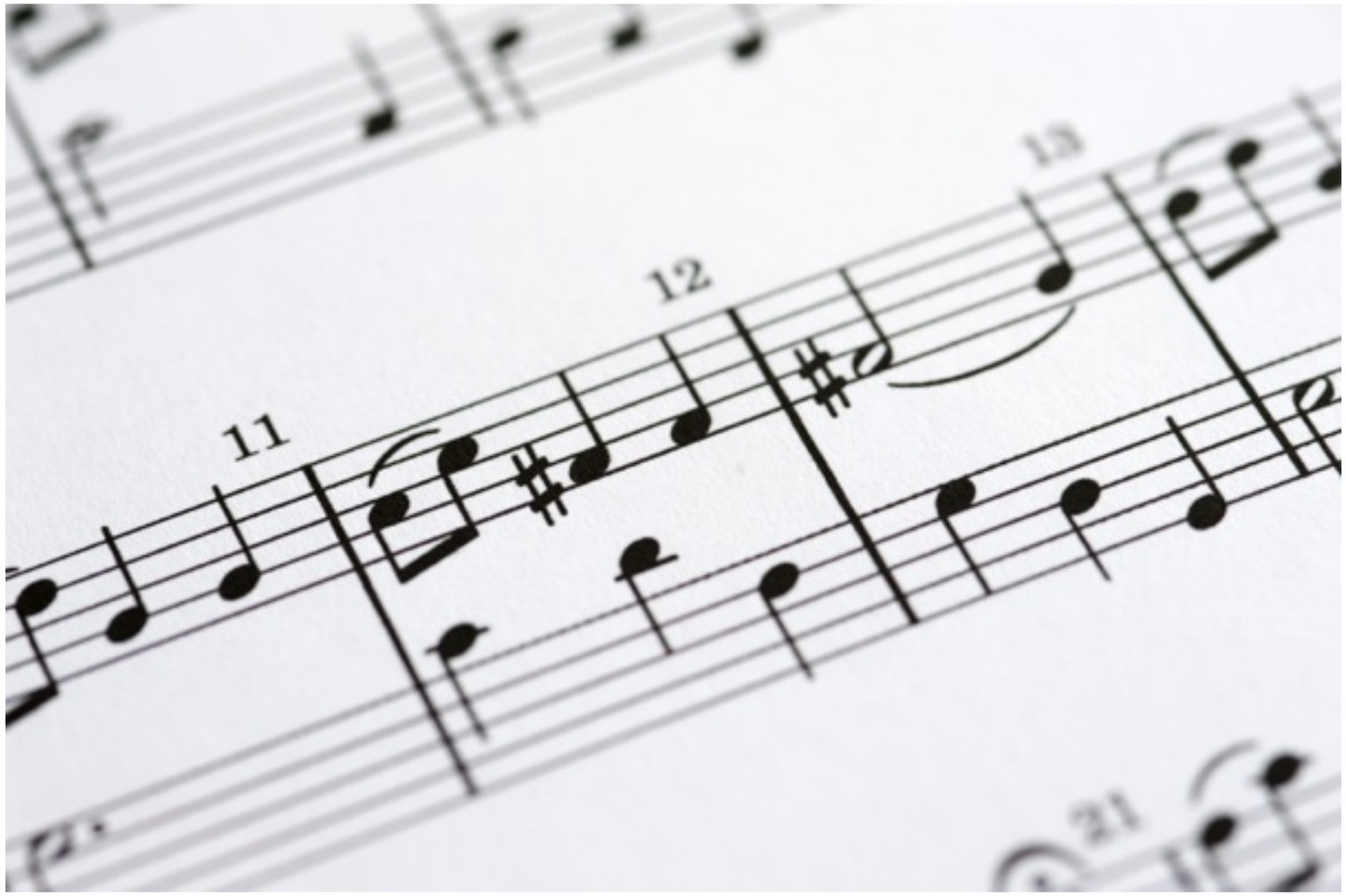
MUSIC

```
// notes in the melody:
int melody[] = {
NOTE_C4, NOTE_G3,NOTE_G3, NOTE_A3, NOTE_G3,0, NOTE_B3, NOTE_C4};
```

MUSIC

is just like...

