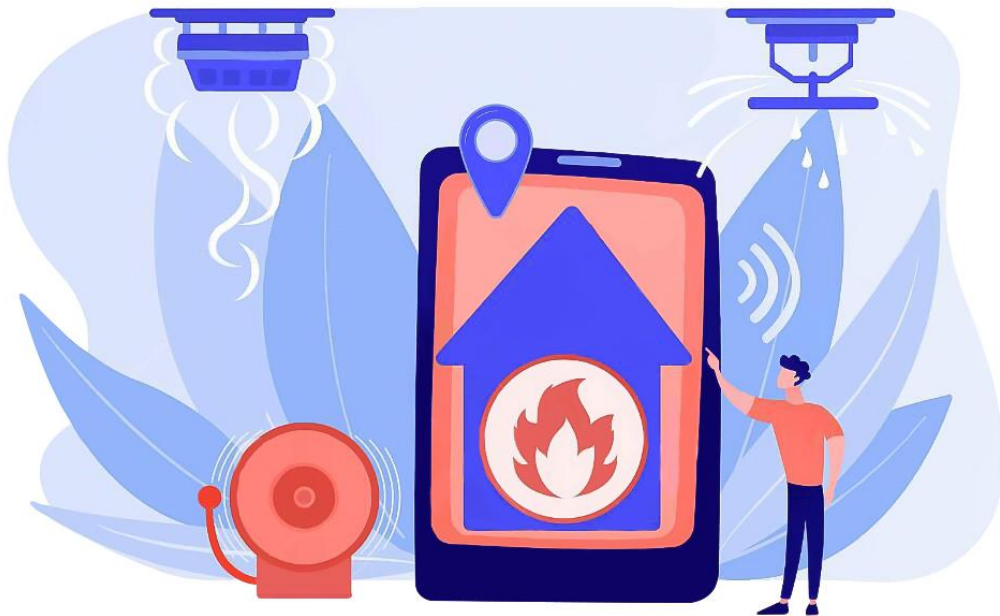


## Project 21: Flame Alarm

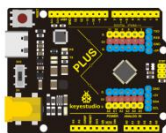


### 1. Project Introduction

Fire is one of the terrible disasters, and Fire Alarm Systems are very useful in houses, commercial building, and factories

In this project, we will use the flame sensor and buzzer to make a fire alarm device. This is a meaningful maker activity.

