SANJEET KUMAR

LED BLINKING CIRCUIT

INTRODUCTION

The LED blinking circuit is one of the most basic and essential experiments in electronics. It involves connecting an LED (Light Emitting Diode) to a power source in such a way that it turns ON and OFF at regular intervals. This project helps beginners understand the working of:LEDsResistorsBasic wiring on a breadboard Programming digital outputs (using Arduino or microcontrollers)

COMPONENTS

6 LED

1 Breadboard

1 Arduino uno

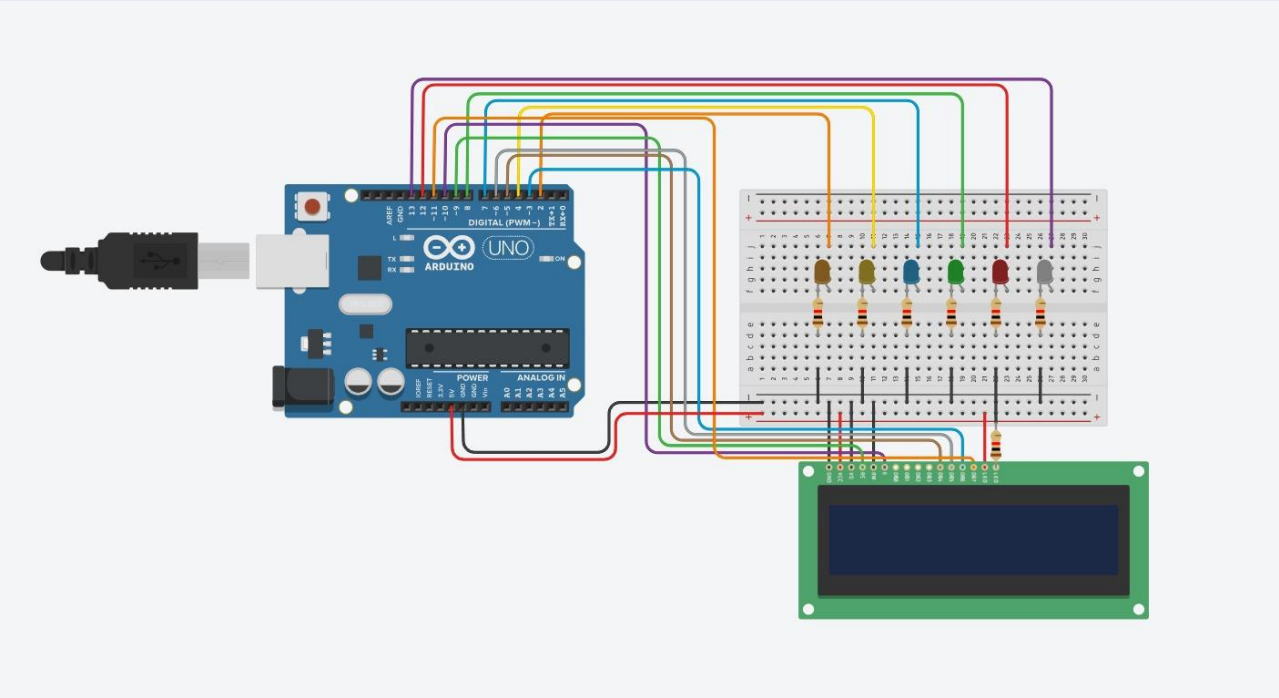
LCD Display 2x16

6 resistor

Jumper Wires

USB Cable/ 5v power supply

CIRCUIT DIAGRAM



