

LED Blink using Arduino UNO

Circuit Documentation

Summary:

This circuit is designed to control a red two-pin LED using an Arduino UNO microcontroller. The LED is connected to the digital pin D13 of the Arduino UNO through a current-limiting resistor. The purpose of the circuit is to demonstrate the basic digital output functionality of the Arduino by blinking the LED on and off at one-second intervals.

Component List:

Arduino UNO

- **Description:** A microcontroller board based on the ATmega328P.
- **Purpose:** Acts as the control unit for the LED blinker circuit.
- **Pins Used:** UNUSED, IOREF, Reset, 3.3V, 5V, GND, Vin, A0-A5, SCL, SDA, AREF, D0-D13.

LED: Two Pin (red)

- **Description:** A basic red light-emitting diode.
- **Purpose:** Emits light when powered.
- **Pins:** cathode (negative), anode (positive).

Resistor

- **Description:** A passive two-terminal electrical component that implements electrical resistance as a circuit element.
- **Purpose:** Limits the current flowing through the LED to prevent damage.
- **Pins:** pin1, pin2.
- **Properties:** Resistance value of 220 Ohms.

Wiring Details:

Arduino UNO

- **D13:** Connected to pin2 of the Resistor.
- **GND:** Connected to the cathode of the LED.

LED: Two Pin (red)

- **Anode:** Connected to pin1 of the Resistor.
- **Cathode:** Connected to GND on the Arduino UNO.

Resistor

- **Pin1:** Connected to the anode of the LED.
- **Pin2:** Connected to D13 on the Arduino UNO.

Documented Code:

```
// Define the LED pin
const int ledPin = 13;

// the setup function runs once when you press reset or power the
board
void setup() {
    // initialize digital pin ledPin as an output.
    pinMode(ledPin, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
    digitalWrite(ledPin, HIGH);    // turn the LED on (HIGH is the
voltage level)
    delay(1000);                  // wait for a second
    digitalWrite(ledPin, LOW);    // turn the LED off by making the
voltage LOW
    delay(1000);                  // wait for a second
}
```

The code provided is a simple Arduino sketch written in C++ for the Arduino IDE. It defines the LED pin as pin 13 (D13) on the Arduino UNO. In the setup() function, this pin is set as an output. The loop() function then repeatedly turns the LED on and off, with a one-second delay between each state change. This results in the LED blinking at a regular interval of one second on and one second off.