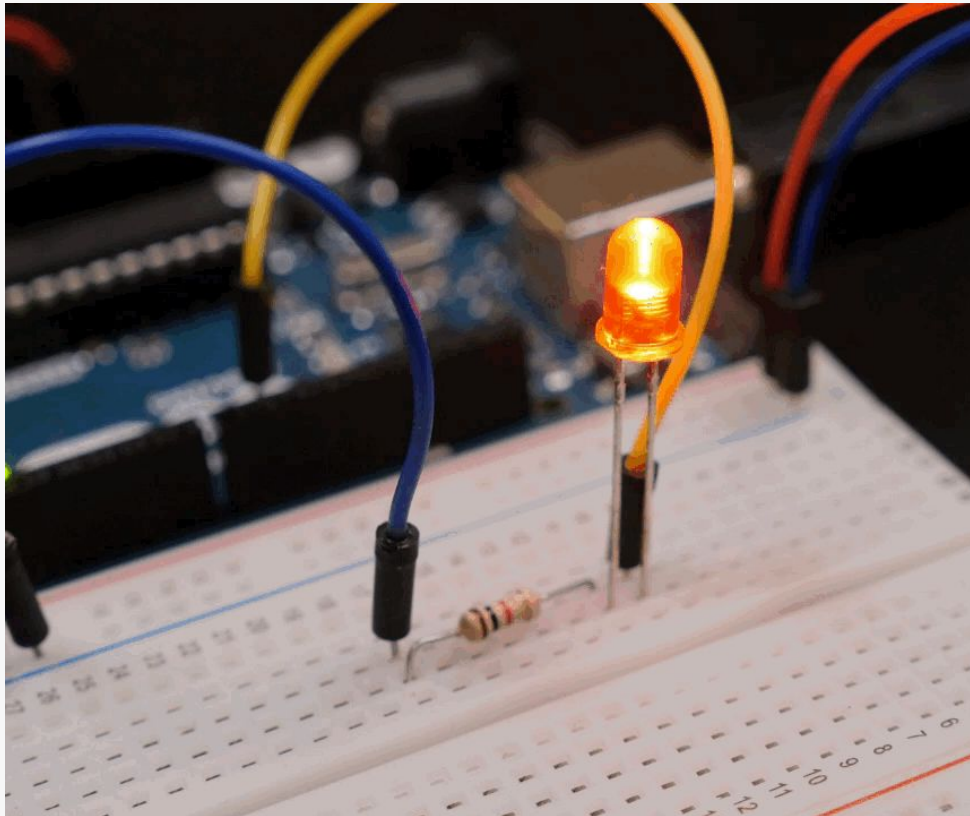


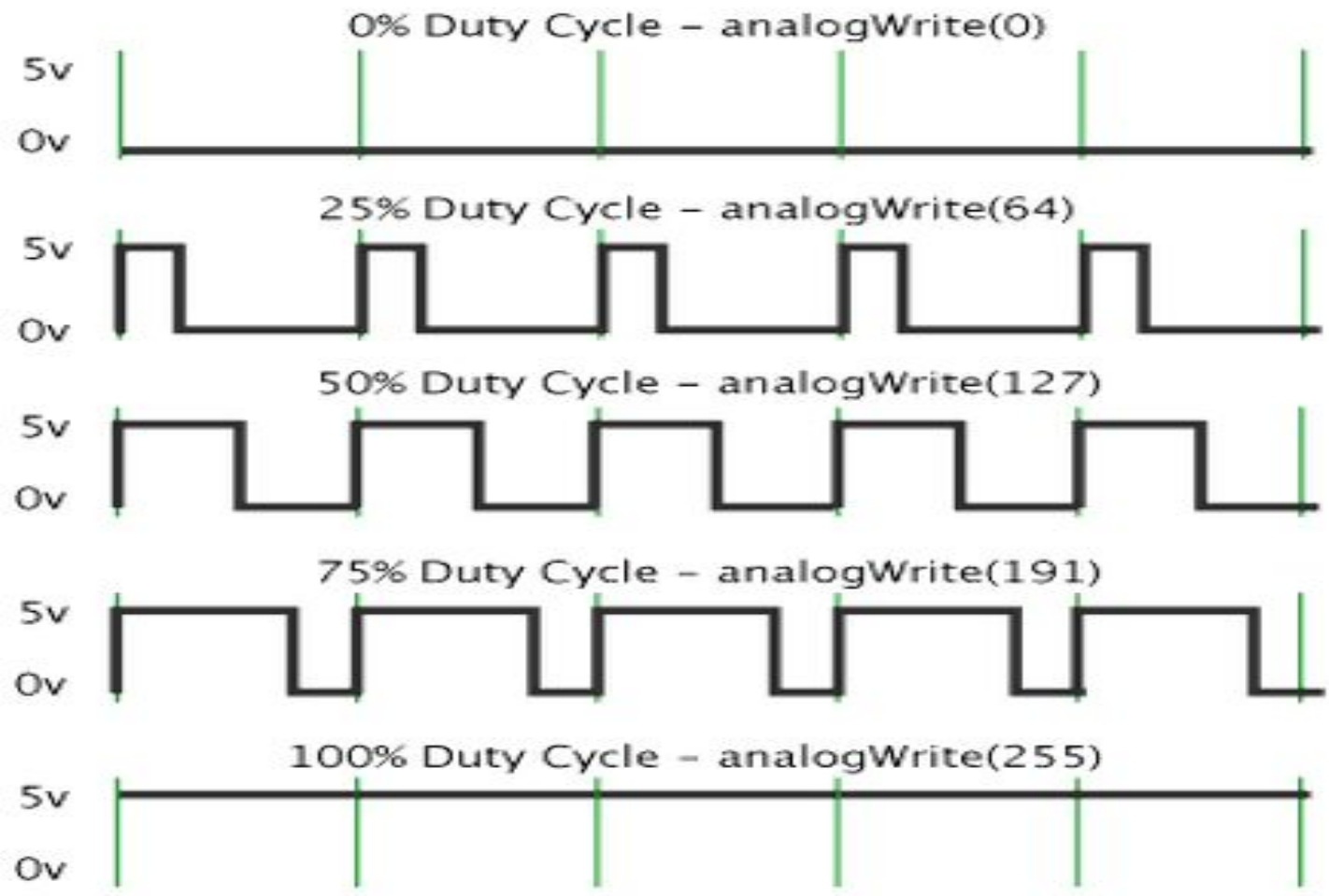
# LED Fading using PWM Pin



# Pulse Width Modulation

- Pulse Width Modulation, or PWM, is a technique for getting analog results with digital means.
- Digital control is used to create a square wave; the signal is switched between on and off.
- This on-off pattern can simulate voltages in between full on (5 Volts) and off (0 Volts) by changing the portion of the time the signal spends on versus the time that the signal spends off.
- The duration of "on time" is called the **pulse width**.
- To get varying analog values, you change, or modulate, that pulse width.

## Pulse Width Modulation



# Function used in PWM

## Syntax:

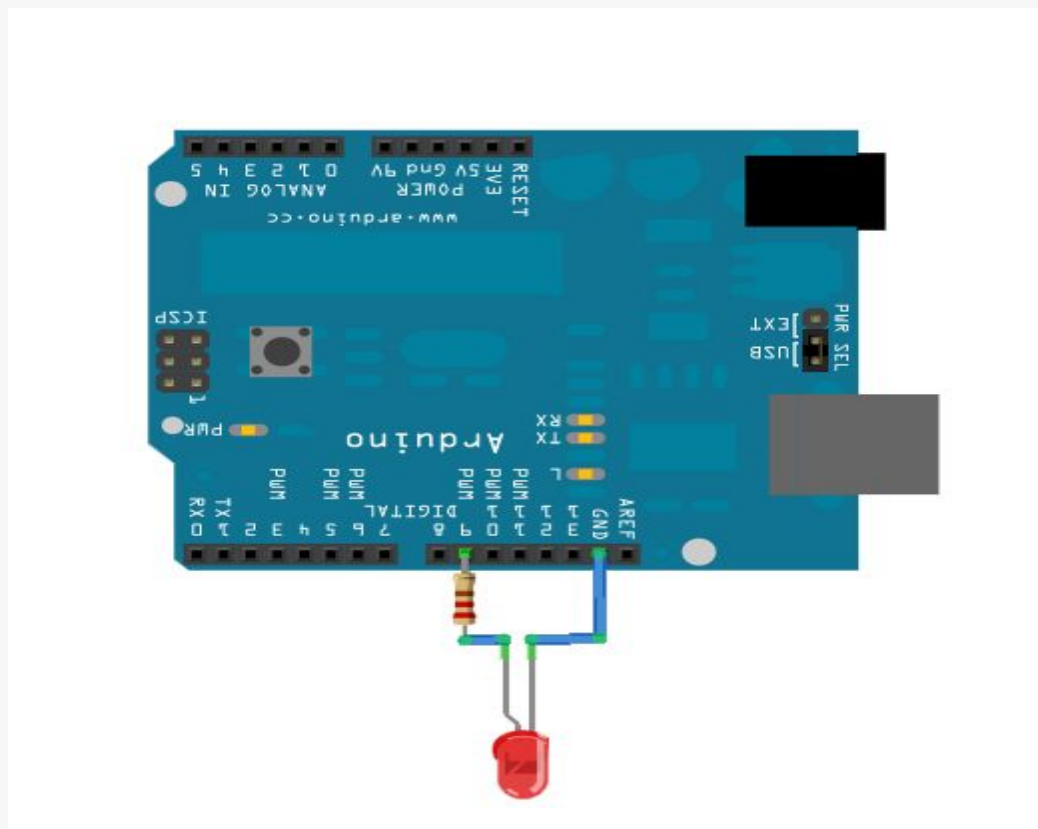
**analogWrite(pin, value);** – Once a pin is set to output it can be given any analog value between 0 to 255.

## Parameters:

pin: the pin to write to.

