🔧 Project Description:

This project demonstrates how to control an **RGB LED** using an **Arduino Uno**. The RGB LED is programmed to display **various colors** by changing the intensity of its red, green, and blue components using **PWM (Pulse Width Modulation)** signals.

We use the **TinkerCAD simulation** environment to virtually build and test the circuit.

📋 Components Used:

- 1 × **Arduino Uno**
- 1 × **Common Cathode RGB LED**
- 3 × **220Ω Resistors** (one for each color pin: Red, Green, Blue)
- Jumper wires
- TinkerCAD (online simulation platform)

🔌 Circuit Connections:

- **Red pin** of RGB LED → Arduino **Pin 9** via 220Ω resistor
- **Green pin** of RGB LED → Arduino **Pin 10** via 220Ω resistor
- **Blue pin** of RGB LED → Arduino **Pin 11** via 220Ω resistor
- **Cathode (common ground)** → Arduino **GND**

💡 How It Works:

By changing the values of PWM signals sent to each color pin (Red, Green, Blue), we can mix these basic colors to produce **a wide range of shades**. The brightness of each color component (0–255) determines the final color output.