MUSIC



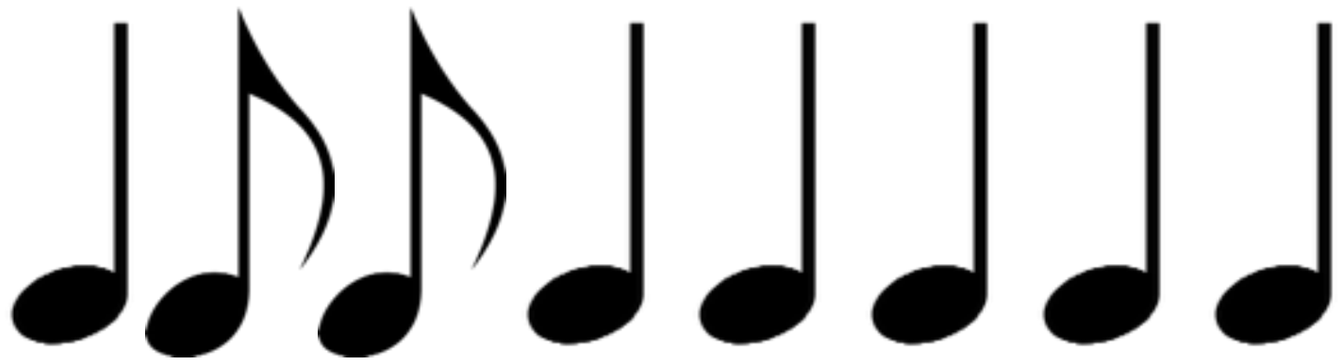
MUSIC

```
// note durations: 4 = quarter note, 8 = eighth note, etc.:
int noteDurations[] = {
4, 8, 8, 4,4,4,4,4 };
```

MUSIC

is the same as...

MUSIC



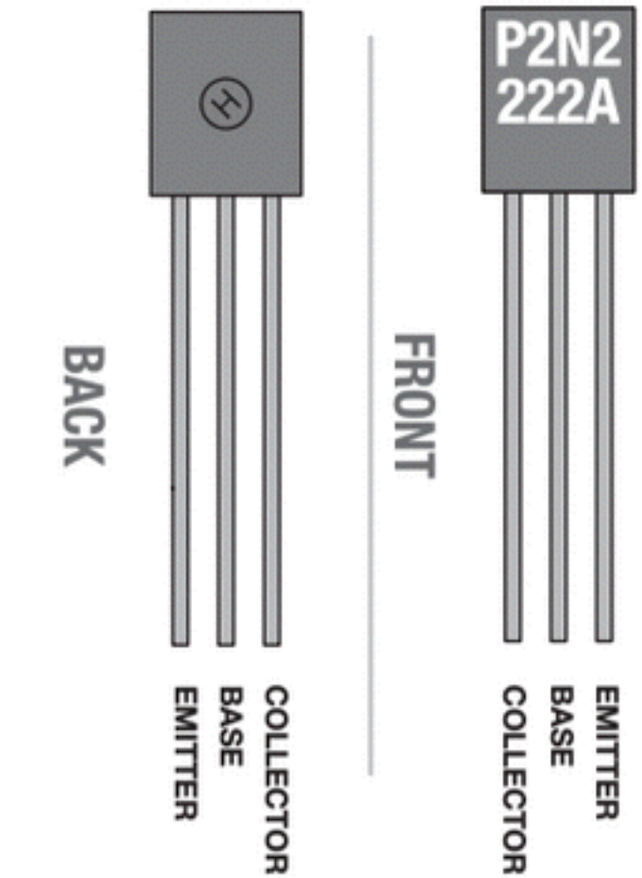
Upload the code!

