

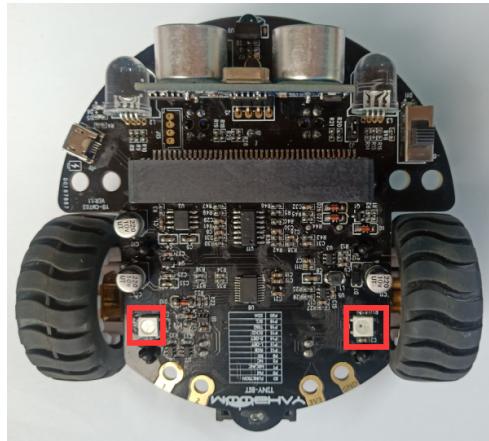
3.Breathing light

Learning goal:

This lesson we will learn how to control two LED light to become breathing light.

Preparation:

- 1.The position of the LED lights in the robot car,as shown below.



2. The micro:bit pins connected to the two LED lights.

From the hardware interface manual, we can know that two LED lights are directly driven by P12 of micro:bit .

Category	Function	Number	Drive	The number of Drive pin	The number of connected to the controller	micro:bit
Buzzer	Buzzer	FM			FM	P0
Voice sensor	Voice sensor	MIC			MIC	P1
LED light	Water light	LED-RGB			LED-RGB	P12
Tracking sensor	Left tracking	L-DET	Micro:bit drive directly		L-DET	P13
	Right tracking	R-DET			R-DET	P14
Ultrasonic module	Echo pin	ECHO			ECHO	P15
Infrared receiver	Trigger pin	TRIG			TRIG	P16
I2C interface	Infrared remote control	RX			RX	P8
	I2C interface	SCL			SCL	P19
		SDA			SDA	P20
Motor	Left motor Forward	L-IN1A	STM32	PC6/TIM1_CH1		
	Left motor Reverse	L-IN1B		PC7/TIM1_CH2		
	Right motor Forward	R-IN1A		PC3/TIM1_CH3		
	Right motor Reverse	R-IN1B		PC4/TIM1_CH4		
RGB Searching light	Red	LED-R	SCL, SDA	PC5/TIM2_CH1		
	Green	LED-G		PD3/TIM2_CH2		
	Blue	LED-B		PD2/TIM2_CH3		
						P19, P20

Code:

```

from microbit import *
import neopixel

np = neopixel.NeoPixel(pin12, 2)

# Two RGB light of Tiny-bit connect to Pin 12 of micro:bit

while True:
    for num1 in range(255, 0, -1):      # From 255 to 0, increase by -1 each time
        np[0] = (num1, 0, 0)
        np[1] = (0, num1, 0)
        np.show()
    for num1 in range(0, 255, 1):      # From 0 to 255, increase by 1 each time
        np[0] = (0, num1, 0)
        np[1] = (0, 0, num1)
        np.show()

```

```

for pixel_id in range(0, len(np)):
    np[pixel_id] = (num1, 0, num1)      # purple
    np.show()
    sleep(5)
    # RGB lights are changed gradually from light to dark

    for num1 in range(0, 255, 1):      # From 0 to 255, increase by 1 each
time

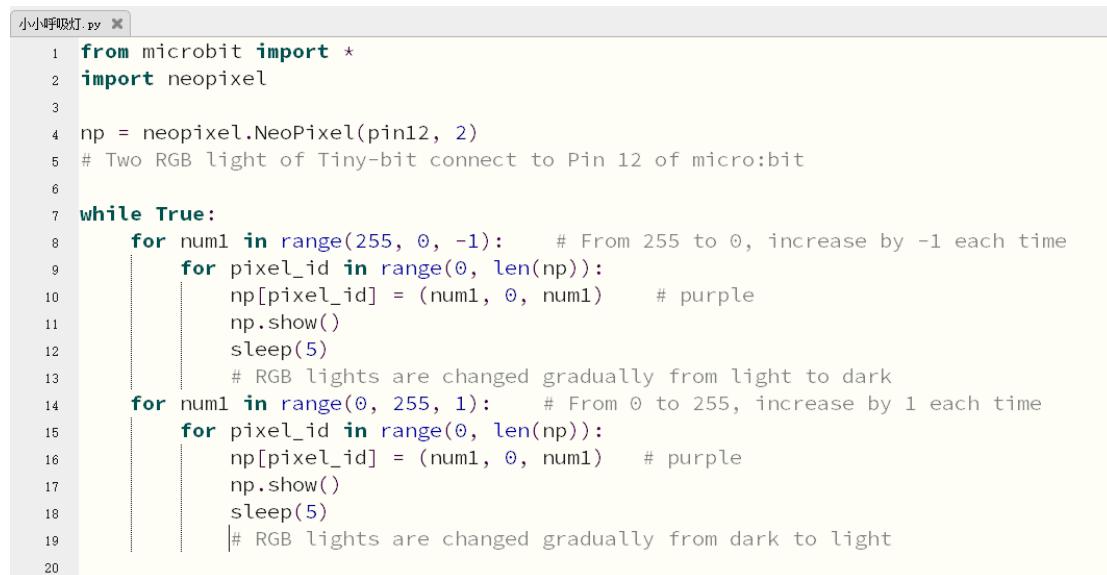
        for pixel_id in range(0, len(np)):
            np[pixel_id] = (num1, 0, num1)      # purple
            np.show()
            sleep(5)
            # RGB lights are changed gradually from dark to light

