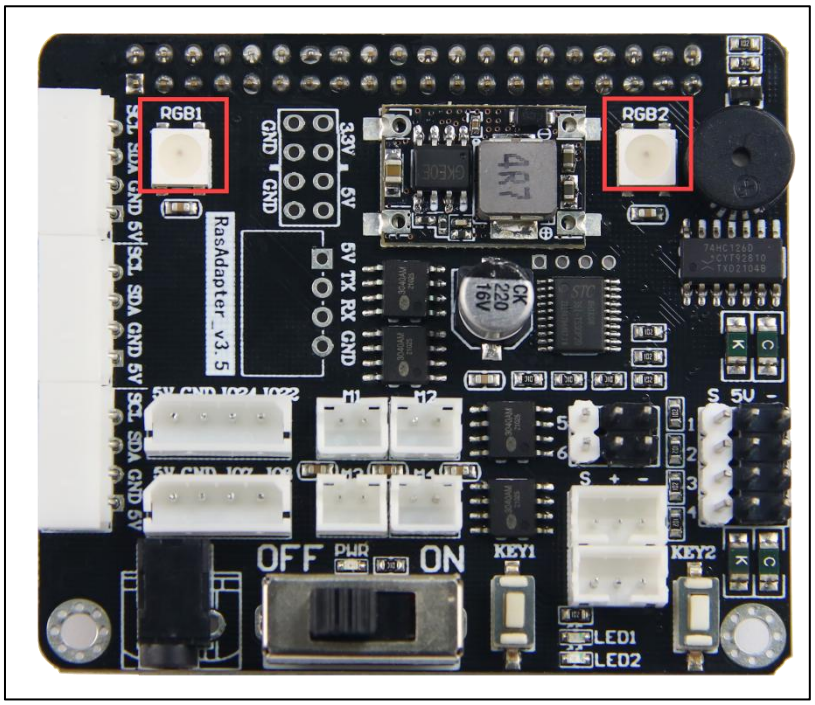
Lesson 2 RGB Light Control

1. Getting Ready

There are two RGB lights on Raspberry Pi expansion board, as the figure shown below:



2. Working Principle

Let's learn about how to realize this project:

RGB represents red, green and blue three colors and the parameter of three colors ranges from 0 to 255. The color can be changed by setting RGB color parameter.

The source code of program is located in **/home/pi/MasterPi/HiwonderSDK/RGBControlDemo.py**

```
    Board.RGB.setPixelColor(1, Board.PixelColor(255, 0, 0))
    Board.RGB.show()
    time.sleep(1)

    #set the second light to green
    Board.RGB.setPixelColor(0, Board.PixelColor(0, 255, 0))
    Board.RGB.setPixelColor(1, Board.PixelColor(0, 255, 0))
    Board.RGB.show()
    time.sleep(1)

    #set the second light to blue
    Board.RGB.setPixelColor(0, Board.PixelColor(0, 0, 255))
    Board.RGB.setPixelColor(1, Board.PixelColor(0, 0, 255))
    Board.RGB.show()
    time.sleep(1)

    #set the second light to yellow
    Board.RGB.setPixelColor(0, Board.PixelColor(255, 255, 0))
    Board.RGB.setPixelColor(1, Board.PixelColor(255, 255, 0))
    Board.RGB.show()
    time.sleep(1)
```

3. Operation Steps

1) Click  or press “Ctrl+Alt+T” to open LX terminal.

2) Enter “cd /home/pi/MasterPi/HiwonderSDK/” command in LX terminal and press “Enter” to come to the directory of game programs.

3) Then, enter “sudo python3 RGBControlDemo.py” command and press “Enter” to start game.

```
pi@raspberrypi: ~/MasterPi/HiwonderSDK
File  Edit  Tabs  Help
pi@raspberrypi:~ $ cd /home/pi/MasterPi/HiwonderSDK/
pi@raspberrypi:~/MasterPi/HiwonderSDK $ sudo python3 RGBControlDemo.py
```

4) If want to exit the program, you can press “Ctrl+C”.

4. Project Outcome

After starting program, two RGB lights on Raspberry Pi expansion board will light up with red, green, blue and yellow lights repeatedly.

5. Function Extension

You can change the light color by modifying code. This section will change to keep red light on as example.

