Spider advance

1. Learning Objectives

In this course, we mainly learn how to use Python programming to achieve that the building block spider keeps moving forward.

2. Building Blocks

For the building block steps, please refer to the installation drawings of [Assembly course]-[Spider] in the materials or the building block installation album.

3. Motor Wiring

The motor wiring on the left side of the car is inserted into the M1 interface of the Super:bit expansion board, and the black line is close to the battery side;

The motor wiring on the right side of the car is inserted into the M3 interface of the Super:bit expansion board, and the black line is close to the battery side;

As shown in the figure below:
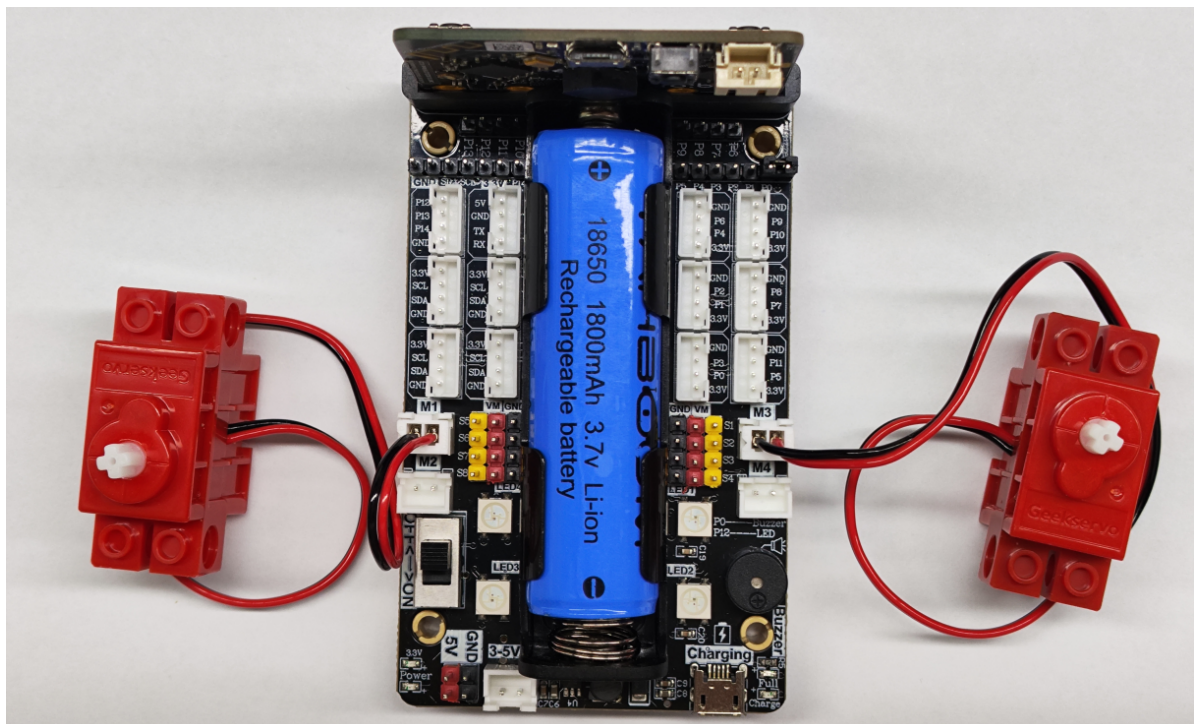
4. Code Analysis

For the program of this course, please see the **Spider advance.py** file.

```python
from microbit import *
import superbit
```

First, import the library needed for this lesson from microbit: the superbit library is dedicated to the superbit expansion board.

```python
display.show(Image.HAPPY)
```

display.show(Image.HAPPY): Display a smiley face pattern on the microbit dot matrix;

```python
while True:
    superbit.motor_control(superbit.M1, -255, 0)
    superbit.motor_control(superbit.M3, -255, 0)
```

while True: infinite loop

superbit.motor_control(superbit.M1, -255, 0): The motor connected to the M1 interface reverses at a speed of 255; **(Due to the problem of the building block structure, if you want the spider to move forward, the building block motor needs to rotate backward)**

.....

