

Courses13 --- LED light

Learning goal:

This lesson learns how to drive two LED lights of Tiny:bit car by Python programming.

Code:

```
1 # Write your code here :‐)
2 from microbit import *
3 import neopixel
4 import random
5
6 display.show(Image.HAPPY)
7 np = neopixel.NeoPixel(pin12, 2)
8
9
10 while True:
11
12     for pixel_id in range(0, len(np)):
13         R = random.randint(0, 255)
14         G = random.randint(0, 255)
15         B = random.randint(0, 255)
16         np.clear()
17         np[pixel_id] = (R, G, B)
18         np.show()
19         sleep(500)
20
```

- 1) Import the microbit library, neopixel for RGB lights, and random for generating random numbers.
- 2) `display.show (Image.HAPPY)`: show smiling faces;
- 3) `np = neopixel.NeoPixel (pin12, 2)`: Initialize the RGB programming lamp library. The first parameter is the pins of the RGB lamp, and the second parameter is the number of RGB lamps.
- 4) `for pixel_id in range (0, len (np))`: for loop, starting from 0, automatically +1 for each loop, ending the loop when len (np) is reached;
- 5) `R = random.randint (0, 255)`: Generate a random number from 0 to 255 and save it to the R variable;
- 6) `np.clear ()`: Clear RGB light display;

- 7) `np [pixel_id] = (R, G, B)`: Pass the color RGB value of the RGB lamp to the pixel_id lamp;
- 8) `np.show ()`: refresh the colorful lights display, if you do not run this function, the above set color will not work;
- 9) `sleep (500)`: 500 milliseconds delay.

According to the hardware interface reference manual, the sound sensor connect to 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			P0	
Voice sensor	Voice sensor	MIC			P1	
LED light	Water light	LED-RGB			LED-RGB	P12
Tracking sensor	Left tracking Right tracking	L-DET R-DET			L-DET R-DET	P13 P14
Ultrasonic module	Echo pin Trigger pin	ECHO TRIG			ECHO TRIG	P15 P16
Infrared receiver	Infrared remote control	RX			RX	P8
I2C interface	I2C interface	SCL SDA			SCL SDA	P19 P20
Motor	Left motor Forward Left motor Reverse Right motor Forward Right motor Reverse	L-INA L-INB R-INA R-INB	STM8S	P06/TIM1_CH1 P07/TIM1_CH2 PC3/TIM1_CH3 PC4/TIM1_CH4	SCL, SDA	P19, P20
RGB Searching light	Red Green Blue	LED-R LED-G LED-B		P05/TIM2_CH1 PD3/TIM2_CH2 PD2/TIM2_CH3		

Programming and downloading :

1. You should open the Mu software, and enter the code in the edit window, , as shown below.

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

The screenshot shows the Mu Editor interface. The toolbar at the top includes icons for Mode, New, Load, Save, Flash, Files, REPL, Plotter, Zoom-in, Zoom-out, Theme, and Check. The code editor window has a title bar "Sound sensor.py" and contains the following Python code:

```

1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display, Image
3 import tinybit
4 from random import randint
5
6 display.show(Image.HAPPY)
7 item = 0

```

2. You can 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.

```

6
7 np = neopixel.NeoPixel(pin12, 2)
8 np.clear()
9 tinybit.car_HeadRGB(0, 0, 0)
10 display.show(Image.HAPPY)
11
12 item = 0
13
14
15 while True:
16     voice = tinybit.getVoicedata()
17     if voice > 100:

```

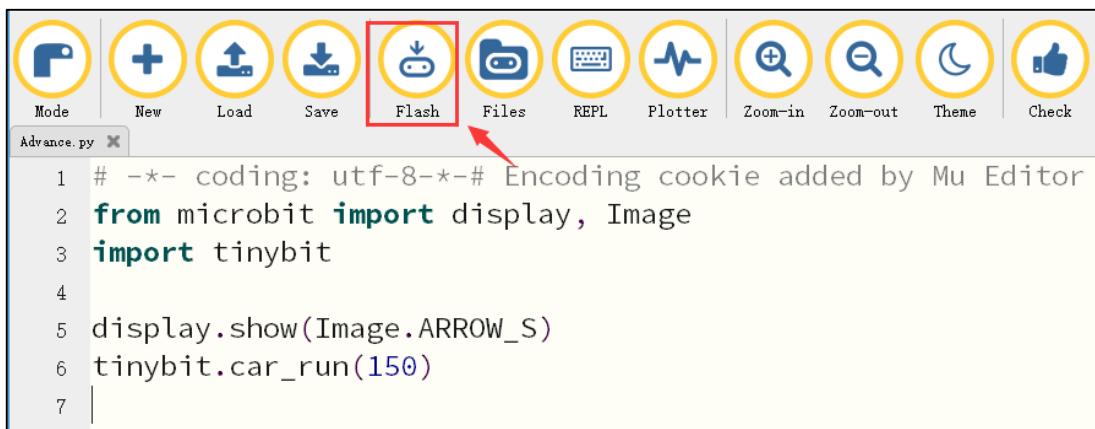
3.Click “REPL” button,check whether the tinybit library has been downloaded. If not, please refer to the [preparation before class]---> [Python programming]

```

1 # Write your code here :-
2
BBC micro:bit REPL
MicroPython for Tinybit V1.1 Modified by Yahboom Team
Type "help()" for more information.
>>>
>>> |

```

4.Click the “Flash” button to download the program to micro:bit board.



If the program is wrong or the experimental phenomenon is wrong after downloading, please confirm whether you have downloaded the Buildingbit libraryhex file we provided to the micro: bit board.

For the specific method of adding library files, please refer to **【1.Preparation before class】** --- **【Python programming】**

Experimental phenomena

After download is complete, open the power switch. Micro:bit dot matrix will display a smile. Two LED light will light up in turn, time interval is 0.5 seconds, and the color of each light is random.

