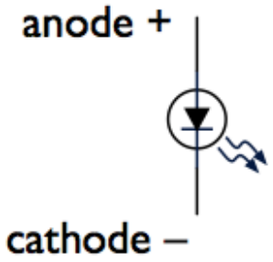
Controlling things

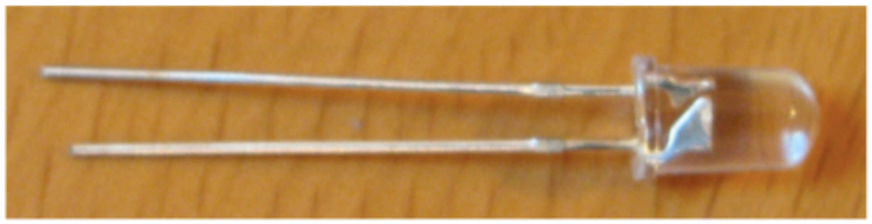
Day #3

RGB LED

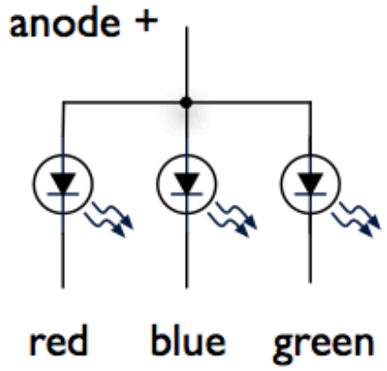
Normal LED



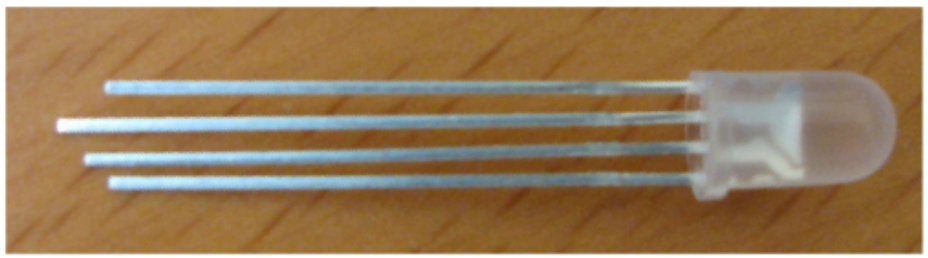
anode +
cathode –



RGB LED



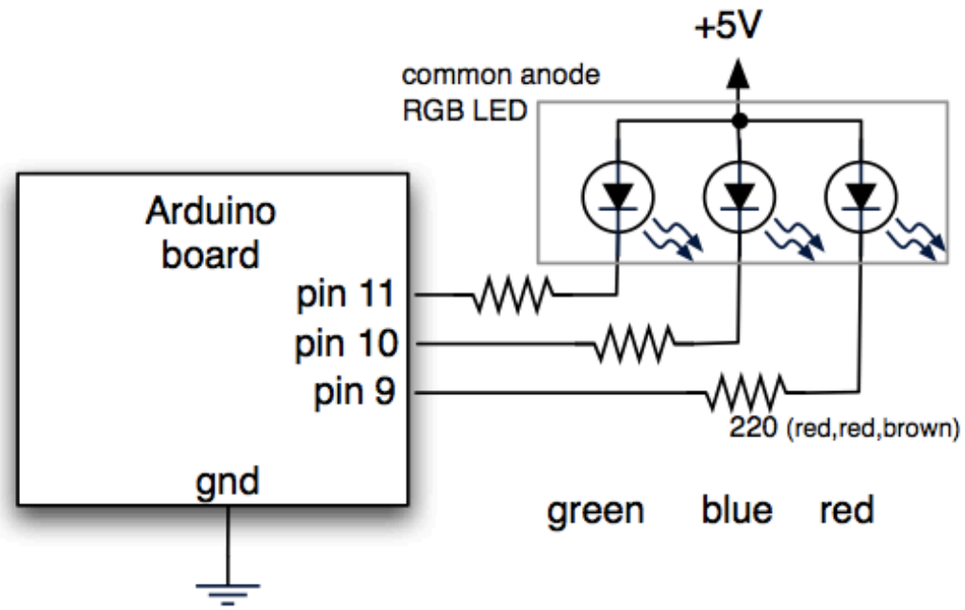
red cathode –
anode +
green cathode –
blue cathode –



actually 3 LEDs in one package

What colors can you have?