MUSIC

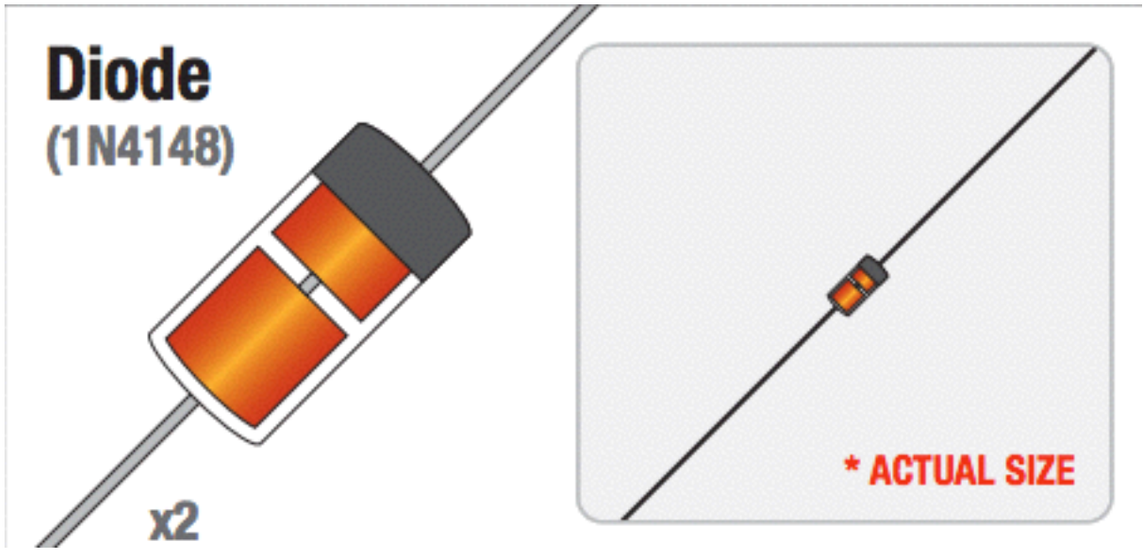
MOTORS

Before we start...

