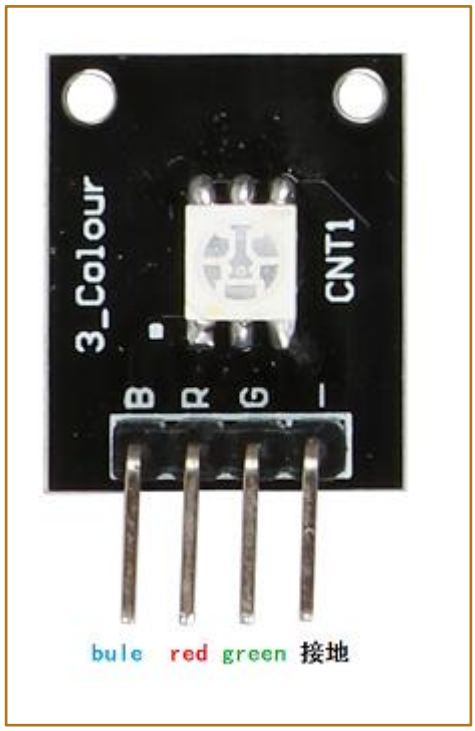
RGB patch module experiment

Introduction to RGB LED module

In this lesson, you will use PWM to control an RGB LED and make it display different colors.



Component List

- Keywish Arduino UNO R3 Mainboard
- Breadboard
- USB cable
- RGB LED*1
- Resistor (220Ω) *3
- Some wires

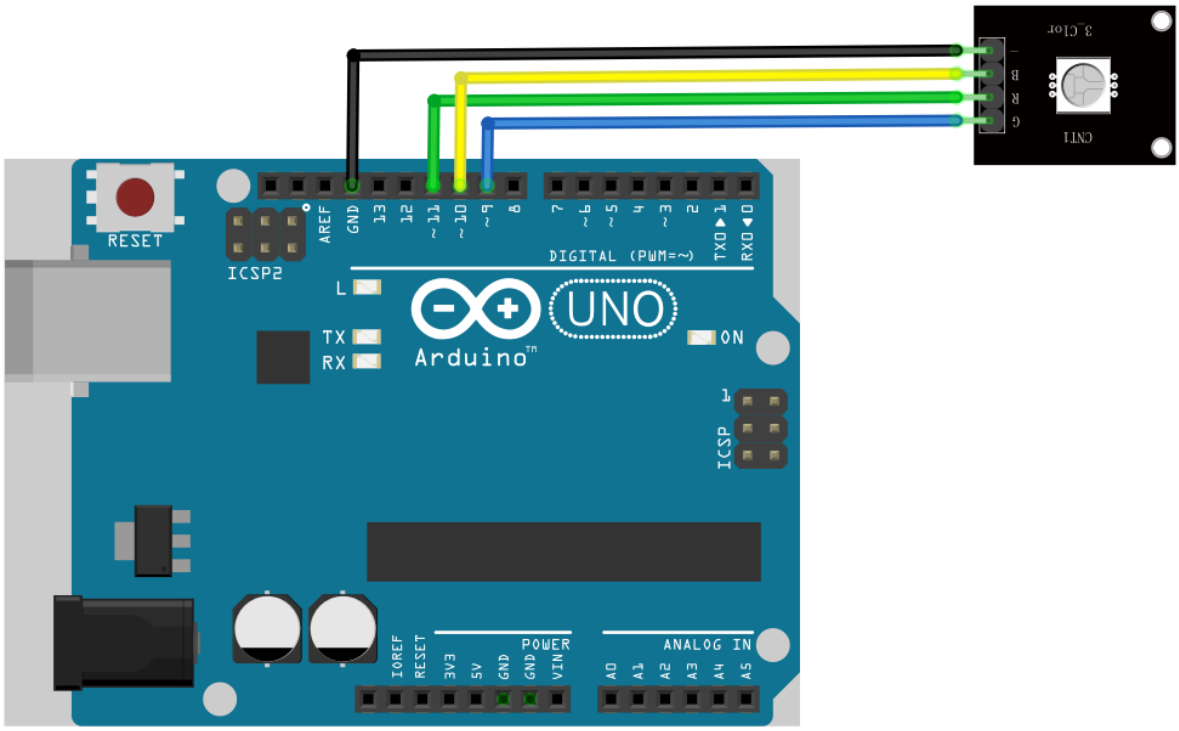
Experimental Principle

Each of the three color channels of red, green, and blue has 255 stages of brightness.When the three primary colors are all 0, "LED light" is the darkest, that is, it turns off. When the three primary colors are all 255, "LED light" is the brightest. When superimposing the lights emitted by the three primary colors, the colors will be mixed. However, the brightnessis equal to the sum of all brightness, and the more you mix, the brighter the LED is. This process is known as additive mixing.

In this experiment, we will also use PWM, if you've followed the lessons sofar,you,for sure, you already have a basic understanding. Here we input a value between 0 and 255to the three pins of the RGB LED to make it display different colors.