With just 3 LEDs you can make any* color



With RGB you can make any color
(except black)

Mixing light is the additive color model

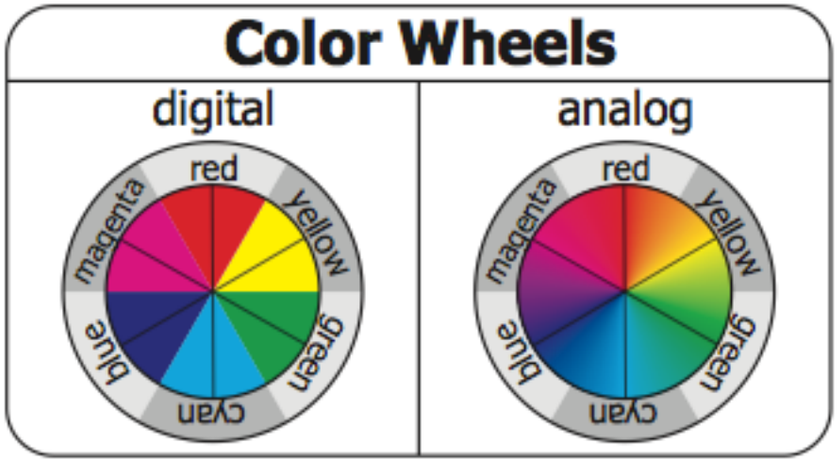
(paint is subtractive color, and can give you brown)

Cycle through all colors

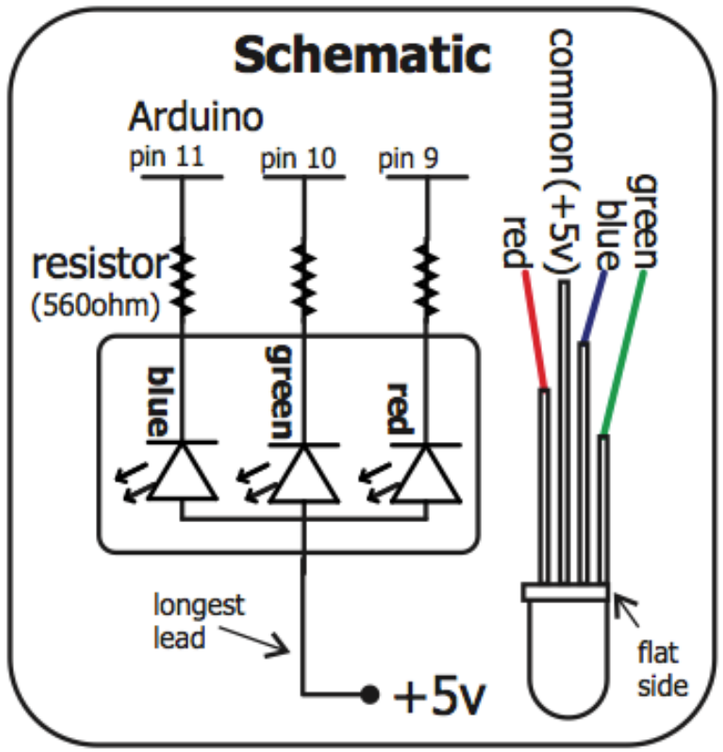
Color Truth Table

red	green	blue	
ON	ON	OFF	yellow
OFF	ON	ON	cyan
ON	OFF	ON	magenta
ON	ON	ON	white

Color Wheels

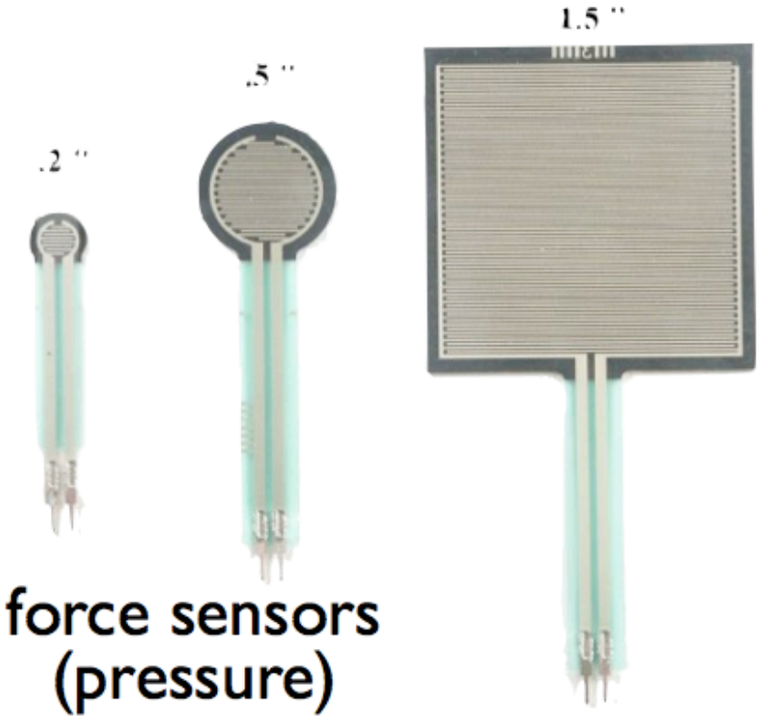


- Every second we want the LED to have a different color.
- Red, Green, Blue, Yellow, Cyan, Magenta, White.