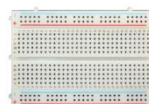
### 2. Project Hardware



Plus  
Development



Plus Board  
Holder



400-Hole  
Breadboard



USB Cable\*1

Board\*1



Flame Sensor



Buzzer \*1



10K $\Omega$



Jumper Wire\*7

\*1

Resistor\*1



Fire Alarm

Paper Card\*1

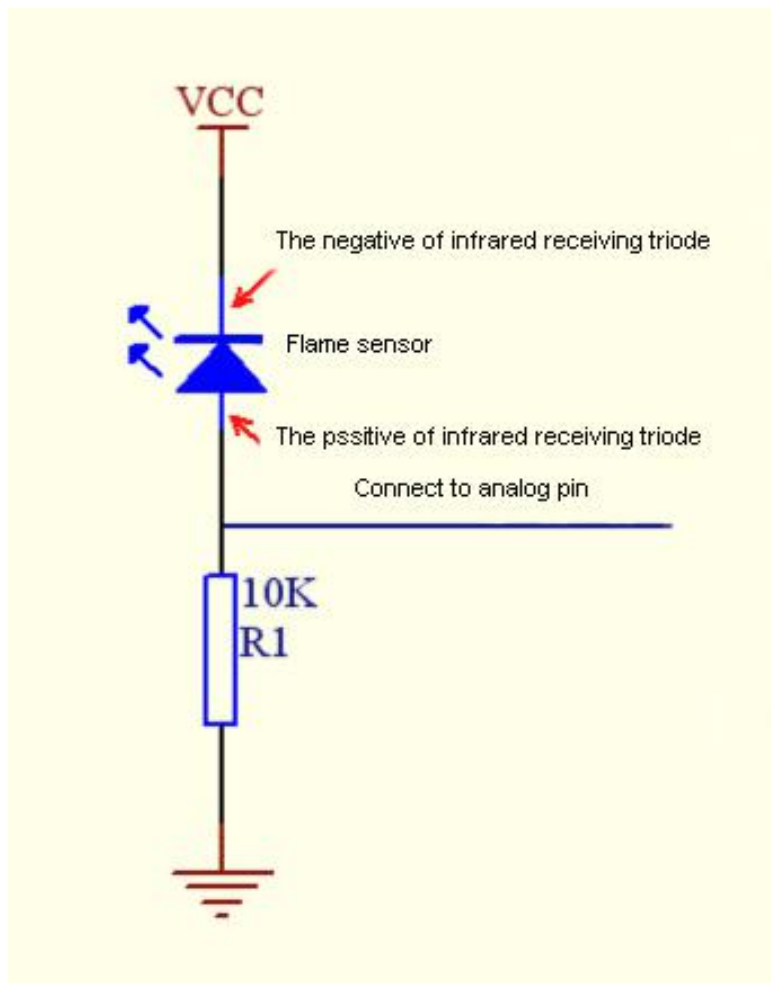
