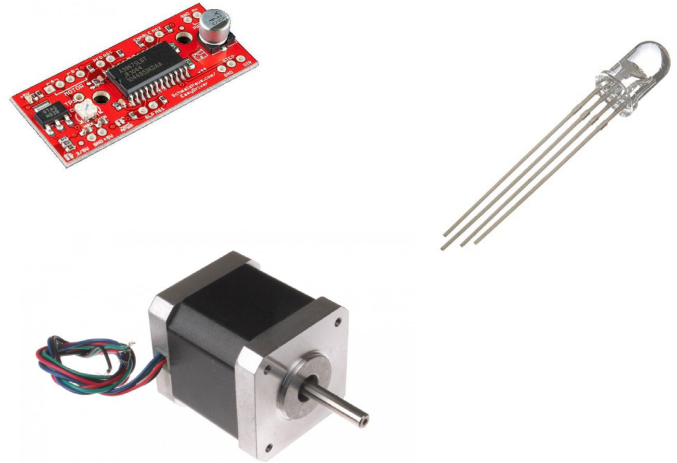


AD3 : Outputting Data



In this session we will be looking at a couple of examples where we use data to make something happen i.e outputting data. Until now we have mainly looked at gathering data. The special components needed for the examples are:

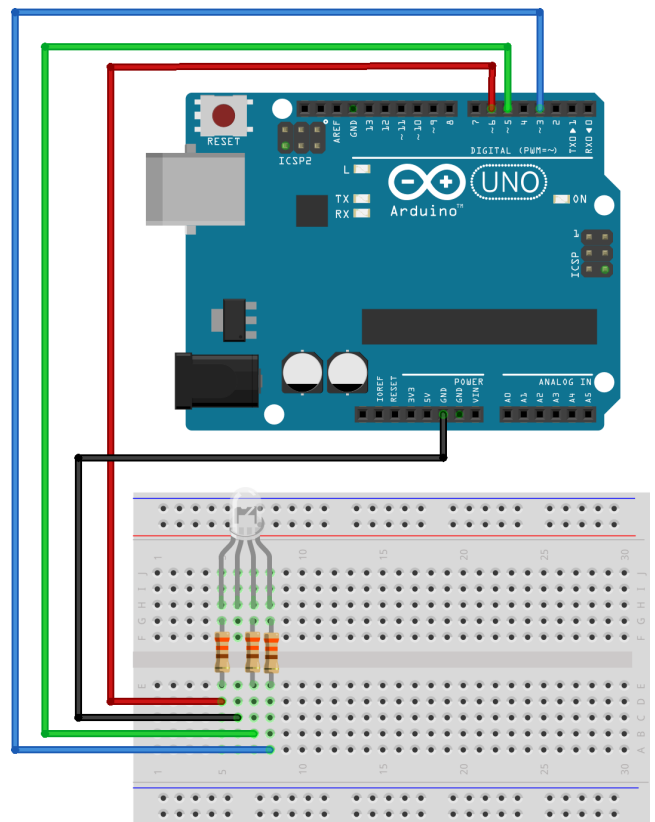
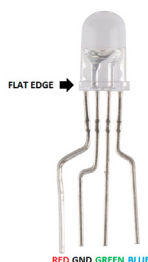
- Stepper Motor (I'm using a Nema17)
- Easy Driver (I'm using v4.4)
- Four pin RGB LED
- 12v DC power supply (Mine is 5A, 1-5 A is ok)



