

Robot course3 --- Control speed

Learning goal:

This lesson learns how to control car speed by Python programming.

Code_1:

```
1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display, Image, sleep
3 import tinybit
4
5 display.show(Image.HAPPY)
6
7
8 while True:
9     tinybit.car_run(0, 0)
10    sleep(1000)
11    tinybit.car_run(50, 50)
12    sleep(1000)
13    tinybit.car_run(100, 100)
14    sleep(1000)
15    tinybit.car_run(150, 100)
16    sleep(1000)
17    tinybit.car_run(200, 200)
18    sleep(1000)
19    tinybit.car_run(255, 255)
20    sleep(1000)
21
```

Code_2:

```
1 # -*- coding: utf-8-*# Encoding cookie add
2 import tinybit
3
4 while True:
5     tinybit.setMotorPWM(0, 0, 1000)
6
7     tinybit.setMotorPWM(50, 50, 1000)
8
9     tinybit.setMotorPWM(100, 100, 1000)
10
11    tinybit.setMotorPWM(150, 150, 1000)
12
13    tinybit.setMotorPWM(200, 200, 1000)
14
15    tinybit.setMotorPWM(255, 255, 1000)
16
```

1) Import the library needed for this lesson from microbit: display for dot matrix display,

Image calls the built-in image, tinybit controls the car;

2) **display.show(Image.HAPPY)**: Display A smile on the micro:bit dot matrix.

3) Method1:

tinybit.car_run(a,b): Set the speed of car. The first parameter a indicates the speed of the left motor (0 ~ 255), and the second parameter b indicates the speed of the right motor (0 ~ 255).

4) Method2:

tinybit.setMotorPWM(a,b,c): This function adjusts the speed of the motor.\

The parameter a controls the left motor, the value range is -255 ~ 255, a positive number indicates the left motor rotates forward, a negative number indicates the left motor reverses, 0 indicates stop.

The parameter b controls the right motor, the value range is -255 ~ 255, a positive number is right motor rotates forward, a negative number is right motor reverses, 0 indicates stop.

The parameter c is delay time, unit is millisecond (ms).

From the hardware interface manual, we can know that the tracking sensor is directly driven by the micro:bit IIC pin.

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			P12	
Tracking sensor	Left tracking	L-DET			P13	
	Right tracking	R-DET			P14	
Ultrasonic module	Echo pin	ECHO			P15	
	Trigger pin	TRIG			P16	
Infrared receiver	Infrared remote control	RX			P8	
I2C interface	I2C interface	SCL			P19	
		SDA			P20	
Motor	Left motor Forward	L-IN1	STM8S	P06/TIM1_CH1		
	Left motor Reverse	L-INB		P07/TIM1_CH2		
	Right motor Forward	R-IN1		P03/TIM1_CH3		
	Right motor Reverse	R-INB		P04/TIM1_CH4		
RGB Searching light	Red	LED-R		P05/TIM2_CH1	SCL, SDA	P19, P20
	Green	LED-G		P03/TIM2_CH2		
	Blue	LED-B		P02/TIM2_CH3		

Position of motor as shown below:

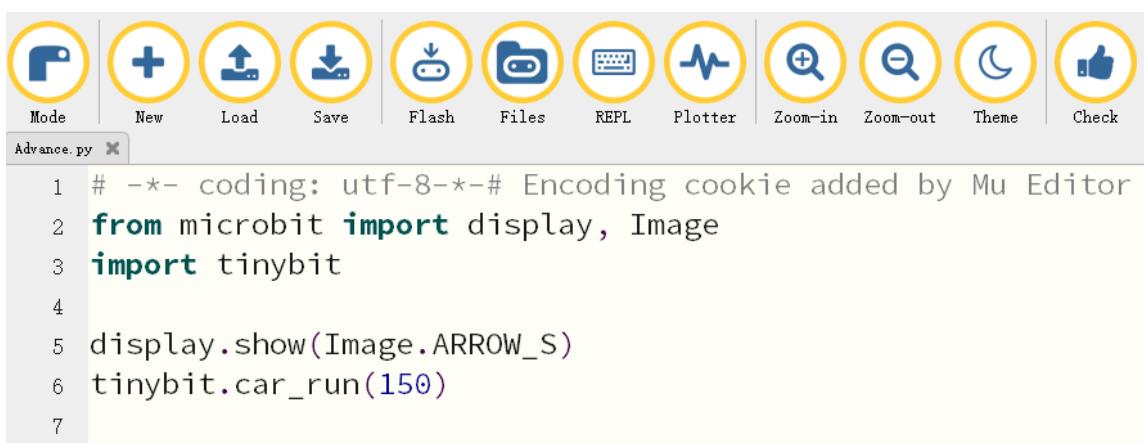


Programming and downloading :