Loop like this.

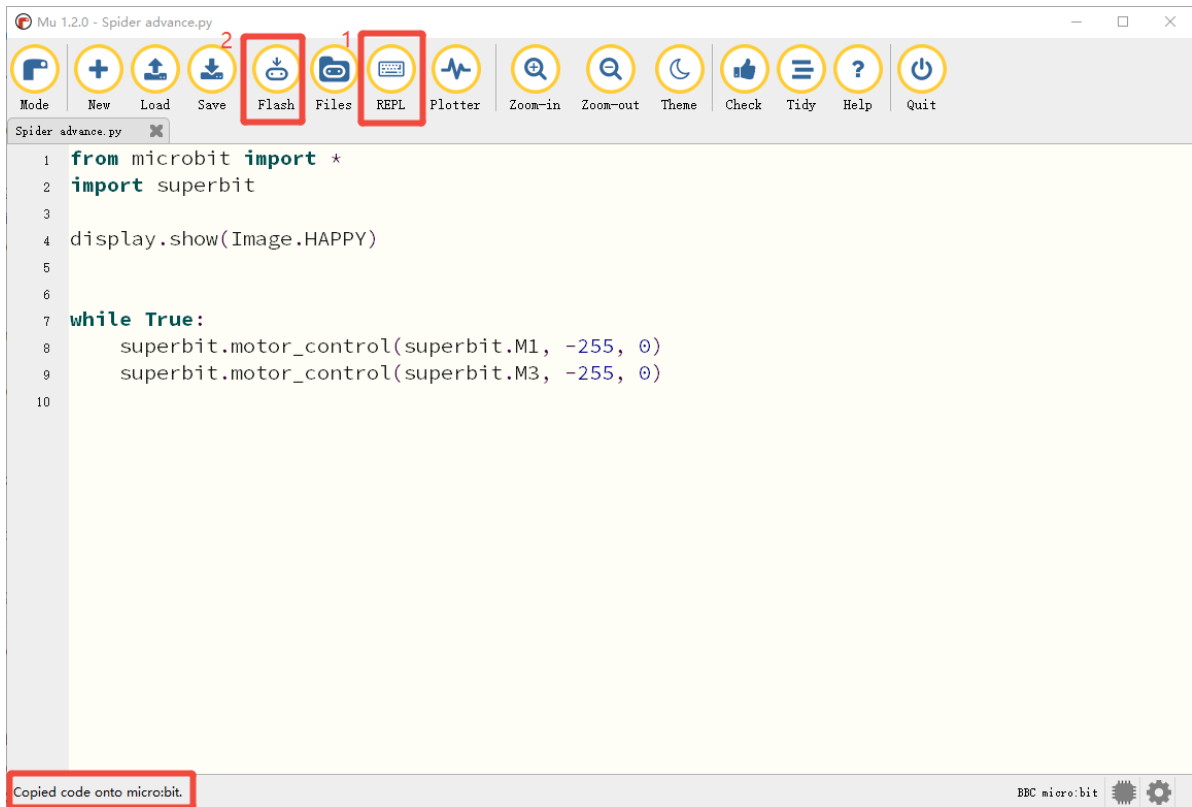# 5. Write and download the program

1. Open the Mu software and enter the code in the editing window. **Note! All English and symbols should be entered in English, use the Tab key for indentation, and the last line ends with a blank program.**
2. Click the thumb 'Check' button to check if there are any errors in our code. If a cursor or underline appears in