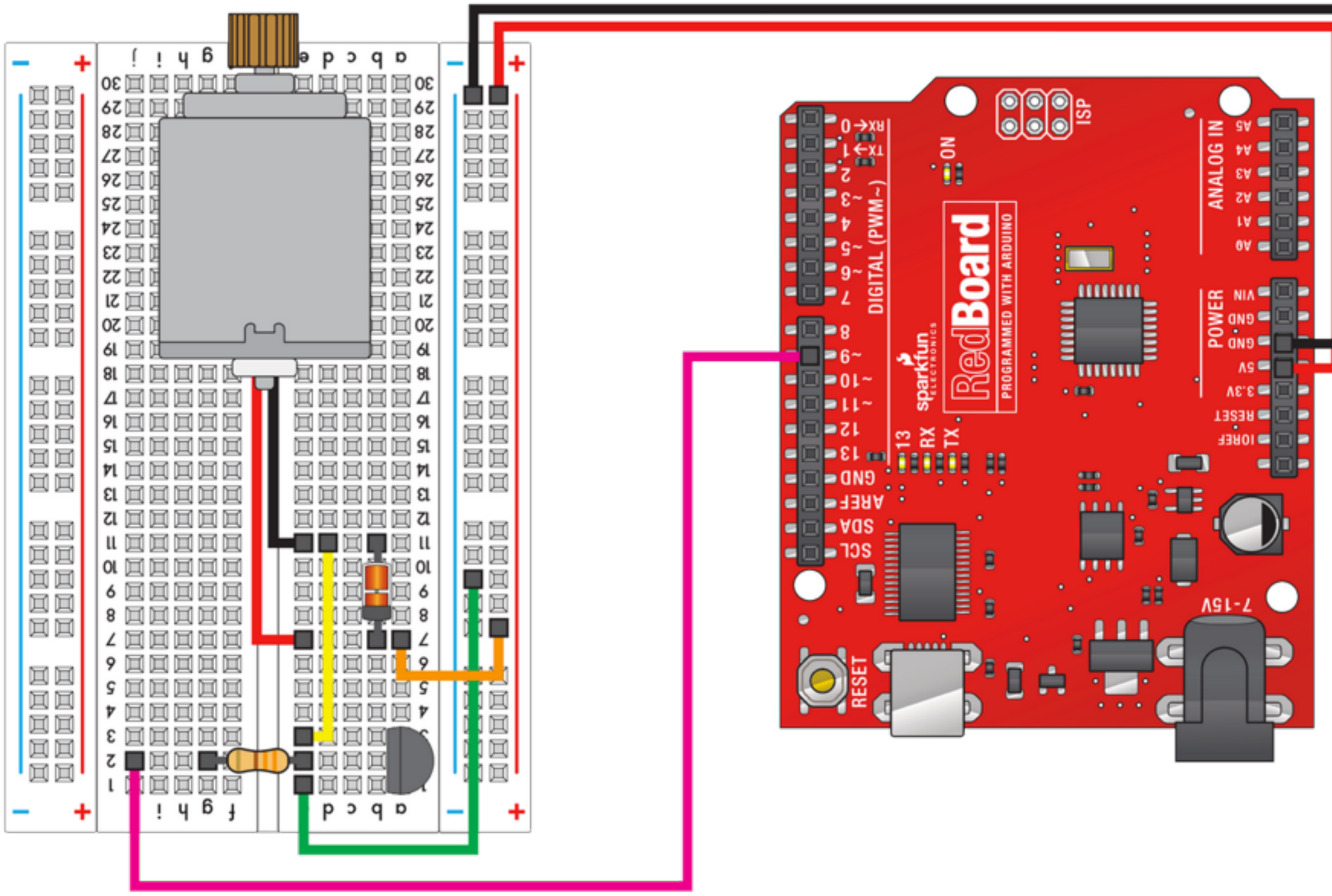
Transistor


P2N2
222A
BACK
FRONT
EMITTER
BASE
COLLECTOR
COLLECTOR
BASE
EMITTER

Diode



MOTORS


RedBoard
PROGRAMMED WITH ARDUINO
sparkfun
ELECTRONICS
DIGITAL (PWM~)
ANALOG IN
POWER
ISP
ON
RESET
7-15V

MOTORS

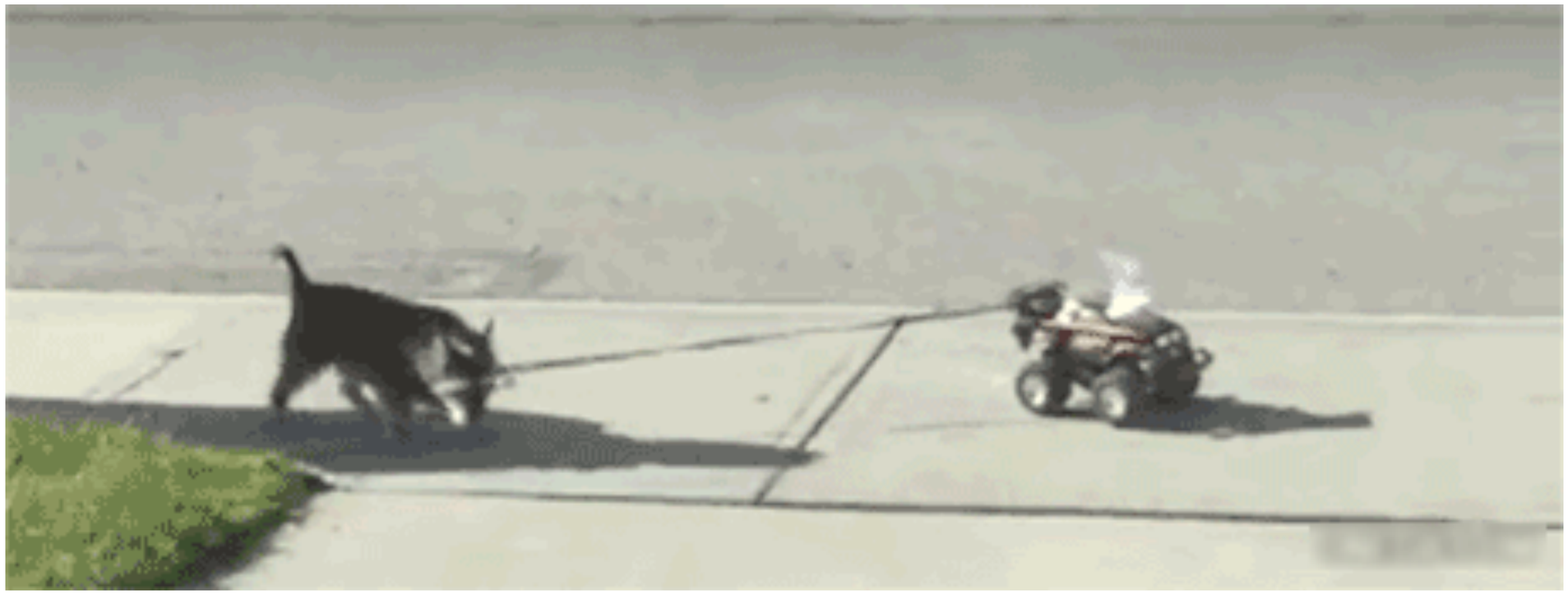
Open up SIK Guide Code Circuit_12.

MOTORS

Upload it.

Open up your Serial Monitor.

MOTORS



Here's your Homework

Your Arduino Final Project due in two weeks.

(yup: Arduino's over.)

(assignment coming soon)

Next class: Work session + Individual Meetings

ALSO....

Next Tuesday is
Ada Lovelace Day.

you should check out:

The Forgotten Female Programmers Who Created Modern Tech

http://www.npr.org/blogs/alltechconsidered/2014/10/06/345799830/the-forgotten-female-programmers-who-created-modern-tech

Brownie points to anyone who brings something Lady-Tech or Ada themed to class next week.

(it's my favorite nerd holiday)