Wiring of Circuit

Arduino Uno	RGB
11	R
10	G
9	B
GND	-



Code

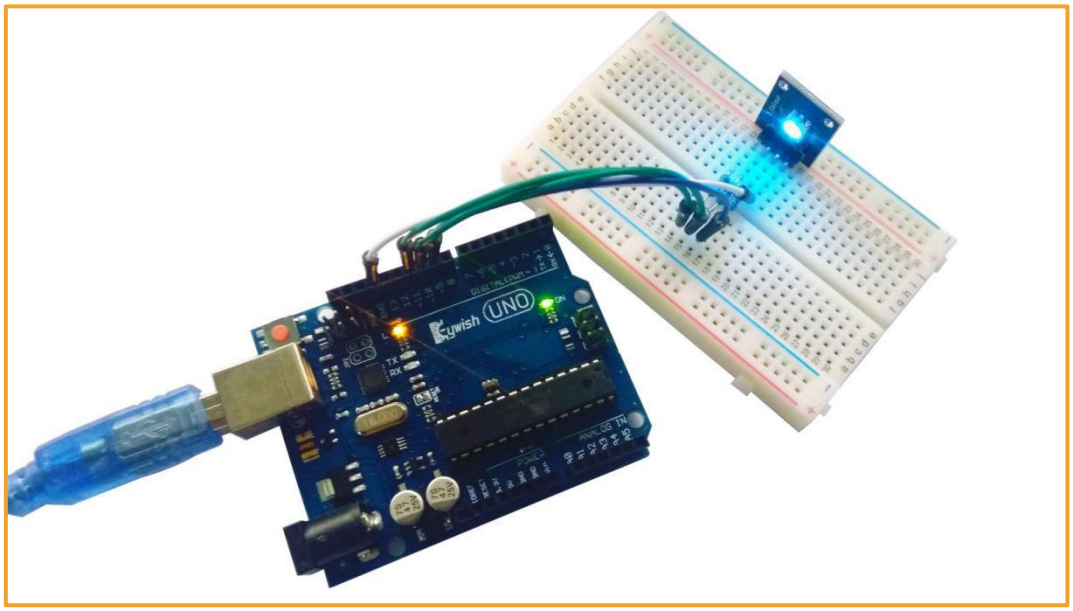
```
#define RGB_RED    11
#define RGB_GREEN  10
#define RGB_BLUE   9

void setup()
{
    pinMode(RGB_RED,OUTPUT);
    pinMode(RGB_GREEN,OUTPUT);
    pinMode(RGB_BLUE,OUTPUT);
}

void setColor(int red,int green,int blue)
{
    analogWrite(RGB_RED,red);
    analogWrite(RGB_GREEN,green);
    analogWrite(RGB_BLUE,blue);
}
void loop()
{
    int i;
    for(i=0,i<256;i++)
    {
        setColor(i,0,0);
        delay(4);
    }
    delay(500);          //turn the RGB LED red smoth
    for(i=0;i<256;i++)
    {
    setColor(0,i,0);
        delay(4);
    }
    delay(500);          //turn the RGB LED green smoth
    for(i=0,i<256;i++)
    {
```

Experiment Result

Here you should see the RGB LED flashes circularly, blue first, then red, green.


UNO

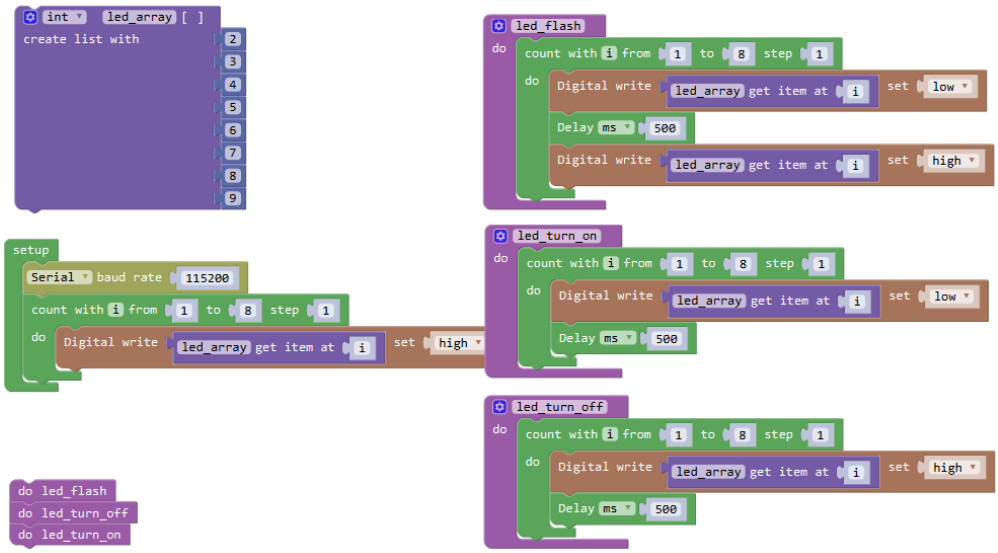
Mblock graphical programming program

MagicBlock graphical programming program

MagicBlock writes the RGB patch module program as shown in the following figure :

Mixly graphical programming program

Mixly writes the breathing lamp program as shown in the following figures :


int led_array [ ]
create list with
2
3
4
5
6
7
8
9
setup
Serial baud rate 115200
count with i from 1 to 8 step 1
do
Digital write led_array get item at i set high
led_flash
do
count with i from 1 to 8 step 1
do
Digital write led_array get item at i set low
Delay ms 500
Digital write led_array get item at i set high
led_turn_on
do
count with i from 1 to 8 step 1
do
Digital write led_array get item at i set low
Delay ms 500
led_turn_off
do
count with i from 1 to 8 step 1
do
Digital write led_array get item at i set high
Delay ms 500
do led_flash
do led_turn_off
do led_turn_on