

03.RGB light bar control

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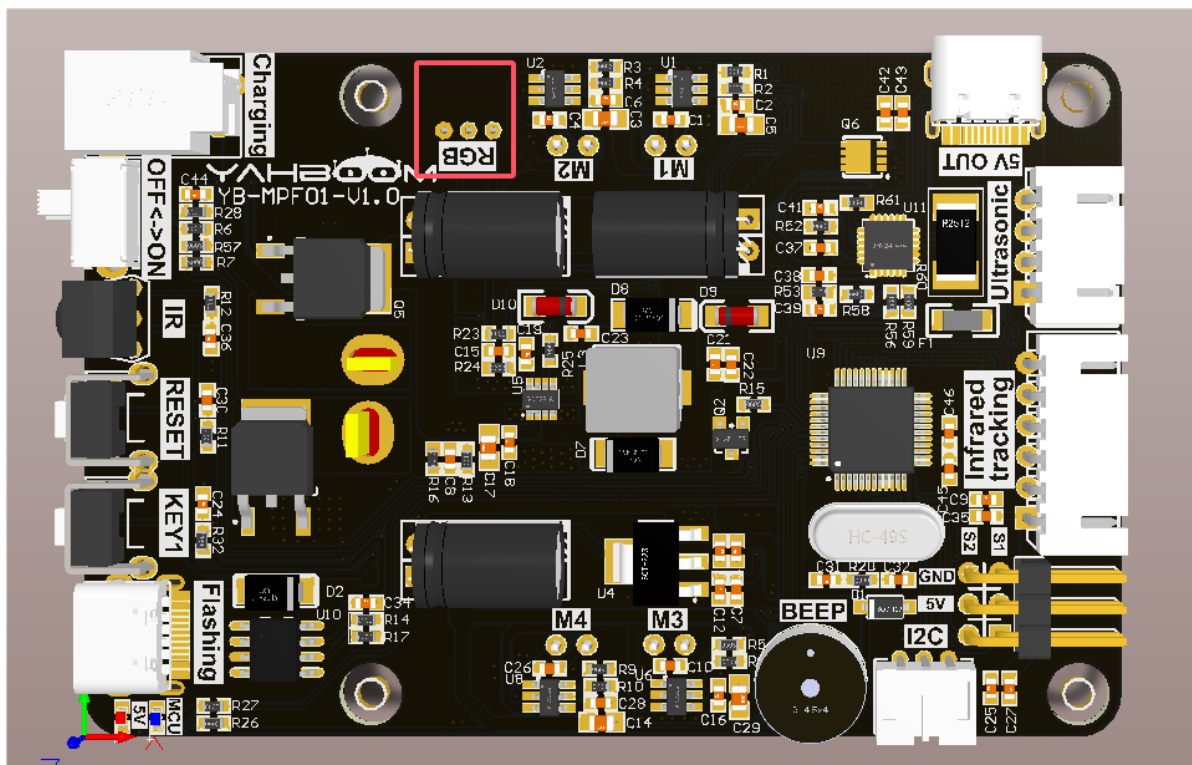
1. Learning objectives
2. Experimental preparation
3. Core code analysis
4. Experimental phenomenon

1. Learning objectives

Control the RGB light bar connected to the expansion board.

2. Experimental preparation

As shown in the figure below, the RGB light bar needs to be connected to the RGB interface.



Raspbot_Lib library functions needed to control the RGB light bar:

```
ctr1_wq2812_ALL(state,color)
```

Parameter explanation: Control the color display of the RGB light bar

state=0: Turn off the color display of the RGB light bar, state=1: Turn on the color display of the RGB light bar.

color =[0,7], 0: red, 1: green, 2: blue, 3: yellow, 4: purple, 5: cyan, 6: white, 7: turn off

Return value: None.

```
Ctrl_WQ2812_brightness_ALL(R,G,B)
```

Parameter explanation: Control the RGB value of the RGB light bar

R, G, B=[0,255], indicating the color RGB value

```
execute_effect(effect_name, effect_duration, speed, current_color)
```

Parameter explanation: Control the lighting effect of the RGB light bar

effect_name: gradient, river, random_running, starlight, breathing

effect_duration: effect duration, not less than 0

speed: lighting effect speed, the smaller the value, the faster, the speed is not less than 0

