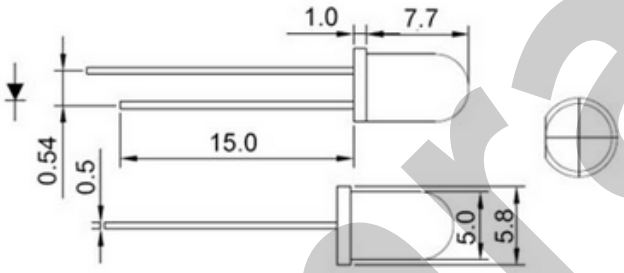
Fading

Overview

This example demonstrates the use of analog output (Pulse Width Modulation (PWM)) to fade an LED. PWM is a technique for getting an analog-like behavior from a digital output by switching it off and on very fast and with different ratio between on and off time.

Specification



Pin definition

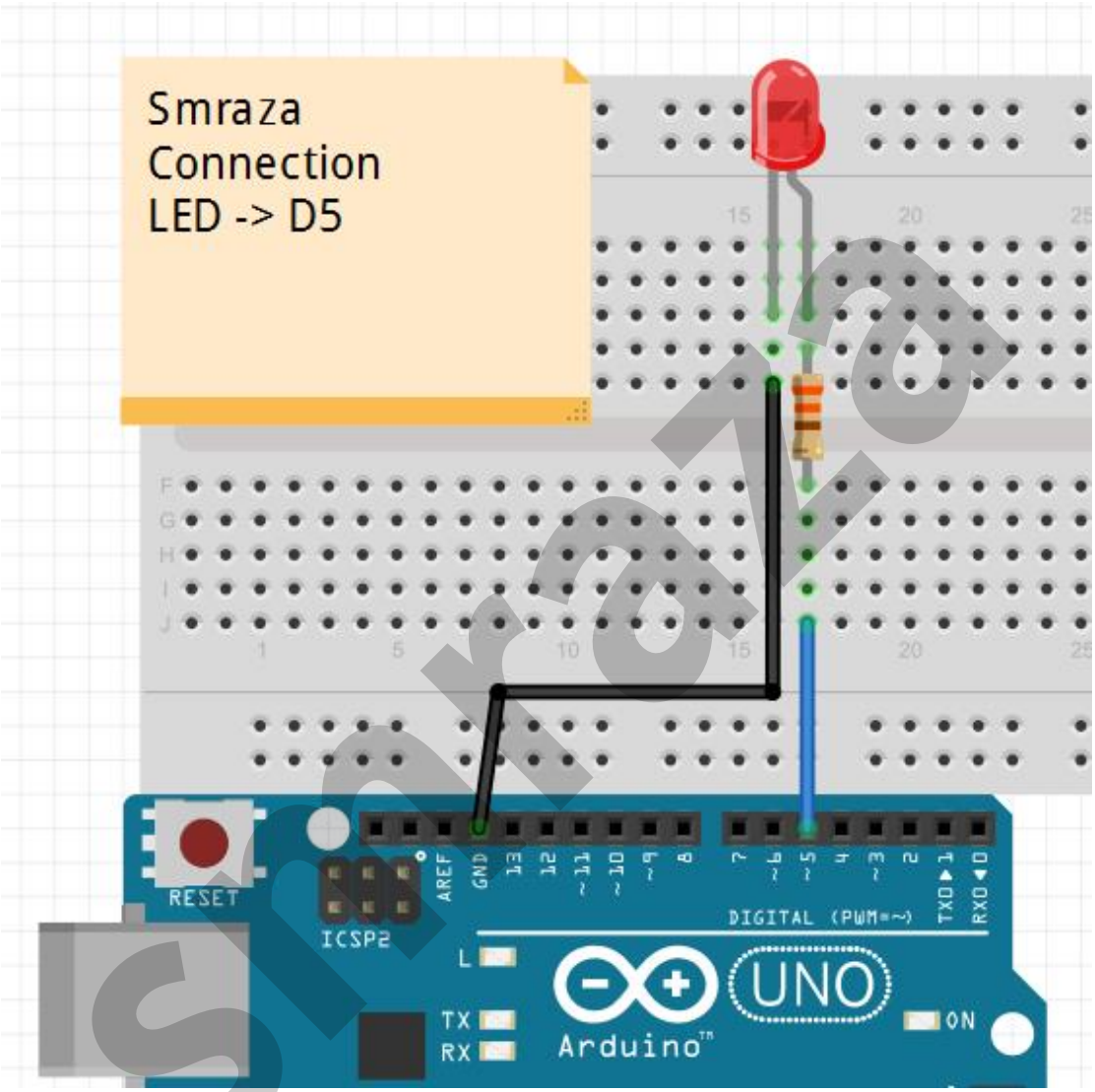
It is the definition of LED pin
Long pin -> + (VCC)
Short pin -> - (GND)

Hardware required

Material diagram	Material name	Number
	220/330Ω resistor	1
	LED	1
	USB Cable	1
	UNO R3	1
	Breadboard	1

	Jumper wires	Several

Connection diagram



Note：An LED connected to digital output pin 5 (D5) through a 220 ohm resistor.

Sample code

Note : sample code under the **Sample code** folder

```
int ledPin = 5;     // LED connected to digital pin 5

void setup() {
  // nothing happens in setup
}
```

```
void loop() {
  // fade in from min to max in increments of 5 points:
  for (int fadeValue = 0 ; fadeValue <= 255; fadeValue += 5) {
    // sets the value (range from 0 to 255):
    analogWrite(ledPin, fadeValue);
    // wait for 30 milliseconds to see the dimming effect
    delay(30);
  }

  // fade out from max to min in increments of 5 points:
  for (int fadeValue = 255 ; fadeValue >= 0; fadeValue -= 5) {
    // sets the value (range from 0 to 255):
    analogWrite(ledPin, fadeValue);
    // wait for 30 milliseconds to see the dimming effect
    delay(30);
  }
}
```

Language reference

Tips：click on the following name to jump to the web page.
If you fail to open, use the Adobe reader to open this document.
+= (add assign)
-= (subtract assign)
<= (less than or equal to)
>= (greater than or equal to)

Application effect

You'll see that LED has the effect of breathing light.