

Robot course8 --- Voice control light

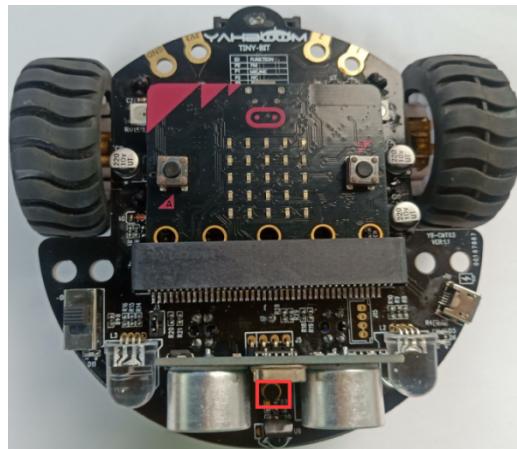
Learning goal:

In this lesson, we will learn how to read sound sensor data, and switch the light color based on the detected data through Python programming.

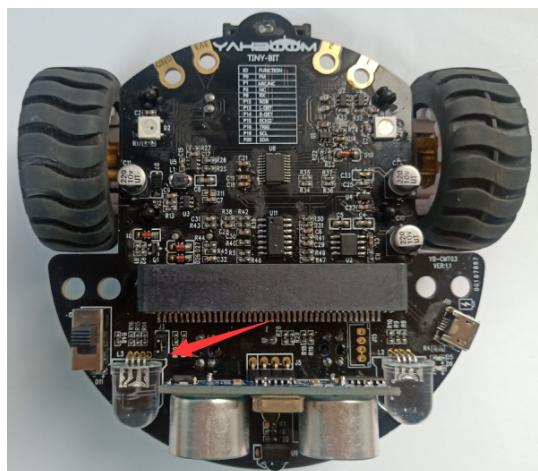
Introduction of Sound sensor principle:

The role of the sound sensor is equivalent to a microphone, which can be used to receive sound wave vibration, so as to detect changes in the current ambient sound, but it cannot measure the intensity of noise. Built-in condenser cylindrical microphone that is sensitive to sound, sound waves can vibrate electret films in microphones, causing the capacitance to change, thereby generating a tiny voltage corresponding to it.

The position of the Voice sensor module in the robot.



!!! Note: In this experiment, we need to install the jumper cap in the position shown below.



Code:

Please use the MU software to open the **Voice control light.py** file we provided.

- 1) Import the library needed for this lesson from micro:bit, display is used for dot matrix

display, Image calls the built-in image, pin12 is the pin of the body colorful lights, neopixel drives the body colorful lights, and tinybit controls the car.

display.show (Image.HAPPY): Display a smile on micro:bit dot matrix.

np = neopixel.NeoPixel (pin12, 2): Initialize the body colorful lights. The first parameter is the pins connected to the lights, and the second parameter is the total number of RGB lights.

np.clear (): Clear the body colorful lights.

tinybit.car_HeadRGB (0, 0, 0): Clear the head RGB searchlight.

item = 0: Declare item as a global variable, and initialize it to 0.

Code as shown below:

```

1  # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2  from microbit import display, Image, pin12
3  import tinybit
4  import random
5  import neopixel
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

```

2) **voice = tinybit.getVoicedata()**: Read the data of the sound sensor and save it to the variable voice.

If the variable voice> 100, it means that the light needs to be switched. First, a random number of 1 to 6 is generated and stored in the variable item. Then the color of the front RGB searchlight and the body colorful light are randomly set.

Code as shown below:

```

15 while True:
16     voice = tinybit.getVoicedata()
17     if voice > 100:
18         item = random.randint(1, 6)
19         tinybit.car_HeadRGB(random.randint(0, 255),
20                             random.randint(0, 255),
21                             random.randint(0, 255))
22         red = random.randint(0, 255)
23         green = random.randint(0, 255)
24         blue = random.randint(0, 255)
25         np[0] = (red, green, blue)
26         np[1] = (red, green, blue)
27         np.show()

```

3) Determine the value of item. Different values display different patterns on the micro:bit dot matrix.

Code as shown below:

```

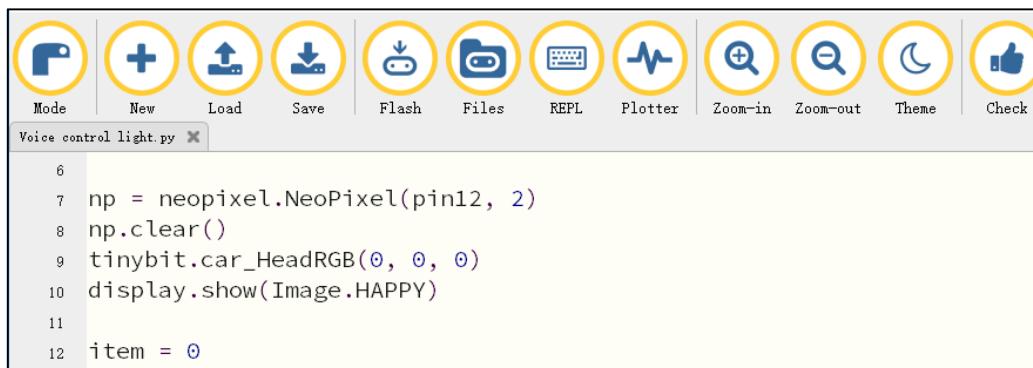
29     if item == 1:
30         display.show(Image.HEART)
31     elif item == 2:
32         display.show(Image.COW)
33     elif item == 3:
34         display.show(Image.DUCK)
35     elif item == 4:
36         display.show(Image.TARGET)
37     elif item == 5:
38         display.show(Image.SNAKE)
39     elif item == 6:
40         display.show(Image.GIRAFFE)

```

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.



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]

```

# Write your code here :-

```

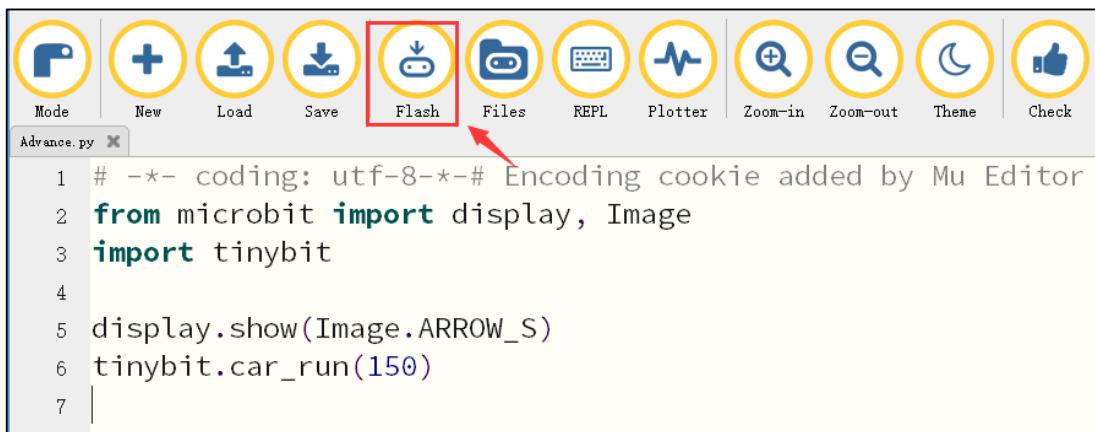
BBC micro:bit REPL

```

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 will display a smile on dot matrix, we need to put robot car on the desk. When we Shooting table, the lights of the robot will be change color randomly.