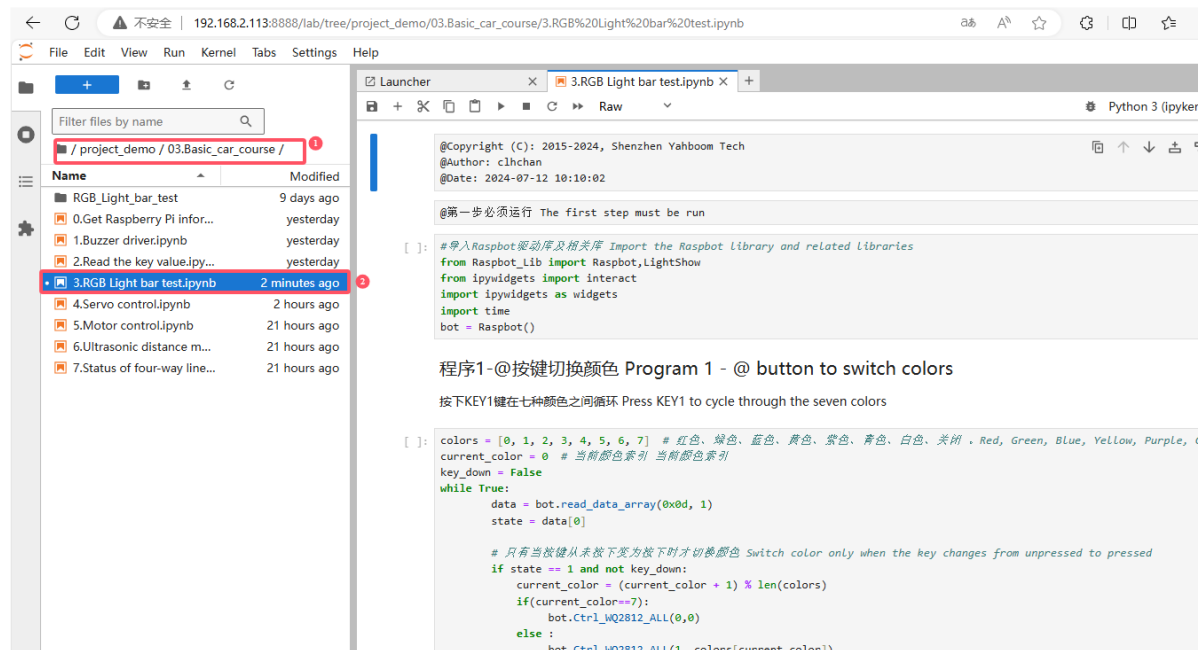
current_color: [0,6], the default value is 0, only valid when in the breathing light effect, 0: red, 1: green, 2: blue, 3: yellow, 4: purple, 5: cyan, 6: white