### 3.Little Knowledge



The flame will emit some level of IR light, this light is not visible to human eyes but our flame sensor can detect it and alert a

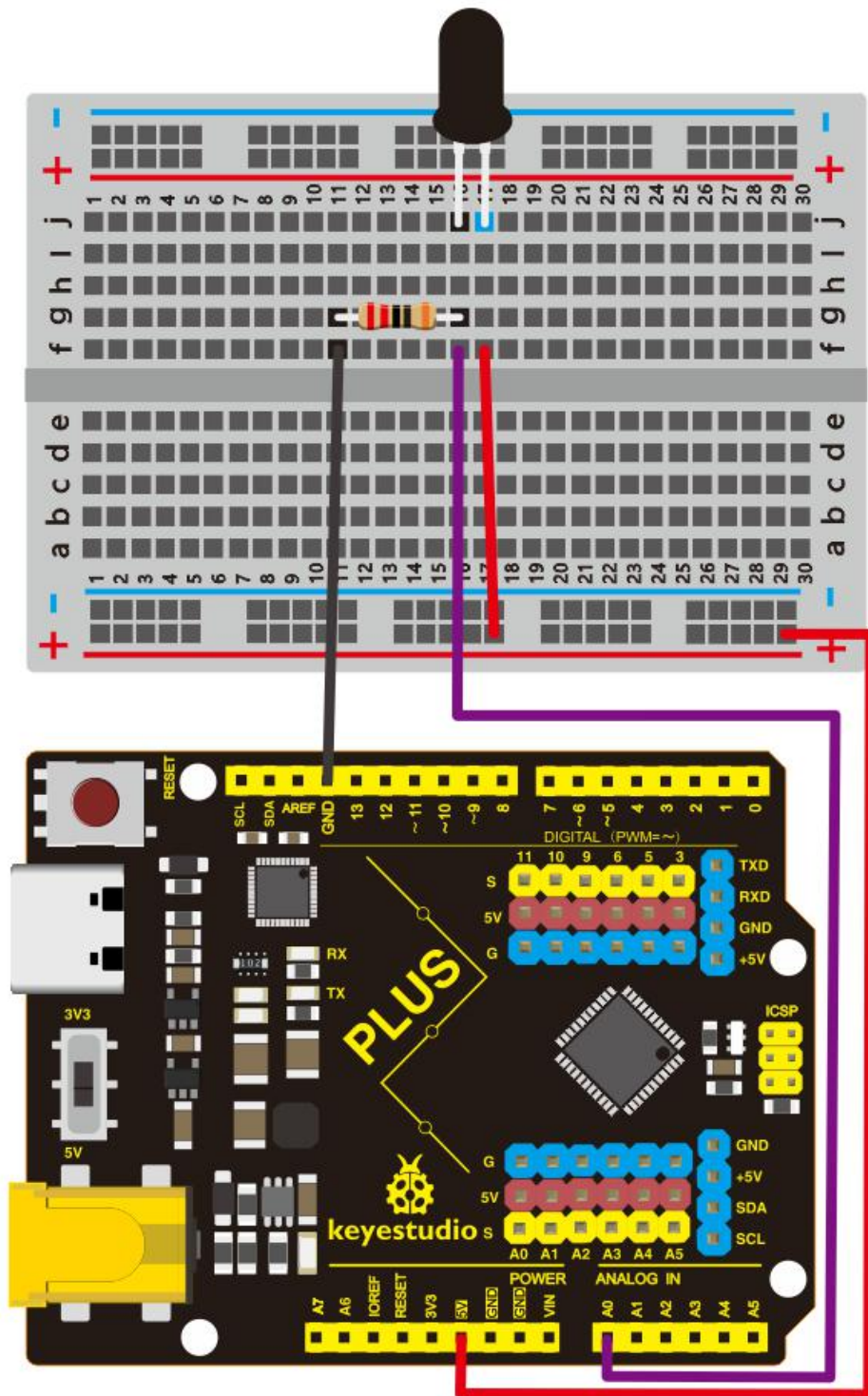
microcontroller like Arduino that a fire has been detected. It has an infrared receiving tube specially designed to detect fire, and then to convert the flame brightness into fluctuating level signal.