value: the duty cycle: between 0 (always off) and 255 (always on).

# Connection Diagram





## Example:

```
int ledPin = 9; // LED connected to digital pin 9
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):
```

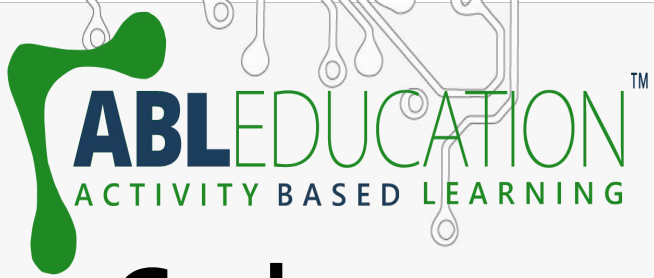
```
    analogWrite(ledPin, fadeValue);
```

```
    // wait for 30 milliseconds to see the dimming effect
```

```
    delay(30);
```

```
}
```

```
}
```



# Code

LED\_fading\_using\_PWM\_pin | Arduino 1.8.19

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LED\_fading\_using\_PWM\_pin

<http://www.arduino.cc/en/tutorial/fading>

```
*/  
  
int ledPin = 9;    // LED connected to digital pin 9  
  
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(50);  
  }  
  
  // 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(50);  
  }  
}
```



**Project Link : <https://youtu.be/ZJKMS02SXyg>**