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

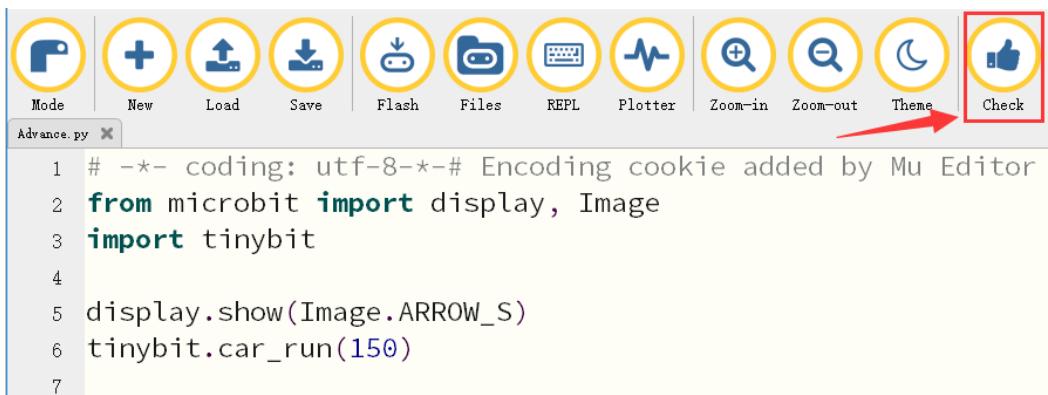
Note! All English and symbols should be entered in English, and the last line must be

a space.



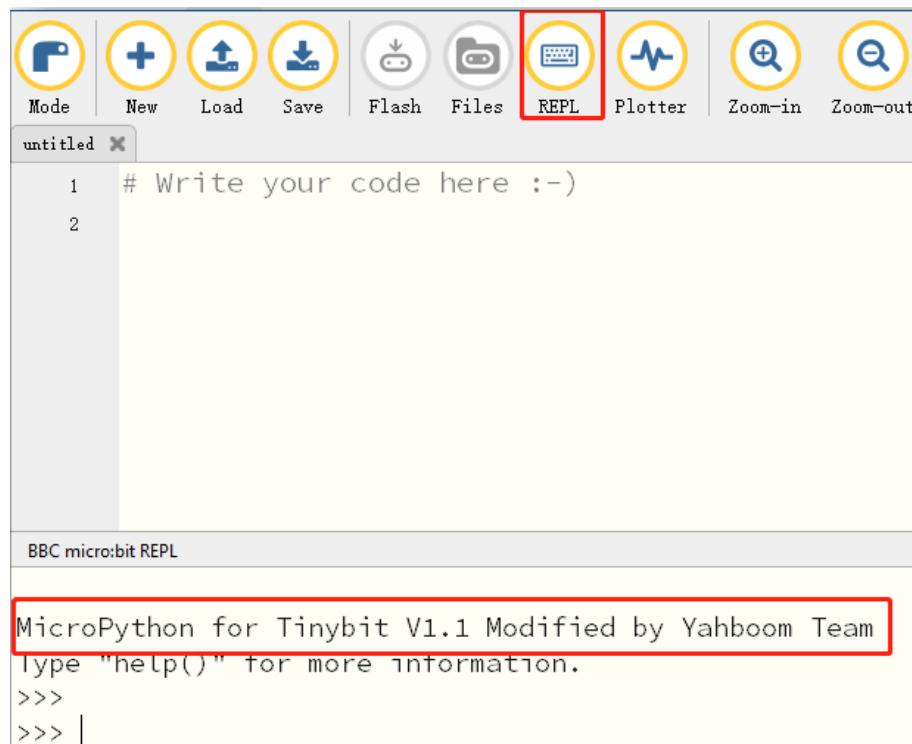
```
Advance.py
1 # -*- coding: utf-8-*-# Encoding cookie added by Mu Editor
2 from microbit import display, Image
3 import tinybit
4
5 display.show(Image.ARROW_S)
6 tinybit.car_run(150)
7
```

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.



```
Advance.py
1 # -*- coding: utf-8-*-# Encoding cookie added by Mu Editor
2 from microbit import display, Image
3 import tinybit
4
5 display.show(Image.ARROW_S)
6 tinybit.car_run(150)
7
```

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



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. The micro:bit dot matrix will display a smile, and the speed of the two motors will gradually increase, increasing the speed every second, running for one second after reaching the highest speed, and stopping for one second. And keep looping like this status.