The shorter lead of the receiving triode is negative, the other one is positive. We should connect negative to 5V pin, connect positive to an analog pin, a resistor, and GND. As shown below



#### 4.Read Flame Sensor Value

We first use a simple code to read the value of the flame sensor, print it in the serial monitor.



Project code

/\*

keyestudio STEM Starter Kit

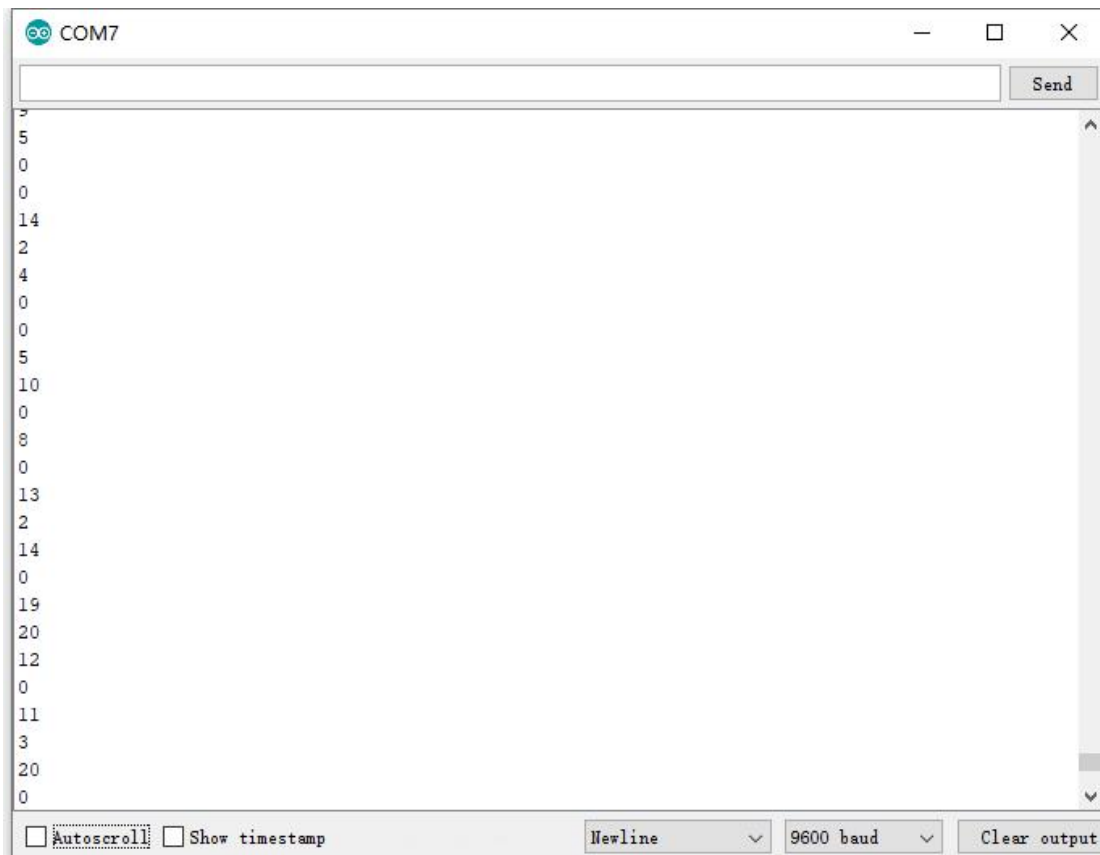
## Project 21.1

### Read Flame Sensor Value

<http://www.keyestudio.com>

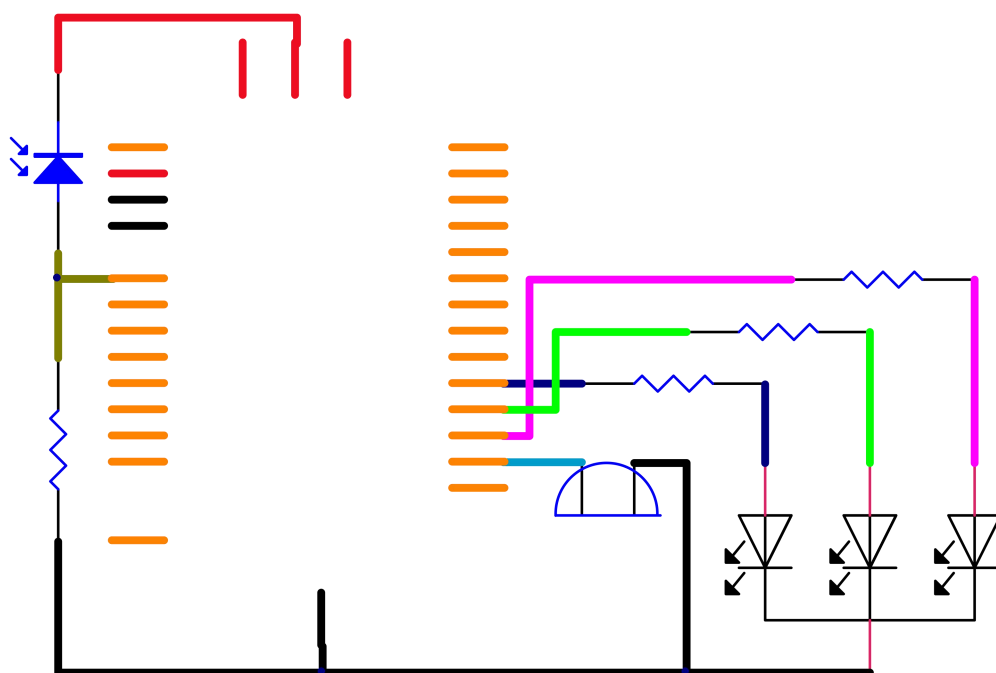
```
*/  
  
int flamepin=0;// initialize analog pin 0  
  
int val=0;// define val, assign initial value 0  
  
void setup()  
{  
  Serial.begin(9600);// set baud rate at 9600  
}  
  
void loop()  
{  
  val=analogRead(flamepin);// read the analog value of analog pin 0,  
  and assign it to val  
  Serial.println(val);// display val's value  
}  
  
////////////////////////////////////
```

