Programming For Engineers

Controlling a Light Emitting Diode (LED) Using Arduino UNO

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Chapter's Information

- Purpose
  - The purpose of this writing is to guide students to control a LED using ADUINO UNO.

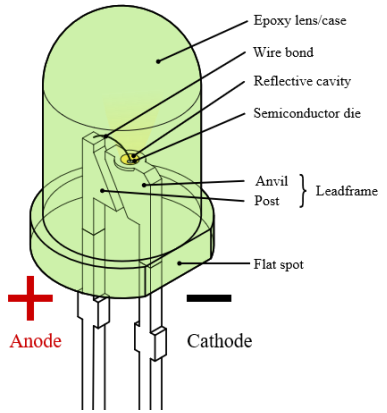
- Required materials

  We require the following materials in order to perform this project:

  a) ARDUINO UNO board
  b) ARDUINO USB to PC cable
  c) A LED
  d) Prototype breadboard
  e) Necessary jumper cable

Project Background

- Below are the pin description of the LED.



https://upload.wikimedia.org/wikipedia/commons/f/f9/LED%2C_5mm%2C_green_%28en%29.svg

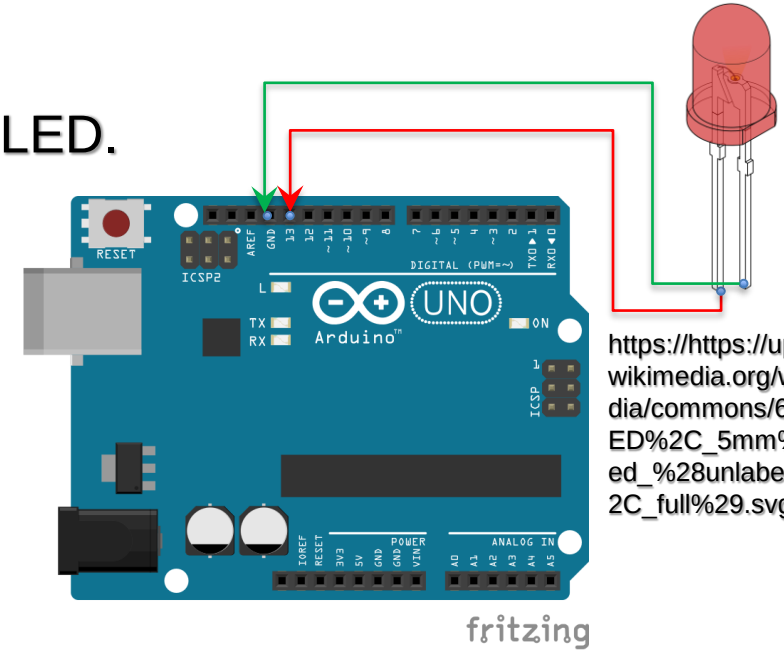
- Here are what the pins are for:
  a. Pin anode is with long lead. This pin is the voltage output. We connect this pin to ARDUINO digital.
  b. Pin cathode is with short lead and flat side. This pin is a ground pin.

Step-by-step Actions

(1) Create Electrical Connection. Here, we use Digital Pin 13 to send the output signal.

(2) We write program to turn on-off LED.

```
int pinLED = 13;
void setup() {
     pinMode(pinLED,OUTPUT);
     Serial.begin(9600);
}
void loop() {
     digitalWrite(pinLED,HIGH);
     delay(1000);
     digitalWrite(pinLED,LOW);
     delay(1000); }
```



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(3) Upload the code to ARDUINO program.

Exploration

- Why don’t we perform the followings?
  i. Make the LED blinking slower/faster.
  ii. Use more LED. Make both LED blinking but in different timing delay. For example, one LED is on, and other LED is off. This process working continuously.

Reflections

- We have learn how to:
  - Program and download program using ARDUINO UNO.
  - Use digital pin to read logic status.
  - Use LED.
  - Program the ARDUINO to make LED blinking.