

Customize the front and back sides

Learning goals

In this lesson, we mainly learn how to control building block motor and RGB lights by micro:bit and Super:bit expansion board.

Code

```
1 from microbit import *
2 import microbit
3 import superbit
4 import neopixel
5
6 k = 0
7 flag = 2
8 display.show(Image.HAPPY)
9 np = neopixel.NeoPixel(pin12, 4)
10
11 def limit_change():
12     global flag
13     if microbit.button_a.is_pressed():
14         superbit.motor_control(superbit.M1, -255, 0)
15         flag = 0
16         display.show(Image.ARROW_S)
17
18     elif microbit.button_b.is_pressed():
19         superbit.motor_control(superbit.M1, 255, 0)
20         flag = 1
21         display.show(Image.ARROW_N)
22
23 while True:
24     limit_change()
25     if flag == 1:
26         while k < 255:
27             np[0] = (k, 0, 0)
28             np[1] = (k, 0, 0)
29             np[2] = (k, 0, 0)
30             np[3] = (k, 0, 0)
31             np.show()
32             k += 1
```

```
33         np.clear()
34
35     else:
36         np[0] = (k, 0, 0)
37         np[1] = (k, 0, 0)
38         np[2] = (k, 0, 0)
39         np[3] = (k, 0, 0)
40         np.show()
41         k = 255 - k
42         np.clear()
43
```

Import microbit, neopixel and superbit library.

`display.show(Image.HAPPY)` : Micro:bit dot matrix will display a smile pattern.

`np = neopixel.NeoPixel(pin12, 4)` : Setting the pins of RGB lights, there are 4 RGB lights in total.

`limit_change()` : Determines whether button A and B is pressed in this function, if button A is pressed, motor with 255 speed, if button B is pressed, motor with -255 speed. And micro:bit display different pattern, change the value of flag.

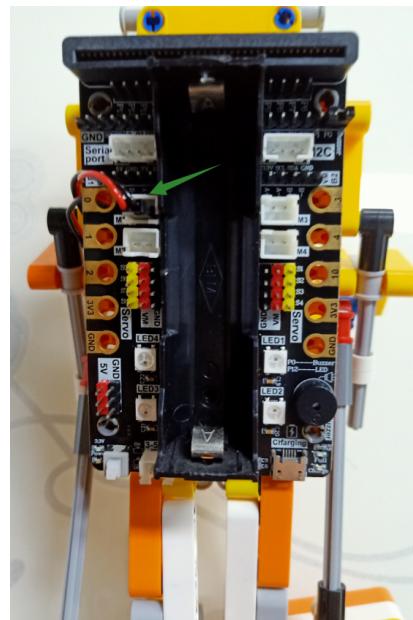
In an infinite loop, run the `limit_change()` function all the time and determine the status of the flag. If flag = 1, RGB light will realize breathing effect.

About wiring

As shown below,

Building block motor connect to M1 interface of super:bit.

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



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.

```

from microbit import *
import superbit
display.show(Image.HAPPY)
while True:
    superbit.motor_control(superbit.M1, 255, 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.

```

Ferris wheel rotate.py
1 from microbit import *
2 import superbit
3
4 display.show(Image.HAPPY)
5
6 while True:
7     superbit.motor_control(superbit.M1, 255, 0)
8

```

Good job! No problems found.

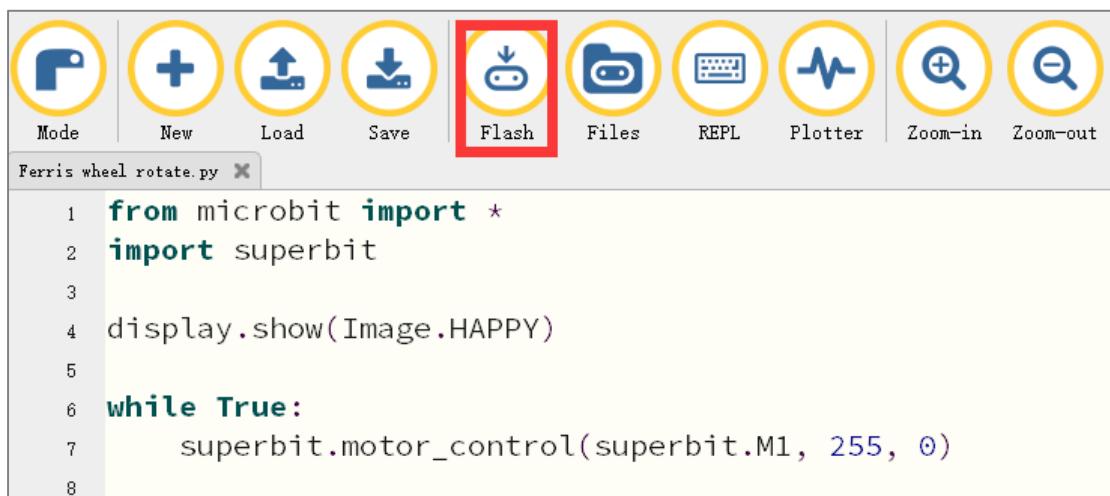
3. Click the 'REPL' button to check whether the super:bit library has been downloaded. If not, please refer to the [1.preparation before class] ---> [2.How to import Yahboom superbit library] import super:bit library tutorial.

```

Ferris wheel rotate.py
1 from microbit import *
2 import superbit
3
4 display.show(Image.HAPPY)
5
6 while True:
7     superbit.motor_control(superbit.M1, 255, 0)
8
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.



If the program is wrong or the experimental phenomenon is wrong after downloading, please confirm whether you have downloaded the Superbit 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 superbit library】](#)

Experimental phenomena

After the program is successfully downloaded, the micro:bit dot matrix will display the smile pattern and the robot will stop. When we press the A button, the side with the motor is front for robot, the robot will advance and micro:bit dot matrix will display south arrow. When we press the B button, the side with the super:bit board is front for robot, the robot will back, micro:bit dot matrix will display north arrow and RGB light will realize breathing effect.