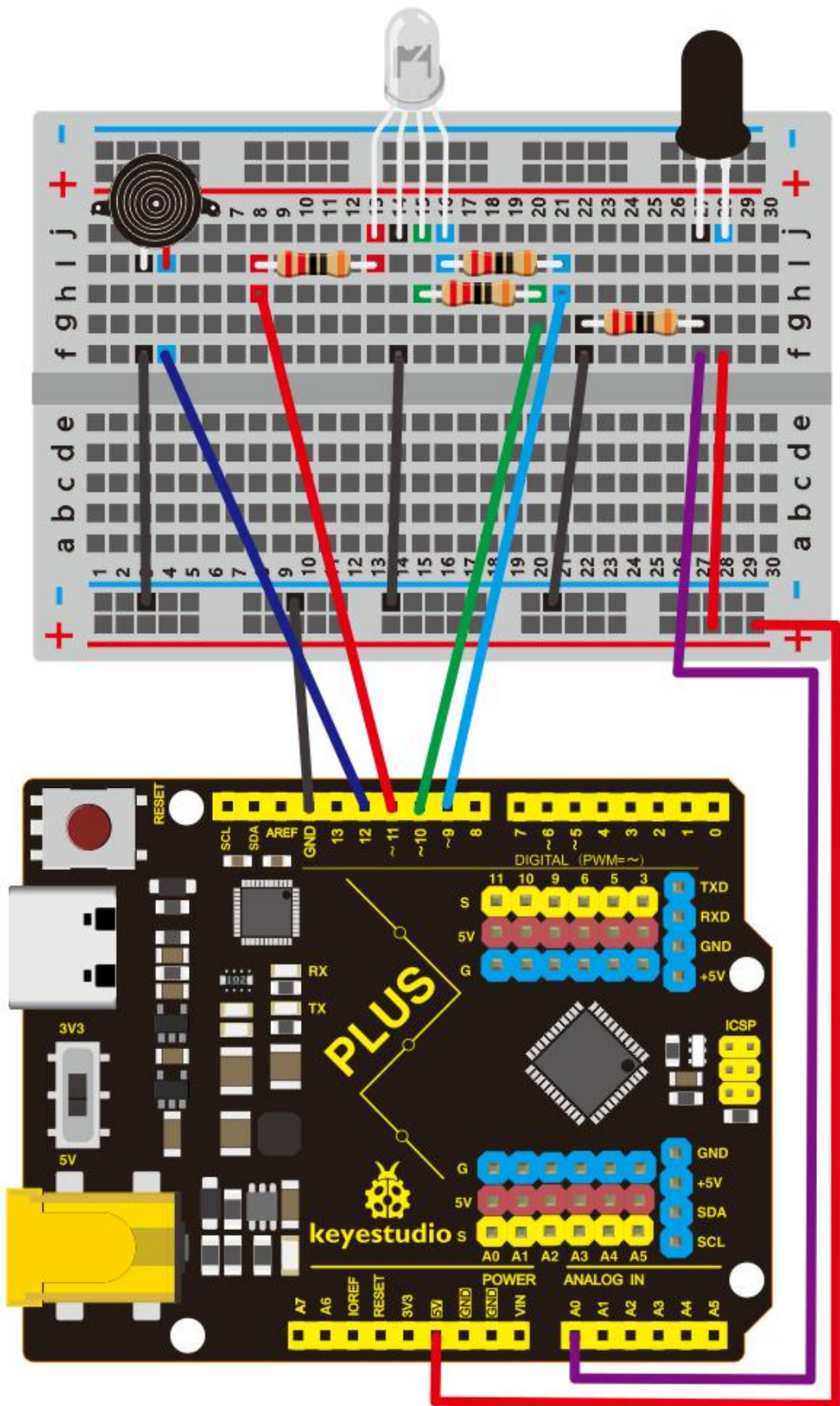
Upload the code to the Plus development board, open the serial monitor, and use a lighter to approach the flame sensor to see the value.



## 5.Flame Alarm Circuit Connection

Next, we will use the flame sensor and buzzer RGB LED to make a fun project--- flame alarm. When flame is detected, the RGB will light up and the buzzer will alarm.







## 6.Project Code

```
/*  
  
keyestudio STEM Starter Kit  
  
Project 21.2  
  
Flame Alarm  
  
http://www.keyestudio.com  
  
*/  
  
const int red = 11;  
  
const int green = 10;  
  
const int blue= 9;  
  
const int buzzer = 12;  
  
const int flamepin = A0;  
  
const int thereshold = 1;  
  
void setup() {  
  
    // put your setup code here, to run once:  
  
    Serial.begin(9600);  
  
    pinMode(red, OUTPUT);  
  
    pinMode(green, OUTPUT);  
  
    pinMode(blue, OUTPUT);  
  
    pinMode(buzzer, OUTPUT);  
  
    pinMode(flamepin, INPUT);  

