

## Courses11 --- Ultrasonic

### Learning goal:

This lesson learns how to use ultrasonic sensor by Python programming.

### Code:

```

1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display, Image
3 import tinybit
4
5 display.show(Image.HAPPY)
6
7
8 while True:
9     a = tinybit.ultrasonic()
10    print(a)
11

```

- 1) Import the library needed for this lesson from micro:bit, display is used for dot matrix display, Image calls the built-in image, and tinybit controls the car.
- 2) **display.show(Image.HAPPY)**: Display a smile on micro:bit dot matrix.
- 3) **a = tinybit.ultrasonic()**: Read the ultrasonic data and save it to variable a;
- 4) **print(a)**: Print the data a detected by the ultrasonic wave through the serial port.

According to the hardware interface reference manual, the ultrasonic sensor connect to P15,P16 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			L-DET	P13
	Right tracking	R-DET			R-DET	P14
Ultrasonic module	Echo pin	ECHO	Micro-bit drive directly		ECHO	P15
	Trigger pin	TRIG			TRIG	P16
Infrared receiver	Infrared remote control	RX			RX	P8
I2C interface	I2C interface	SCL			SCL	P19
		SDA			SDA	P20
Motor	Left motor Forward	L-INB	STM8S	P06/TIM1_CH1	SCL, SDA	P19, P20
	Left motor Reverse	L-INB		P07/TIM1_CH2		
	Right motor Forward	R-INB		P03/TIM1_CH3		
	Right motor Reverse	R-INB		P04/TIM1_CH4		
RGB Searching light	Red	LED-R		P05/TIM2_CH1		
	Green	LED-G		P03/TIM2_CH2		
	Blue	LED-B		P02/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.**

```

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.

```

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]

```

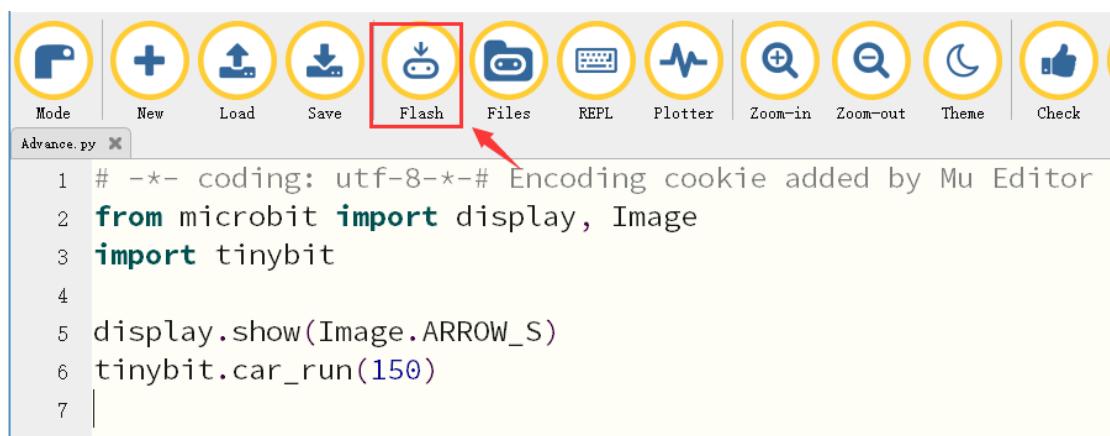
1 # Write your code here :-)
2

```

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. You can see the smiling face on the LED dot matrix screen. Open the serial port assistant, select the corresponding serial port, set the baud rate to 115200, and click to open the serial port, you can see the ultrasonic data.