a line, it means a syntax error. Please check and modify it. If there is no error, the lower left corner will prompt that there is no problem with the detection.
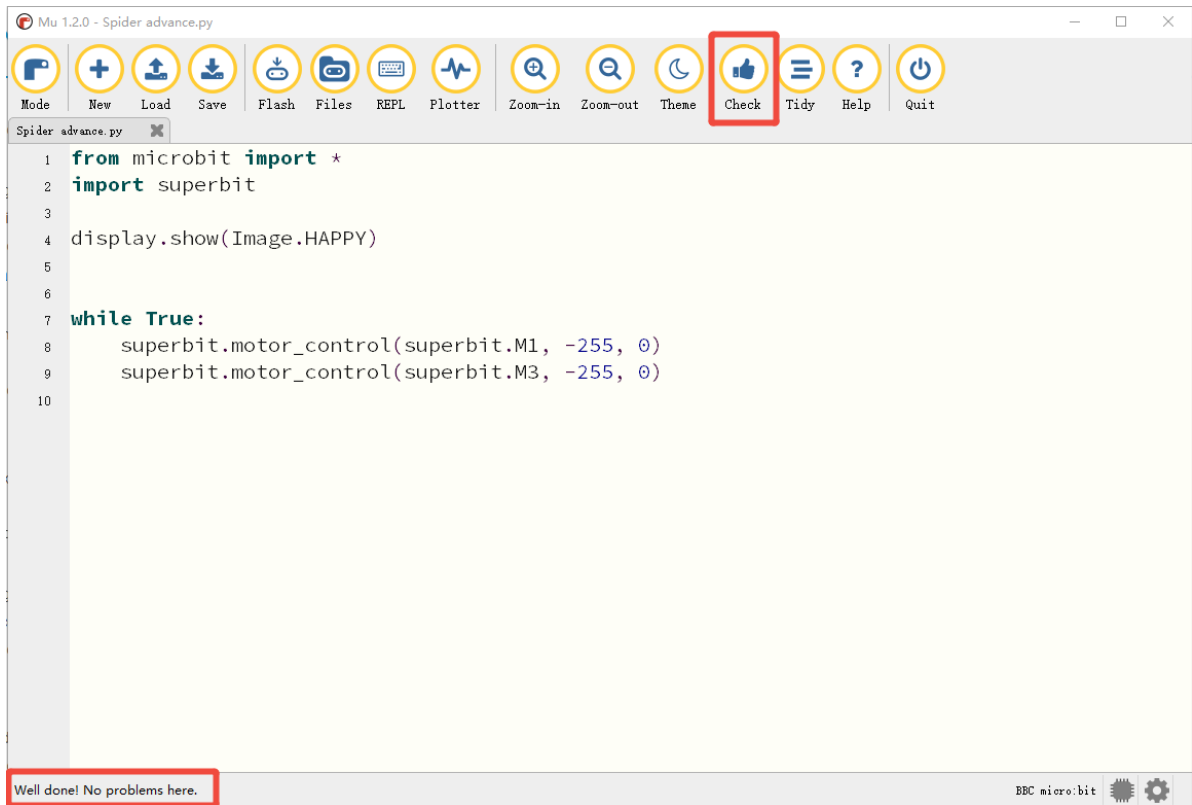
3. Click the 'REPL' button to check whether the Superbit library has been downloaded. If not, please refer to [Preparation before class] --> [2.4 Python Programming Guide].
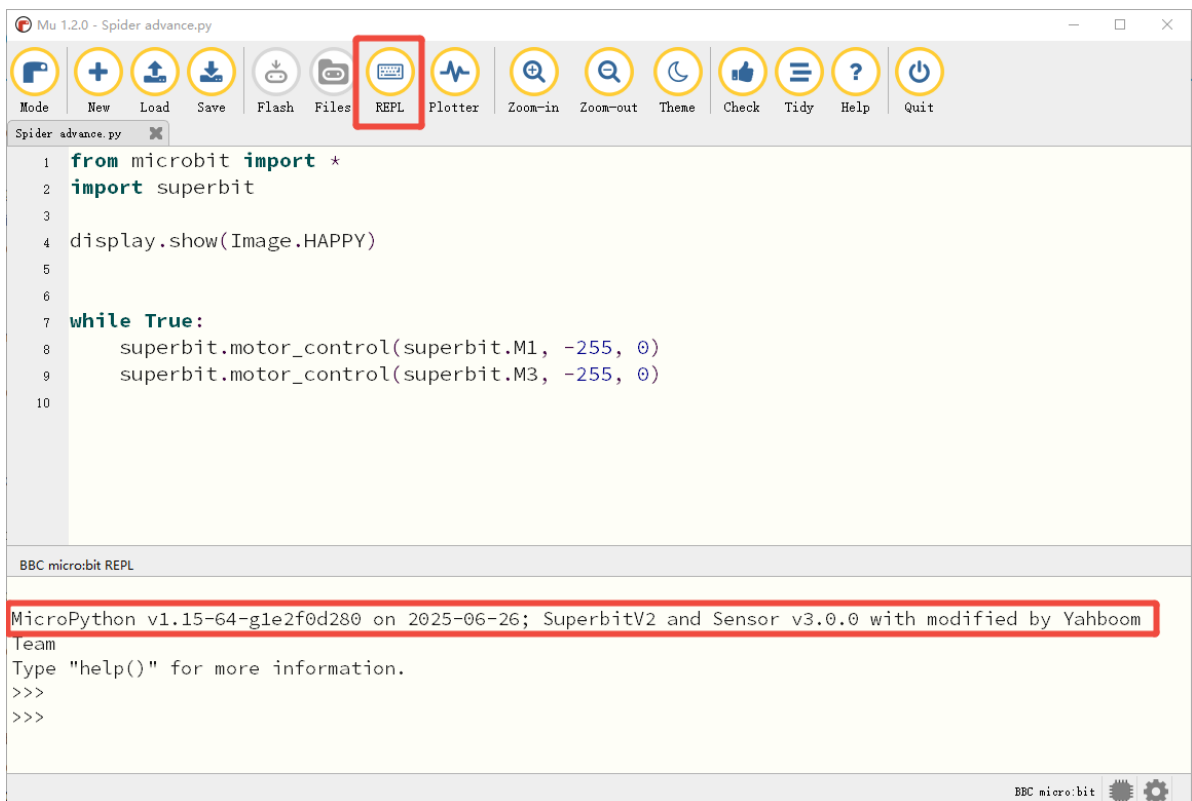

