International Centre for Free and Open Source Software

# Arduino Uno LED Array Patterns

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# 1 INTRODUCTION

This project explores the use of an Arduino Uno board to control an array of 8 LEDs, each connected to individual pins for the positive terminal and sharing a common ground. The LEDs are arranged in a linear fashion, with each LED's ground connected through a 330 Ohm resistor to a common ground pin.

# 2 COMPONENTS USED

## 2.1 Hardware Components:

### 2.1.1 Arduino Uno:

- Includes 14 digital pins and 6 analog pins.
- Operates at a voltage of 5V.
- Microcontroller: ATmega328P
- Uses the ATmega328P microcontroller.
- Runs at a clock speed of 16MHz.

### 2.1.2 Array of 8 LEDs:

- Consists of 8 Light Emitting Diodes (LEDs) arranged in parallel configuration.
- Each LED connected to a common ground.
- Each LED connected in parallel with a 330 Ohm resistor to limit current flow.
- Provides visual indication, lighting, and display capabilities.

## 2.2 Software Components:

### 2.2.1 Arduino IDE:

- Integrated Development Environment (IDE) for Arduino boards.
- Provides a user-friendly interface for writing, compiling, and uploading code to the Arduino Uno.
- Offers a wide range of built-in functions and libraries for interfacing with hardware components.

# 3 HARDWARE CONNECTIONS SETUP

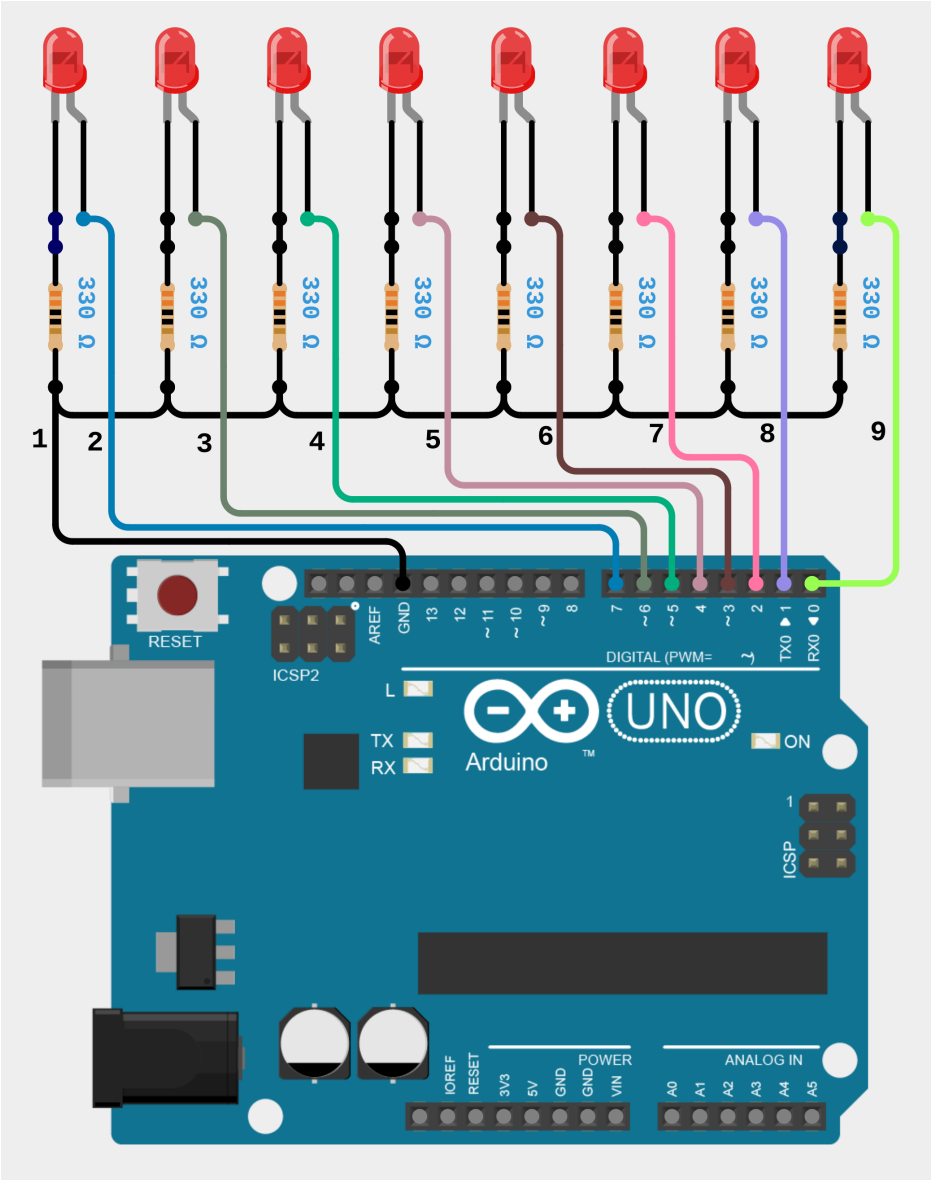


Figure 2: Hardware Connections Setup Circuit Diagram

1. Connect the common ground of the LED array to the ground (GND) pin of the Arduino Uno.
2. Connect the positive (+) terminal of LED 1 to digital pin 7 of the Arduino Uno.
3. Connect the positive (+) terminal of LED 2 to digital pin 6 of the Arduino Uno.
4. Connect the positive (+) terminal of LED 3 to digital pin 5 of the Arduino Uno.
5. Connect the positive (+) terminal of LED 4 to digital pin 4 of the Arduino Uno.
6. Connect the positive (+) terminal of LED 5 to digital pin 3 of the Arduino Uno.
7. Connect the positive (+) terminal of LED 6 to digital pin 2 of the Arduino Uno.
8. Connect the positive (+) terminal of LED 7 to digital pin 1 of the Arduino Uno.
9. Connect the positive (+) terminal of LED 8 to digital pin 0 of the Arduino Uno.

# 4 RESULT

The LED array operates effectively, enabling individual control of 8 LEDs via an Arduino Uno. Each LED is linked to a distinct pin on the Arduino, facilitating diverse light patterns and displays. This setup is ideal for applications requiring status indicators etc.