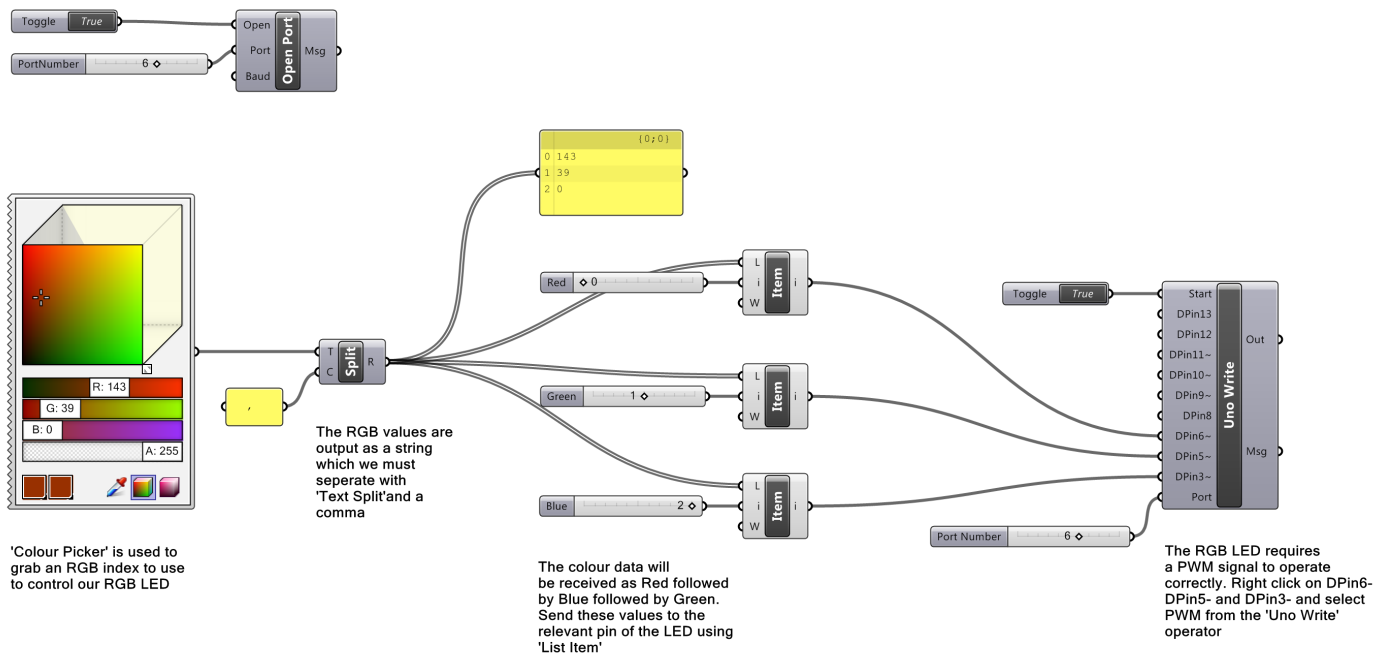
RGB LED.

The Red Green Blue (RGB) LED can output a spectrum of colours. Just like you can pick a colour in Photoshop with an index in the format of 255,255,255 we can send values to the RGB LED and it will output that colour.

Wiring the LED is simple, the longest pin is ground and should be wired to GND on the Arduino. The other pins should be connected to DPin3~ DPin5~ and DPin6~ via a 330 Ω resistor. The diagram below shows which pins are red, green and blue.



GRASSHOPPER COLOUR.



If you have wired the RGB LED and Arduino Uno as shown on the previous page this Grasshopper/Firefly sketch should allow you to pick a colour with the colour picker and that colour should be displayed on the RGB LED.

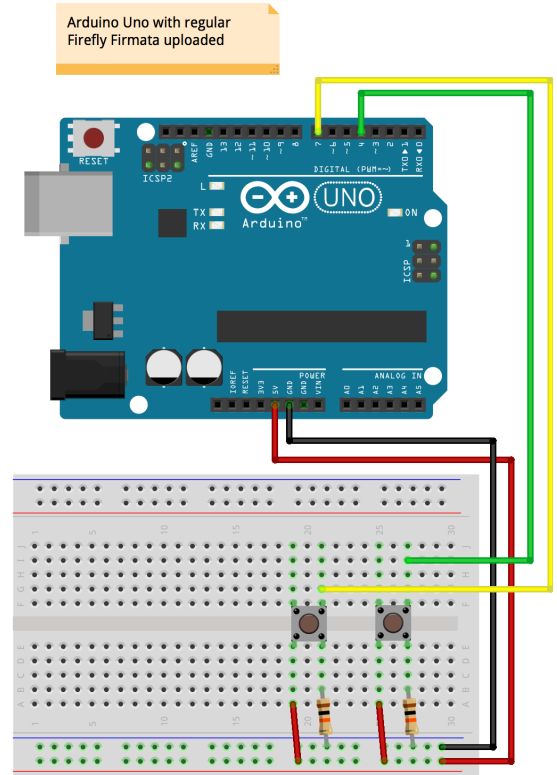
The values could easily be another data stream, its just necessary that the three values are mapped to a range of 0-255.

STEPPER MOTOR.

This example requires 2 Arduino Unos. One must have the Firefly Stepper Firmata uploaded to it, the other jsut requires the standard Firmata.