```

Programming and downloading:

1.1. You should open the Mu software, and enter the code in the edit window, , as shown in Figure 3-1.

Note! All English and symbols should be entered in English, and the last line must be a space.



```

小小呼吸灯.py ✘
1 from microbit import *
2 import neopixel
3
4 np = neopixel.NeoPixel(pin12, 2)
5 # Two RGB light of Tiny-bit connect to Pin 12 of micro:bit
6
7 while True:
8     for num1 in range(255, 0, -1):      # From 255 to 0, increase by -1 each time
9         for pixel_id in range(0, len(np)):
10             np[pixel_id] = (num1, 0, num1)      # purple
11             np.show()
12             sleep(5)
13             # RGB lights are changed gradually from light to dark
14     for num1 in range(0, 255, 1):      # From 0 to 255, increase by 1 each time
15         for pixel_id in range(0, len(np)):
16             np[pixel_id] = (num1, 0, num1)      # purple
17             np.show()
18             sleep(5)
19             # RGB lights are changed gradually from dark to light
20

```

Figure 3-1

2. As shown in Figure 3-2, you need to click the Check button to check if our code has an error. If a line appears with a cursor or an underscore, the program indicating this line is wrong.

```

1 from microbit import *
2 import neopixel
3
4 np = neopixel.NeoPixel(pin12, 2)
5 # Two RGB light of Tiny-bit connect to Pin 12 of micro:bit
6
7 while True:
8     for num1 in range(255, 0, -1):      # From 255 to 0, increase by -1 each time
9         for pixel_id in range(0, len(np)):
10             np[pixel_id] = (num1, 0, num1)    # purple
11             np.show()
12             sleep(5)
13             # RGB lights are changed gradually from light to dark
14         for num1 in range(0, 255, 1):      # From 0 to 255, increase by 1 each time
15             for pixel_id in range(0, len(np)):
16                 np[pixel_id] = (num1, 0, num1)    # purple
17                 np.show()
18                 sleep(5)
19             # RGB lights are changed gradually from dark to light
20

```

Figure 3-2

3. You need to connect the micro data cable to micro:bit and the computer, then click the Flash button to download the program to micro:bit as shown in Figure 3-3.

```

1 from microbit import *
2 import neopixel
3
4 np = neopixel.NeoPixel(pin12, 2)
5 # Two RGB light of Tiny-bit connect to Pin 12 of micro:bit
6
7 while True:
8     for num1 in range(255, 0, -1):      # From 255 to 0, increase by -1 each time
9         for pixel_id in range(0, len(np)):
10             np[pixel_id] = (num1, 0, num1)    # purple
11             np.show()
12             sleep(5)
13             # RGB lights are changed gradually from light to dark
14         for num1 in range(0, 255, 1):      # From 0 to 255, increase by 1 each time
15             for pixel_id in range(0, len(np)):
16                 np[pixel_id] = (num1, 0, num1)    # purple
17                 np.show()
18                 sleep(5)
19             # RGB lights are changed gradually from dark to light
20

```

Figure 3-3

4. After the download is successful, we can see the purple LED lights on the Tiny-bit car from on to off, from off to on, to achieve the effect of breathing lights.

YAHBOOM