1) First, enter “cd /home/pi/MasterPi/HiwonderSDK/” command and press “Enter” to come to the directory of game programs.

```
pi@raspberrypi: ~
File  Edit  Tabs  Help
pi@raspberrypi:~ $ cd /home/pi/MasterPi/HiwonderSDK/
```

2) Then enter “sudo vim RGBControlDemo.py” command and press “Enter” to open program file.

```
pi@raspberrypi: ~/MasterPi/HiwonderSDK
File  Edit  Tabs  Help
pi@raspberrypi:~ $ cd /home/pi/MasterPi/HiwonderSDK/
pi@raspberrypi:~/MasterPi/HiwonderSDK $ sudo vim RGBControlDemo.py
```

3) Find the code in the figure shown below.

```
40 while True:
41     #set the second light to red
42     Board.RGB.setPixelColor(0, Board.PixelColor(255, 0, 0))
43     Board.RGB.setPixelColor(1, Board.PixelColor(255, 0, 0))
44     Board.RGB.show()
45     time.sleep(1)
46
47     #set the second light to green
48     Board.RGB.setPixelColor(0, Board.PixelColor(0, 255, 0))
49     Board.RGB.setPixelColor(1, Board.PixelColor(0, 255, 0))
50     Board.RGB.show()
51     time.sleep(1)
52
53     #set the second light to blue
54     Board.RGB.setPixelColor(0, Board.PixelColor(0, 0, 255))
55     Board.RGB.setPixelColor(1, Board.PixelColor(0, 0, 255))
56     Board.RGB.show()
57     time.sleep(1)
58
59     #set the second light to yellow
60     Board.RGB.setPixelColor(0, Board.PixelColor(255, 255, 0))
61     Board.RGB.setPixelColor(1, Board.PixelColor(255, 255, 0))
62     Board.RGB.show()
63     time.sleep(1)
64
```

4) Press “i” key. When “INSERT” word appears, which means it has entered the editing mode.

```
53     #set the second light to blue
54     Board.RGB.setPixelColor(0, Board.PixelColor(0, 0, 255))
55     Board.RGB.setPixelColor(1, Board.PixelColor(0, 0, 255))
56     Board.RGB.show()
57     time.sleep(1)
58
59     #set the second light to yellow
60     Board.RGB.setPixelColor(0, Board.PixelColor(255, 255, 0))
61     Board.RGB.setPixelColor(1, Board.PixelColor(255, 255, 0))
62     Board.RGB.show()
63     time.sleep(1)
64
65     if not start:
-- INSERT --                                          52,1          85%
```

5) If want to keep red light on, the programs of other lights need to uncommented. Add “#” in front of the program, as the figure shown below:

```
40 while True:
41     #set the second light to red
42     Board.RGB.setPixelColor(0, Board.PixelColor(255, 0, 0))
43     Board.RGB.setPixelColor(1, Board.PixelColor(255, 0, 0))
44     Board.RGB.show()
45     time.sleep(1)
46
47     #set the second light to green
48     #Board.RGB.setPixelColor(0, Board.PixelColor(0, 255, 0))
49     #Board.RGB.setPixelColor(1, Board.PixelColor(0, 255, 0))
50     #Board.RGB.show()
51     #time.sleep(1)
52
53     #set the second light to blue
54     #Board.RGB.setPixelColor(0, Board.PixelColor(0, 0, 255))
55     #Board.RGB.setPixelColor(1, Board.PixelColor(0, 0, 255))
56     #Board.RGB.show()
57     #time.sleep(1)
58
59     #set the second light to yellow
60     #Board.RGB.setPixelColor(0, Board.PixelColor(255, 255, 0))
61     #Board.RGB.setPixelColor(1, Board.PixelColor(255, 255, 0))
62     #Board.RGB.show()
-- INSERT --                                          57,6          77
```

6) After modifying, press “Esc”. Then enter “:wq” and press “Enter” to save and exit.

```
59     #set the second light to yellow
60     #Board.RGB.setPixelColor(0, Board.PixelColor(255, 255, 0))
61     #Board.RGB.setPixelColor(1, Board.PixelColor(255, 255, 0))
62     #Board.RGB.show()
:wq
```