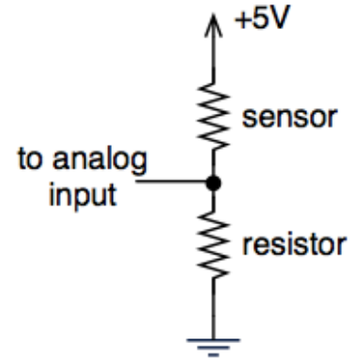
Squeezing with resistive sensors

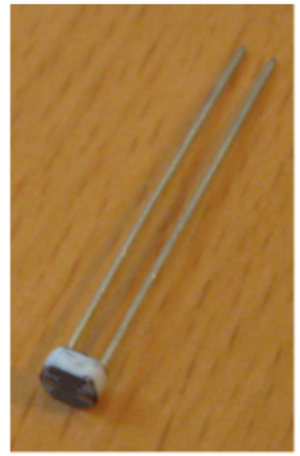
thermistor
(temperature)



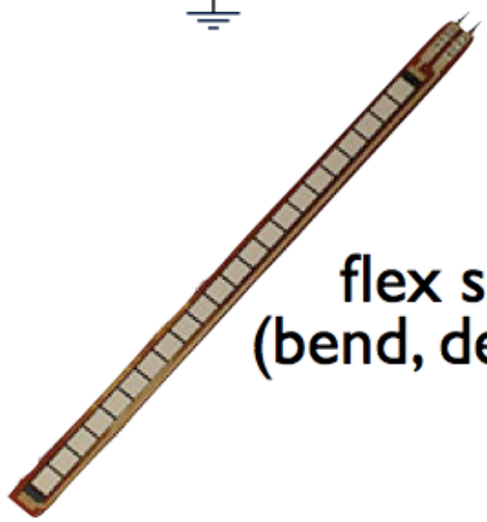
force sensors
(pressure)

circuit is the same
for all these





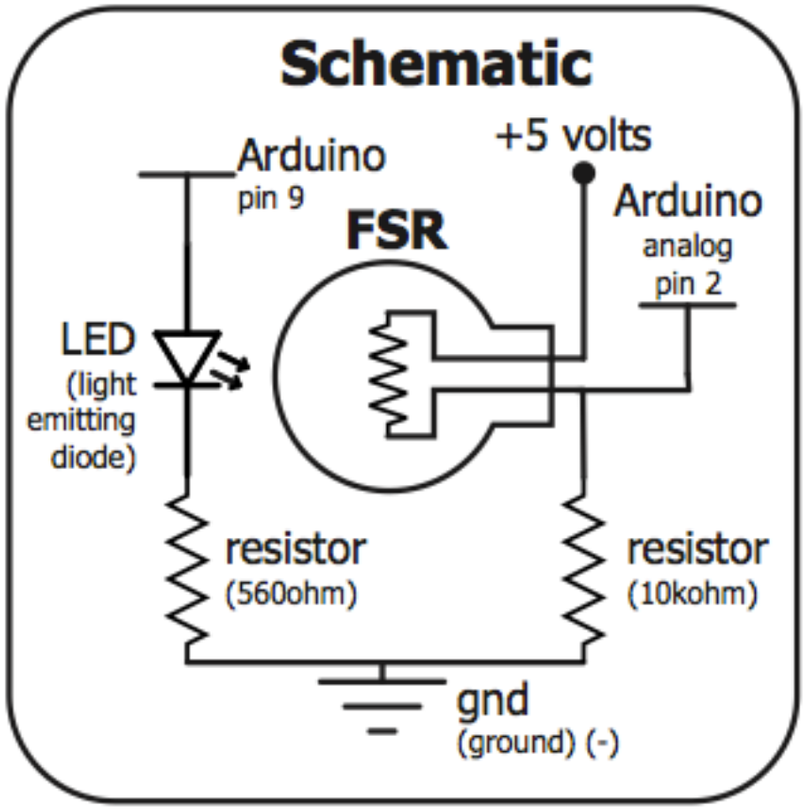
photocell
(light)