WORKING PRINCIPAL

LED emits light when forward biased

Current Flow from 5v → Resistor→ LED → GND

Resistor limits the current to protect the LED

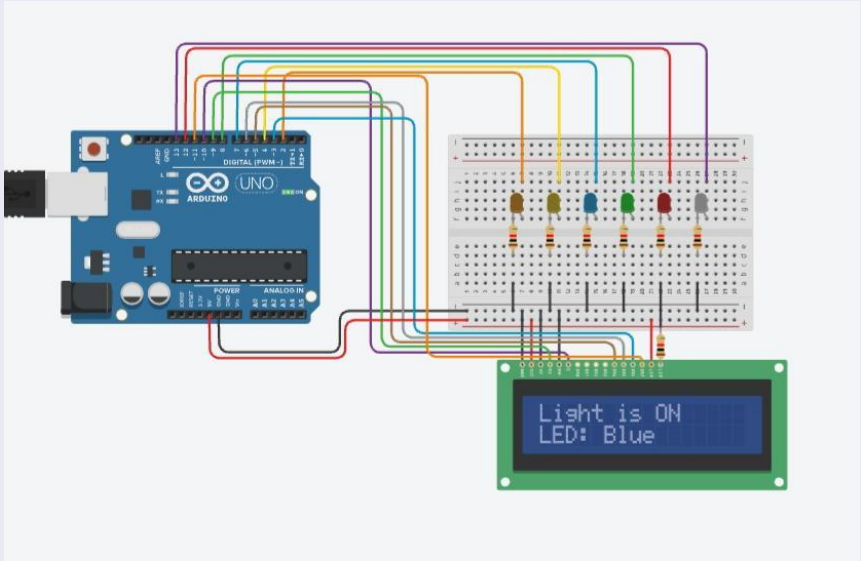
CODE

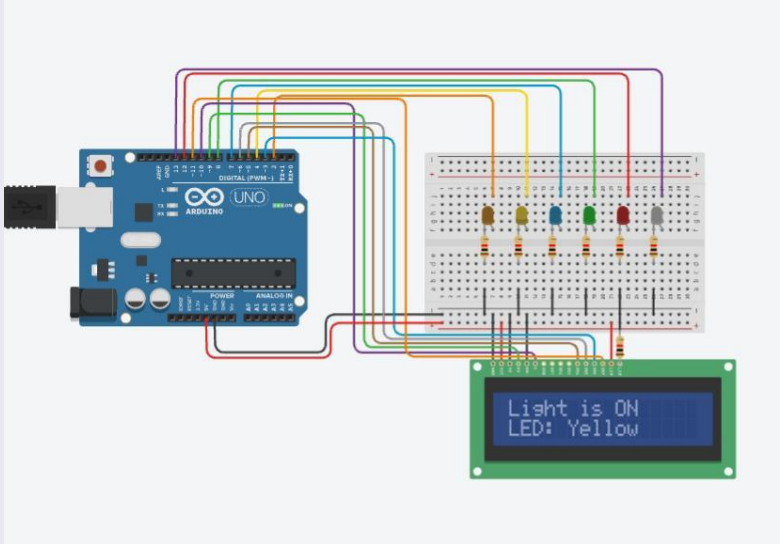
```
#include <LiquidCrystal.h>
int wait = 500;       // Initialize the LCD library with the
pinsLiquidCrystal lcd(9, 10, 5, 6, 3, 11);  // RS, EN, D4, D5, D6, D7
void setup(){
lcd.begin(16, 2); // initialize the LCD as 16x2
lcd.clear();
pinMode(13, OUTPUT);
pinMode(12, OUTPUT);
pinMode(8, OUTPUT);
pinMode(7, OUTPUT);
pinMode(4, OUTPUT);
pinMode(2, OUTPUT);
}
```