```

```
}
```

```
void setColor(int redValue, int greenValue, int blueValue)
```

```
{
```

```
  analogWrite(red, redValue);
```

```
  analogWrite(blue, blueValue);
```

```
  analogWrite(green, greenValue);
```

```
}
```

```
void loop() {
```

```
  // put your main code here, to run repeatedly:
```

```
  int flamesenseval = analogRead(flamepin);
```

```
  Serial.print(flamesenseval);
```

```
  if (flamesenseval >= threshold) {
```

```
    setColor(255, 0, 0); // Red Color
```

```
    tone(buzzer, 1000);
```

```
    delay(10);
```

```
  }
```

```
  else
```

```
  {
```

```
    setColor(0, 255, 0); // Green Color
```

```
    noTone(buzzer);
```

```
  }
```

}

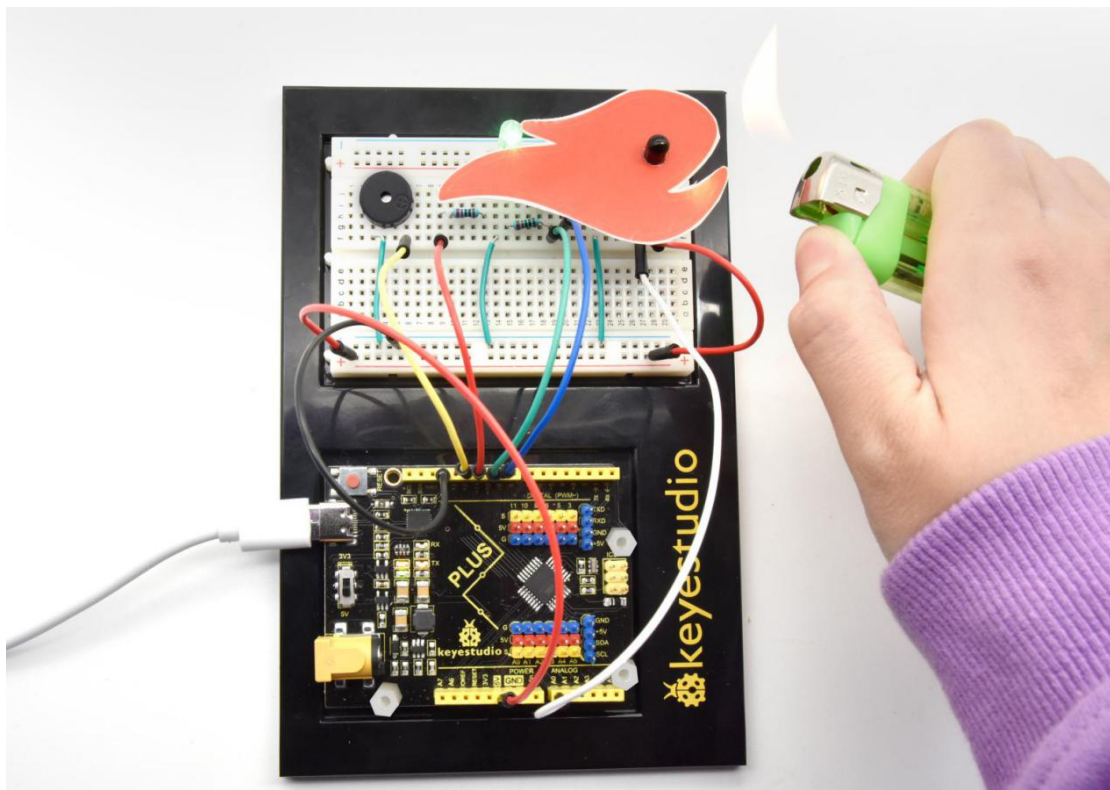
//

## 7.Project Result

Upload the code to the PLUS development board.

Open the serial monitor, set the baud rate to 9600, and the monitor will display the value of the flame sensor.

We use a lighter close to the flame sensor, the RGB LED will emit different colors, and the buzzer will alarm.



\*\*\*\*\*next

project\*\*\*\*\*