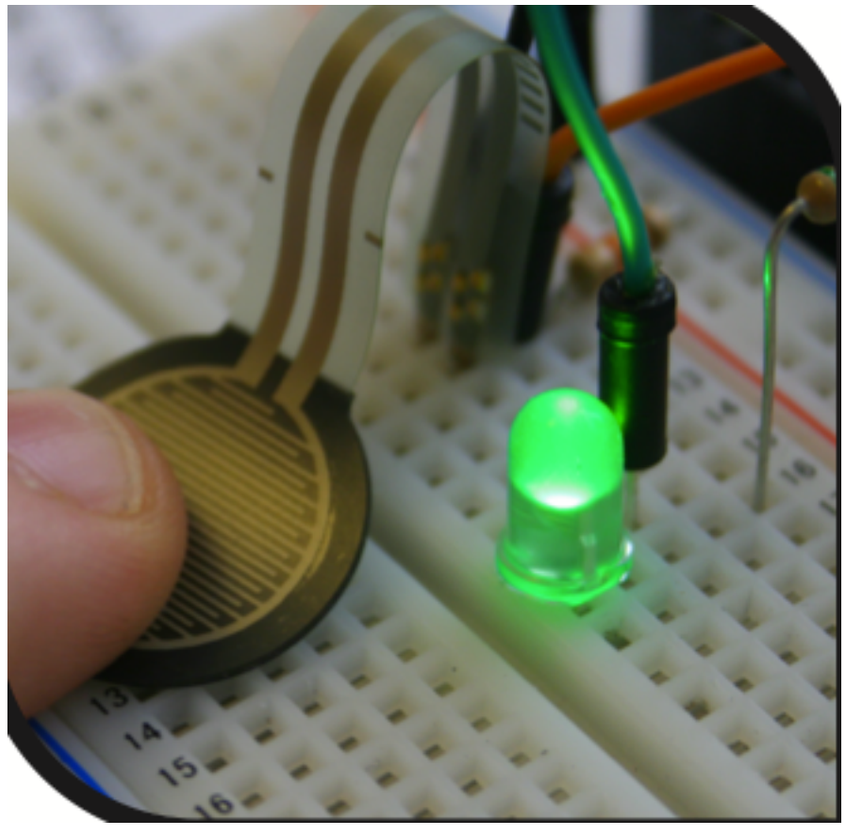


flex sensor
(bend, deflection)

also air pressure
and others

Squeezing





- Whenever you press the resistive sensor, a LED should turn ON.

Resistance vs. Pressure	
force	~FSR Resistance
0 g	infinite
20 g	30 k ohm
100 g	6 k ohm
1 kg	1 k ohm
10 kg	250 ohm

Twisting

- With the digital pins, the Arduino also has 6
  pins which can be used for analog input.

- These inputs take a voltage (from 0 to 5 volts) and convert
  it to a digital number between 0 (0 volts) and 1023 (5 volts).

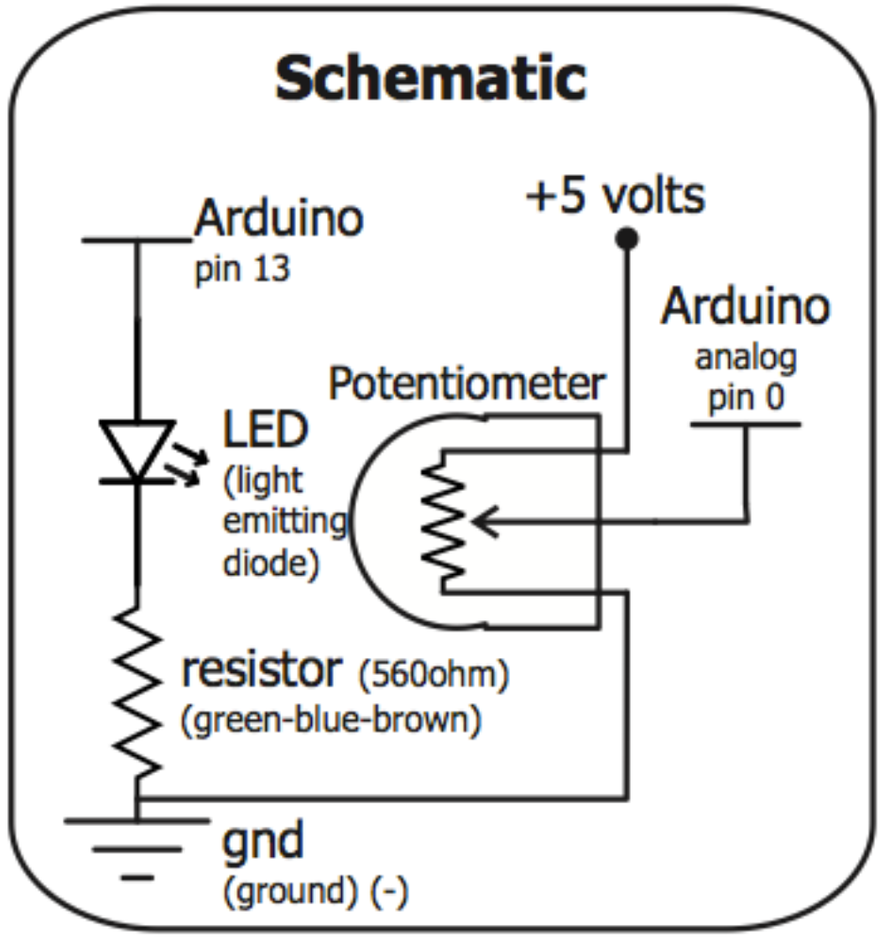
- Potentiometer: When it is connected with 5 volts across its outer pins the middle pin will read some value between 0 and 5 volts dependent on the angle to which it is turned.