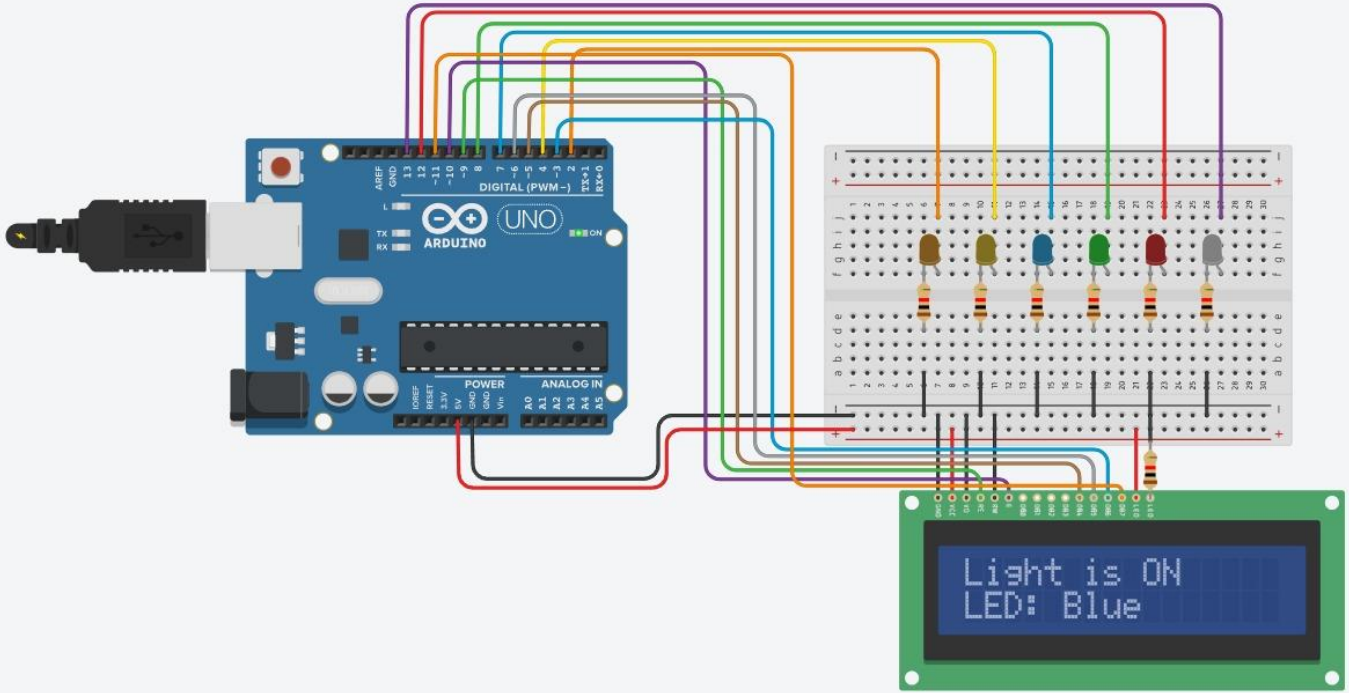
```
Void displayMessage(String ledColor) {
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Light is ON");
lcd.setCursor(0, 1);
Lcd.print("LED: " + ledColor);
}

void loop(){
digitalWrite(13, HIGH);
displayMessage("White");
delay(wait);
digitalWrite(13, LOW);
delay(wait);
digitalWrite(12, HIGH);
displayMessage("Red");
delay(wait);
digitalWrite(12, LOW);
delay(wait);
digitalWrite(8, HIGH);
displayMessage("Green");
delay(wait);
digitalWrite(8, LOW);
delay(wait);
digitalWrite(7, HIGH);
displayMessage("Blue");
delay(wait);
digitalWrite(7, LOW);
delay(wait);
digitalWrite(4, HIGH);
displayMessage("Yellow");
delay(wait);
digitalWrite(4, LOW);
delay(wait);
digitalWrite(2, HIGH);
displayMessage("Orange");
delay(wait);
digitalWrite(2, LOW);
delay(wait);}
```

OUTPUT






DIGITAL (PWM~)
UNO
ARDUINO
POWER
ANALOG IN
Light is ON
LED: Blue

APPLICATION

1. Power Indicator
Shows whether a device is ON or OFF.
2. Status Indicator
Used in routers, chargers, TVs, and machines to indicate system status.
3. Emergency Warning System
Flashing LEDs are used in alarms, sirens, and emergency lights.
4. Traffic Signal Simulation
Used in traffic light models for educational or prototype purposes.
5. Testing and Debugging
Helps test if microcontroller pins or circuits are working properly.

CONCLUSION

LED blinking circuit is a basic yet powerful project to understand the fundamentals of electronics and microcontroller programming. It demonstrates how to control multiple outputs using a microcontroller like Arduino. This project enhances knowledge of:

Circuit designing

LED and resistor usage

Digital output control using code

Timing functions (like delay())

THANK YOU