

## Button adjust speed

### Learning goals:

In this lesson, we mainly learn how to adjust speed of spider.

### Code:

#### ! Note:

Due to the problem of the building block structure, if you want the spider to move forward, the direction of the building block motor needs to be set backward.

```
1 from microbit import *
2
3 import microbit
4 import superbit
5
6 display.show(Image.HAPPY)
7 a = 0
8
9 def limit_change():
10     global a
11     if microbit.button_a.is_pressed():
12         a = a + 50
13         if a > 255:
14             a = 255
15     if microbit.button_b.is_pressed():
16         a = a - 50
17         if a < 0:
18             a = 0
19
20 return
21
22 while True:
23     limit_change()
24     superbit.motor_control(superbit.M1, -a, 0)
25     sleep(500)
```

Import the microbit library and the superbit library;

`display.show(Image.HAPPY)`: Micro:bit dot matrix will display smile faces;

`def limit_change()`: Create a function that is called within a loop to execute the function contents.

`button_a.is_pressed()`: Used to determine whether button A on the micro:bit

board is pressed;

`button_b.is_pressed()`: Used to determine whether button B on the micro:bit board is pressed;

`limit_change()`: Detect whether the A or B key on the micro:bit board is pressed, and execute the statement that operates on the variable a.

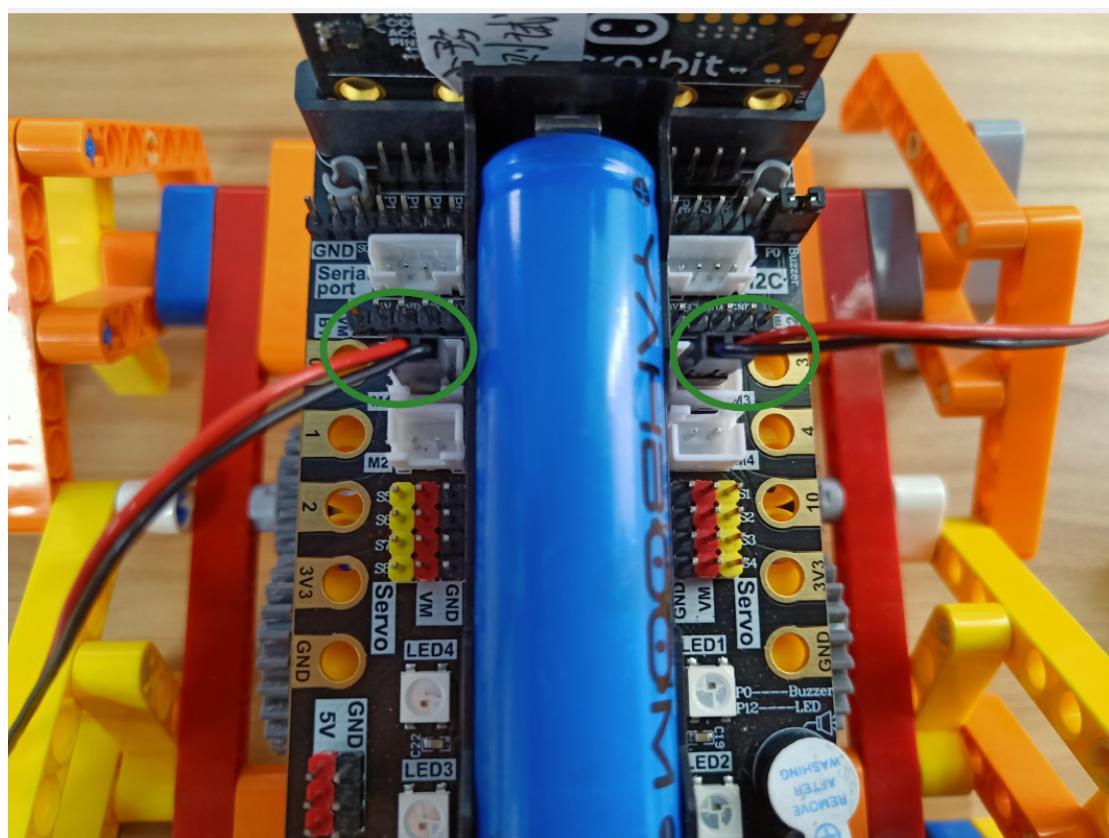
`superbit.motor_control(superbit.M1, 255, 0)`: M1 is the interface on the super:bit board, speed is 255;

`microbit.sleep (500)`: delay 500 milliseconds.

### About wiring:

We need to connect two building block motors to the M1 and M3 interfaces of the Super:bit expansion board.

The black wiring of the motor is near the battery side. 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.**

The screenshot shows the Mu 1.0.3 Python editor interface. The toolbar at the top has icons for Mode, New, Load, Save, Flash, Files, REPL, Plotter, Zoom-in, Zoom-out, Theme, and Check. Below the toolbar is a tab labeled "Spider advance.py". The code in the editor is:

```

1 from microbit import *
2 import superbit
3
4 display.show(Image.HEART)
5
6
7 while True:
8     superbit.motor_control(superbit.M1, -255, 0)
9     superbit.motor_control(superbit.M3, -255, 0)
10
11

```

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.

The screenshot shows the Mu 1.0.3 Python editor interface. The toolbar at the top has icons for Mode, New, Load, Save, Flash, Files, REPL, Plotter, Zoom-in, Zoom-out, Theme, and Check. The "Check" button is highlighted with a red box. Below the toolbar is a tab labeled "Spider advance.py". The code in the editor is the same as in the previous screenshot. At the bottom of the screen, there is a message box with the text "Well done! No problems here." in green.

3. Click the 'REPL' button to check whether the super:bit library has been downloaded. If not, please refer to the [1.preparation before class] ---> [2.How to import Yahboom superbit library] import super:bit library tutorial.

Mu 1.0.3 - Spider advance.py

```

1 from microbit import *
2 import superbbit
3
4 display.show(Image.HEART)
5
6
7 while True:
8     superbbit.motor_control(superbit.M1, -255, 0)
9     superbbit.motor_control(superbit.M3, -255, 0)
10

```

BBC micro:bit REPL

```

MicroPython for Super:bit V1.1 modified by Yahboom Team
Type "help()" for more information.
>>>

```

4. After writing the code, please click the 'Flash' button to download the program to the micro:bit board.

Mu 1.0.3 - Spider advance.py

```

1 from microbit import *
2 import superbbit
3
4 display.show(Image.HEART)
5
6
7 while True:
8     superbbit.motor_control(superbit.M1, -255, 0)
9     superbbit.motor_control(superbit.M3, -255, 0)
10
11

```

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

For the specific method of adding library files, please refer to [【Preparation before class】](#) --- [【How to import Yahboom superbbit library】](#)

## 5. Experimental phenomena

After program download is complete, micro:bit dot matrix will display “Heart”.

We can press A button of micro:bit to increase spider speed, max speed is 255.

We can press B button of micro:bit to decrease spider speed, min speed is 0.

If you need to start over, press the reset button on the back of the micro:bit board.