Change the brightness

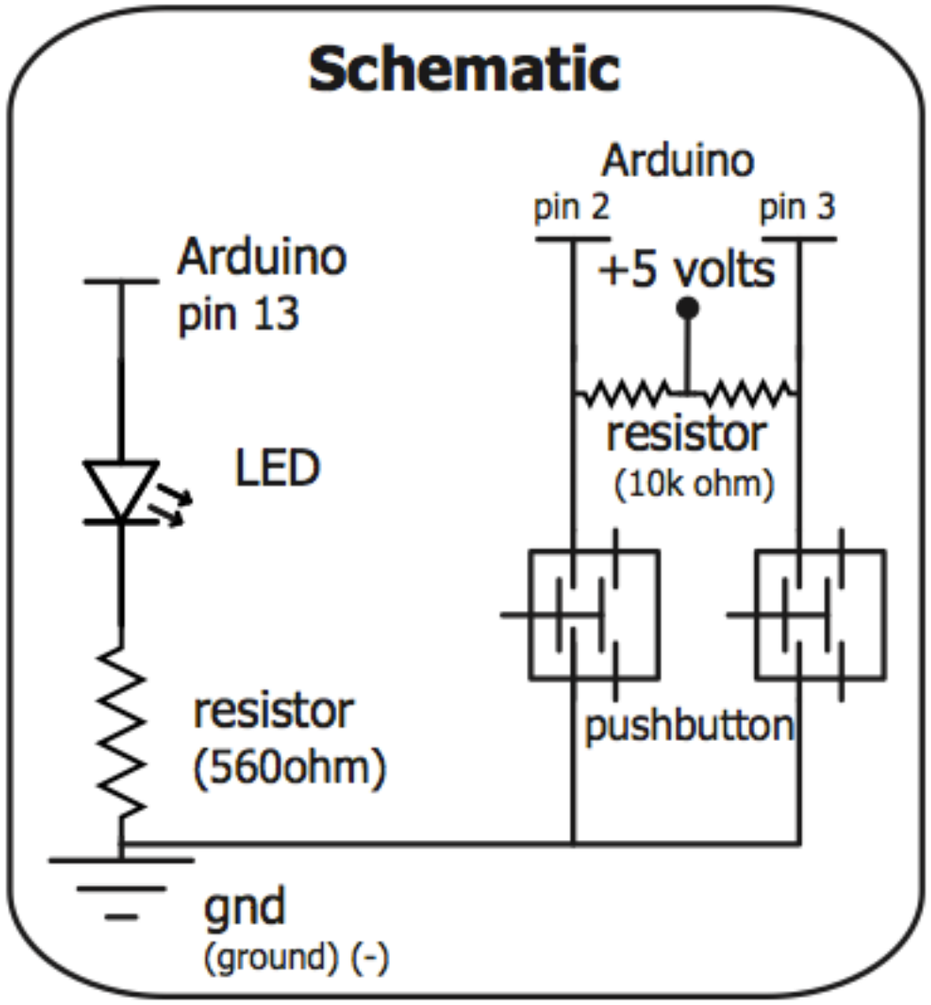
- With a potentiometer:

- Change the brightness of an LED.

- Change the blinking speed of an LED.



Button pressing



- With a button press... turn ON a LED.