Source code path: project_demo/03.Basic_car_course

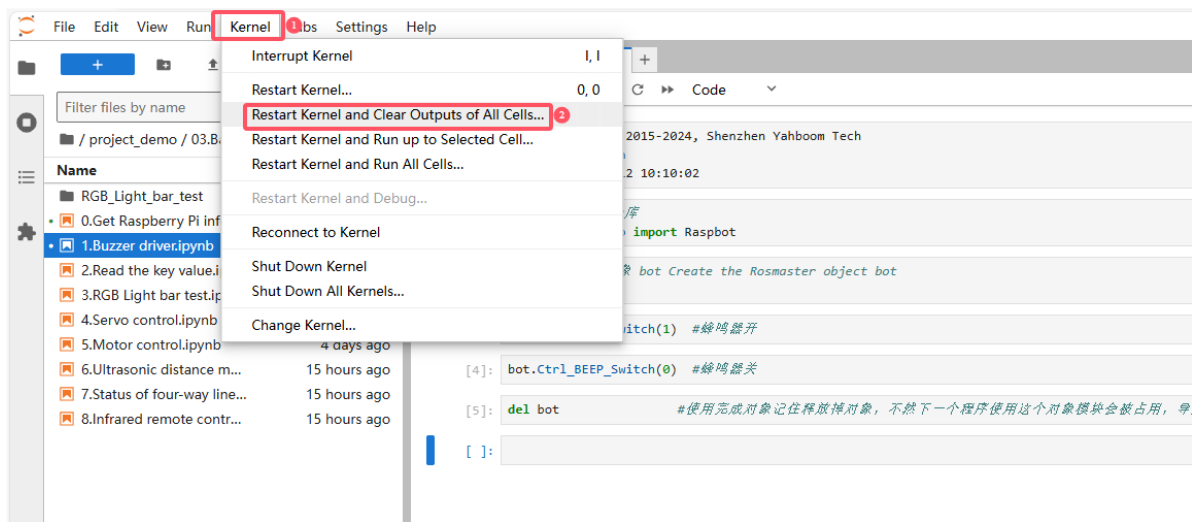
4. Experimental phenomenon

Turn on the robot, open the computer browser to enter the Jupyter lab editor

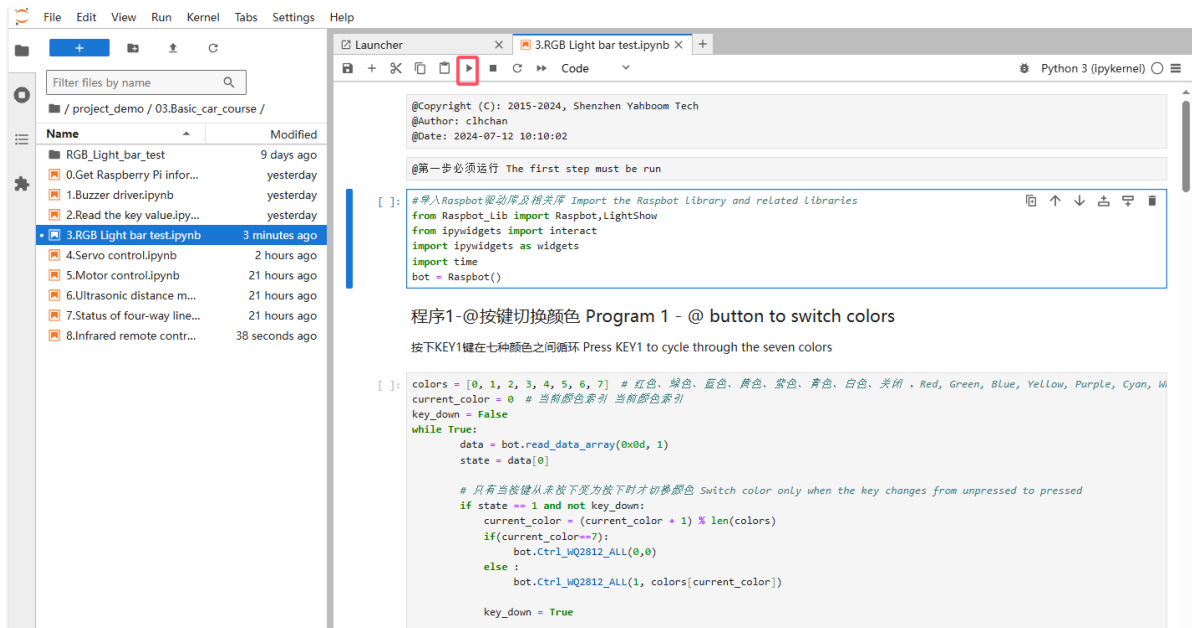
Enter the source code path, double-click the code to be run



