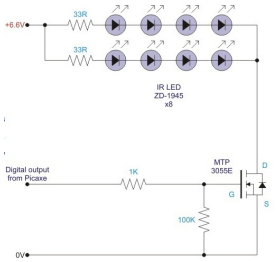
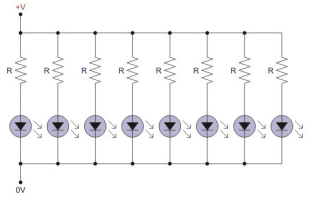
Fashioning Circuits
Oct 31

serial vs. parallel LEDs
tri-color LEDs
fade and forloopiteration

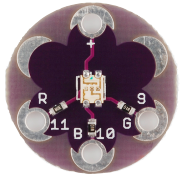
Serial vs. Parallel Wiring



Serial vs. Parallel Wiring

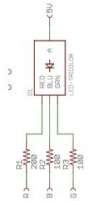


Tri-color LED



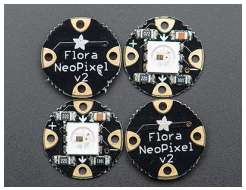
- Three colors - Red, Blue, Green
  - “color changing” = 1 LED with 3 petals.

Tri Color LEDs



Tri-Color LED

Sparkfun Pixelboard



Adafruit Smart NeoPixel

```
/*
 Sketch "FadeExternalLED"


int ledPin = 5;      // the pin that the LED is attached to
int brightness = 0;    // how bright the LED is
int fadeAmount = 5;    // how many points to fade the LED by

// the setup routine runs once when you press reset:
void setup()  {
  // declaring led pin to be an output is optional for analogWrite():
  pinMode(ledPin, OUTPUT);
}

// the loop routine runs over and over again forever:
void loop()  {
  // set the brightness of led pin:
  analogWrite(ledPin, brightness);

  // change the brightness for next time through the loop:
  brightness = brightness + fadeAmount;

  // reverse the direction of the fading at the ends of the fade:
  if (brightness == 0 || brightness == 255) {
    fadeAmount = -fadeAmount ;
  }
  // wait for 30 milliseconds to see the dimming effect
  delay(30);
}
```

```
 For Loop Iteration

 Demonstrates the use of a for() loop.
 Lights multiple LEDs in sequence, then in reverse.


int timer = 100;          // The higher the number, the slower the timing.

void setup() {
  // use a for loop to initialize each pin as an output:
  for (int thisPin = 2; thisPin < 8; thisPin++)  {
    pinMode(thisPin, OUTPUT);
  }
}

void loop() {
  // loop from the lowest pin to the highest:
  for (int thisPin = 2; thisPin < 8; thisPin++) {
    // turn the pin on:
    digitalWrite(thisPin, HIGH);
    delay(timer);
    // turn the pin off:
    digitalWrite(thisPin, LOW);
  }

  // loop from the highest pin to the lowest:
  for (int thisPin = 7; thisPin >= 2; thisPin--) {
    // turn the pin on:
    digitalWrite(thisPin, HIGH);
    delay(timer);
    // turn the pin off:
    digitalWrite(thisPin, LOW);
  }
}
```

Exercises

- Connect RGB LED to a button or switch
- Play with Fade with RGB