You will need an Easy Driver to power stepper motors beyond the very small weak ones. The Easy Driver is a simple cost effective way to drive your stepper motors. Firefly can handle upto for stepper motors per Arduino.

You will also require an external power supply, I am using a 12v 5A DC supply from on old laptop charger.



Easy Driver Wiring:

TOP

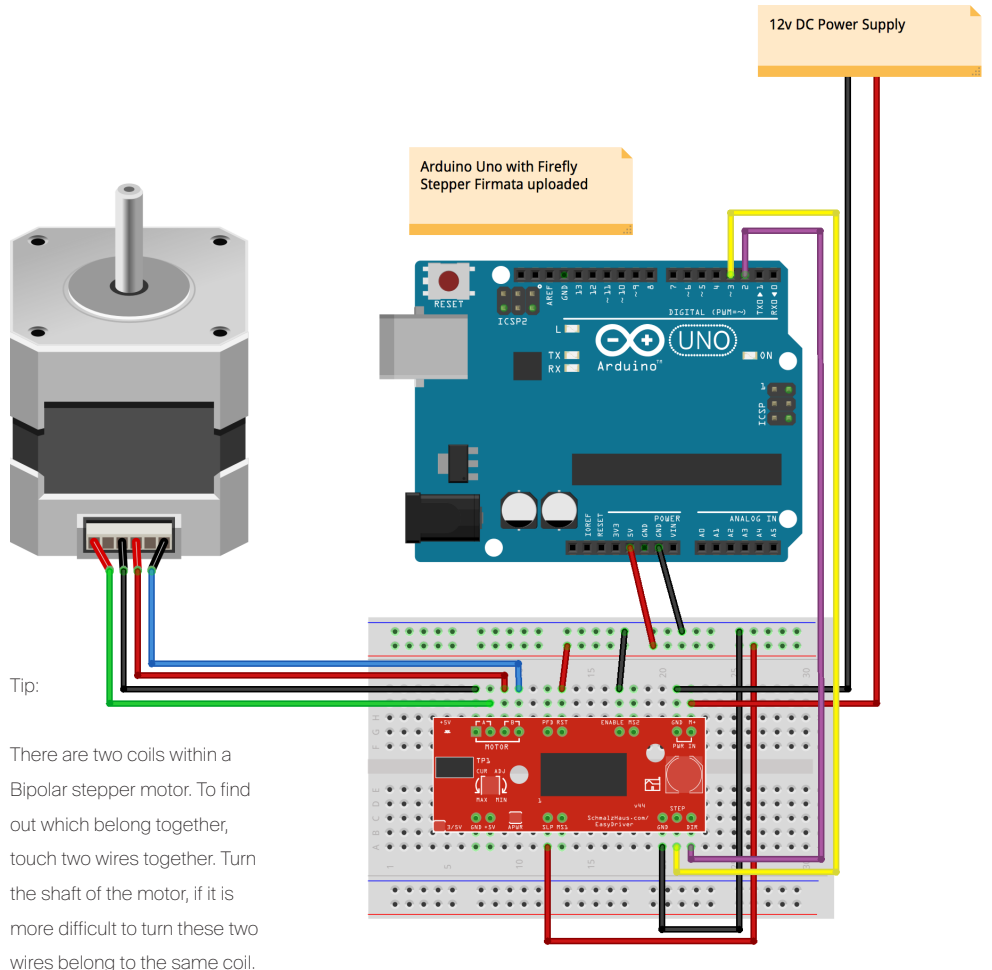
- A - Coil 1 of motor
- A - Coil 1 of motor
- B - Coil 2 of motor
- B - Coil 2 of motor
- PFD - N/a
- RST - 5v
- ENABLE - GND

PWR IN

- GND - Ground of power supply
- M+ - Positive of power supply

BOTTOM

- SLP - 5v
- GND - GND
- STEP- DPin3~
- DIR - DPin2



Tip:

There are two coils within a Bipolar stepper motor. To find out which belong together, touch two wires together. Turn the shaft of the motor, if it is more difficult to turn these two wires belong to the same coil.

SOLDERING.



Some useful tools for soldering:

1. Solder sucker for de-soldering
2. Electric soldering iron
3. Solder
4. Wire cutters
5. Solder wick/braid for desoldering
6. Flux paste
7. Soldering helping hands
8. Heat shrink tubing for insulating solder joints