Restart the kernel and clear all outputs



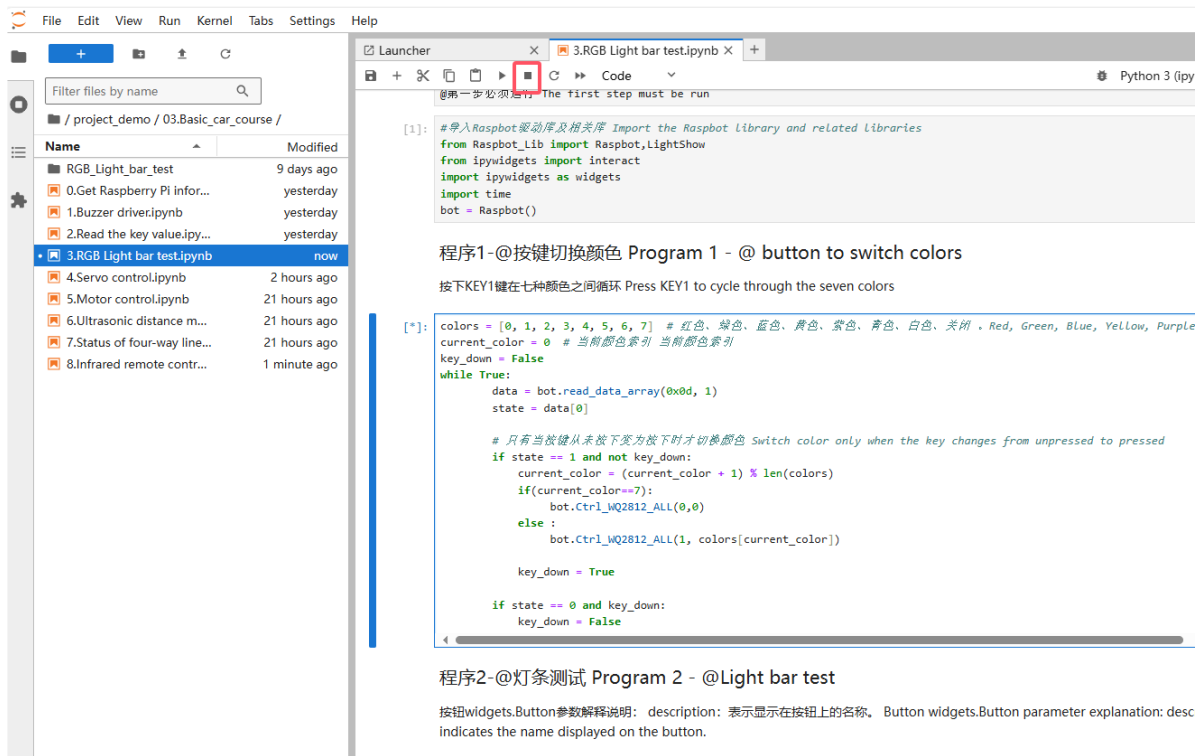
Click the first code block, then click the run button to start running one by one



After the program runs, as the code block runs, we can control the light bar to switch different colors through buttons, switch different light bar colors through sliders and buttons, and switch different lighting effects through the drop-down bar

Note: Before running program 2, you need to stop program 1.

The operation is shown in the figure below. First click the code block, then click the stop button.



File Edit View Run Kernel Tabs Settings Help

Launcher 3.RGB Light bar test.ipynb Python 3 (ipy

Filter files by name

/ project_demo / 03.Basic_car_course /

| Name | Modified |
|------------------------------|--------------|
| RGB_Light_bar_test | 9 days ago |
| 0.Get Raspberry Pi Infor... | yesterday |
| 1.Buzzer driver.ipynb | yesterday |
| 2.Read the key value.ipynb | yesterday |
| 3.RGB Light bar test.ipynb | now |
| 4.Servo control.ipynb | 2 hours ago |
| 5.Motor control.ipynb | 21 hours ago |
| 6.Ultrasonic distance m... | 21 hours ago |
| 7.Status of four-way line... | 21 hours ago |
| 8.Infrared remote contr... | 1 minute ago |

[1]: # 导入Raspbot驱动库及相关库 Import the Raspbot Library and related Libraries

```
from Raspbot.Lib import Raspbot,LightShow
from ipywidgets import interact
import ipywidgets as widgets
import time
bot = Raspbot()
```

程序1-@按键切换颜色 Program 1 - @ button to switch colors

按下KEY1键在七种颜色之间循环 Press KEY1 to cycle through the seven colors

[*]: colors = [0, 1, 2, 3, 4, 5, 6, 7] # 红色、紫色、蓝色、黄色、紫色、青色、白色、关闭 . Red, Green, Blue, Yellow, Purple

```
current_color = 0 # 当前颜色索引 当前颜色索引
key_down = False
while True:
    data = bot.read_data_array(0x0d, 1)
    state = data[0]

    # 只有当按键从未按下变为按下时才切换颜色 Switch color only when the key changes from unpressed to pressed
    if state == 1 and not key_down:
        current_color = (current_color + 1) % len(colors)
        if(current_color==7):
            bot.Ctrl_WQ2812_ALL(0,0)
        else :
            bot.Ctrl_WQ2812_ALL(1, colors[current_color])

        key_down = True

    if state == 0 and key_down:
        key_down = False
```

程序2-@灯条测试 Program 2 - @Light bar test

按钮widgets.Button参数解释说明: description: 表示显示在按钮上的名称。 Button widgets.Button parameter explanation: desc indicates the name displayed on the button.

For the python program of RGB lighting effect, you can enter the following path to view

project_demo/03.Basic_car_course/RGB_Light_bar_test/