

4. Turn on the RGB light

RGB cooling HAT needs to be correctly inserted into the GPIO port of the Raspberry Pi and the I2C function of the Raspberry Pi must be turned on.

The phenomenon of this experiment is that set the color of all RGB lights to green.

1. Compile and run the program

1.1 Enter the folder and view the files in the current folder

```
cd RGB_Cooling_HAT/
```

```
ls
```

```
pi@raspberrypi:~/RGB_Cooling_HAT $ ls
fan.py fan_temp.py install.sh oled.py RGB_Cooling_HAT.py rgb_effect.py rgb.py rgb_temp.py start.desktop start.sh
pi@raspberrypi:~/RGB_Cooling_HAT $
```

1.2 Run code

```
python rgb.py
```

```
pi@raspberrypi:~/RGB_Cooling_HAT $ python rgb.py
```

At this time, we can see that three RGB lights light up blue at the same time.

2. Code analysis

2.1 Initialize the Raspberry Pi I2C configuration, import the smbus module for I2C communication, and the time module for delay.

There are three RGB lights on the smart temperature control extension, so the maximum number of lights is defined to be 3.

```
import smbus
import time
bus = smbus.SMBus(1)

addr = 0x0d
rgb_off_reg = 0x07
Max_LED = 3
```

2.2 setRGB(num, r, g, b) function

Set the RGB light color, num refers to the serial number of the RGB light d.

0 is the first light, 1 is the second light, 2 is the third light.

If greater than or equal to 3, all lights are set at the same time. The value range of R, G, and B values is 0~255.

```
def setRGB(num, r, g, b):  
    if num >= Max_LED:  
        bus.write_byte_data(addr, 0x00, 0xff)  
        bus.write_byte_data(addr, 0x01, r&0xff)  
        bus.write_byte_data(addr, 0x02, g&0xff)  
        bus.write_byte_data(addr, 0x03, b&0xff)  
    elif num >= 0:  
        bus.write_byte_data(addr, 0x00, num&0xff)  
        bus.write_byte_data(addr, 0x01, r&0xff)  
        bus.write_byte_data(addr, 0x02, g&0xff)  
        bus.write_byte_data(addr, 0x03, b&0xff)
```

2.3 Turn off RGB. According to the protocol, the register for turning off RGB is 0x07 and the data is 0x00.

```
bus.write_byte_data(addr, rgb_off_reg, 0x00)
```

2.4 Turn off the RGB light first, and then set the RGB light.

If it is not closed first, the display effect will sometimes be affected.

The effect of setRGB can be set by yourself. Here is an example of all lights turning blue.

```
bus.write_byte_data(addr, rgb_off_reg, 0x00)  
time.sleep(1)  
setRGB(Max_LED, 0, 0, 255)
```