4. After the program is written, connect the computer and microbit mainboard with a microUSB data cable, click the 'Flash' button to download the program to the micro:bit mainboard. **(You need to click the 'REPL' button again to turn off the import library file function before you can download the program normally).**

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

5. If the download fails, please confirm whether the microbit is connected to the computer normally via the microUSB data cable and the Superbit Python library has been imported.

6. Experimental phenomenon

After the program is downloaded successfully, the micro:bit dot matrix will display a smiley face, as shown in the figure below. Turn on the power switch, and the building block spider will keep moving forward.
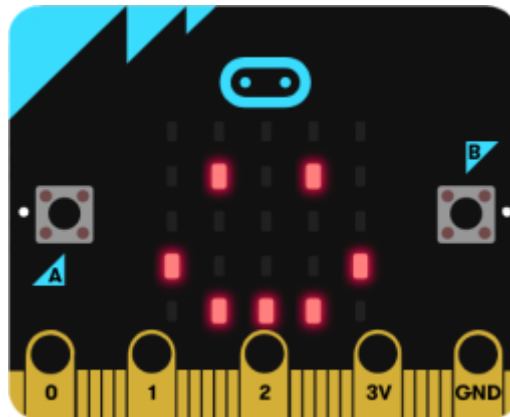
If you need to restart, please press the reset button on the back of the micro:bit motherboard.