

Button control platform

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1. Learning objectives
2. Building blocks
3. Motor wiring
4. Code analysis
5. Write and download the program
6. Experimental phenomenon

1. Learning objectives

In this course, we mainly learn how to use Python programming to achieve that when the A button on the micro:bit motherboard is pressed, the lifting platform rises; when the B button on the micro:bit motherboard is pressed, the lifting platform descends.

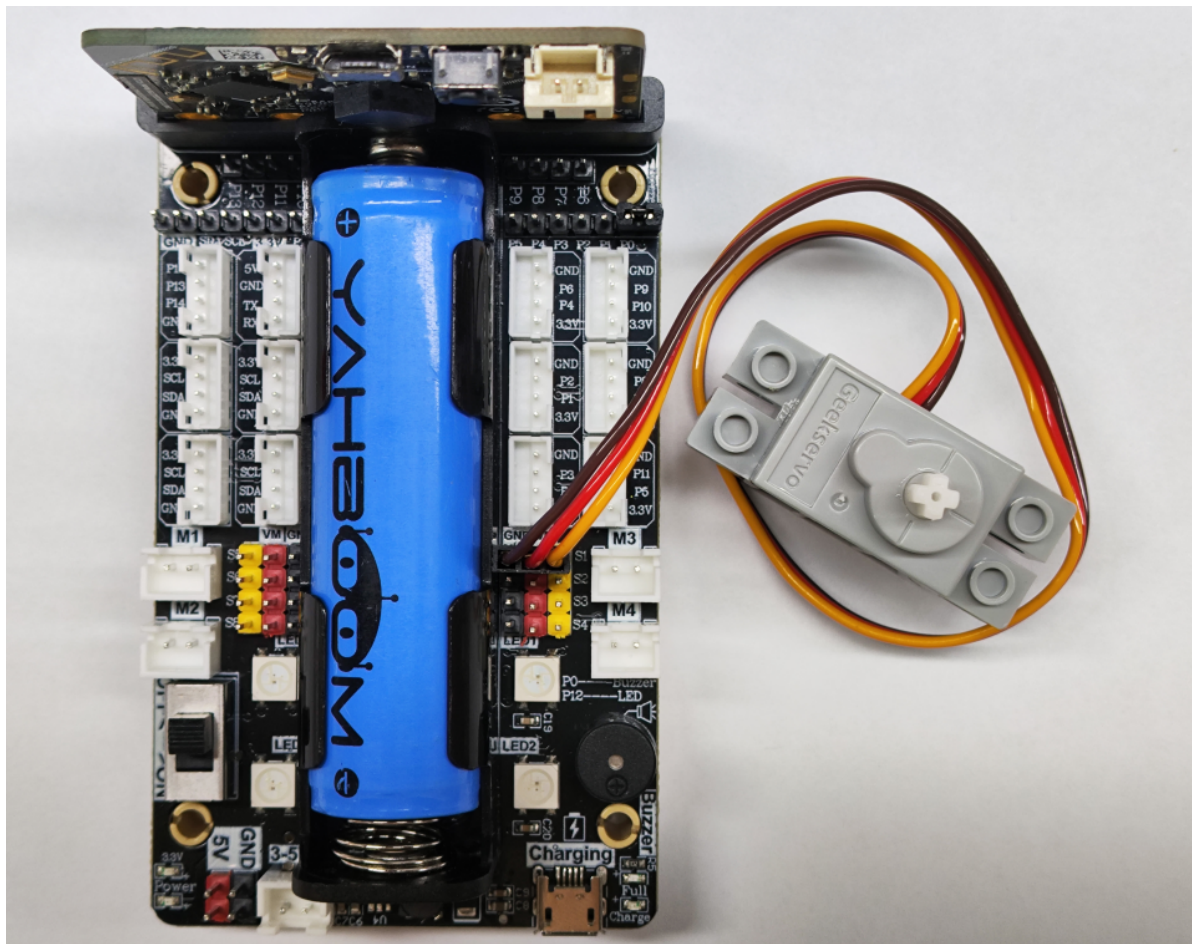
2. Building blocks

For detailed steps of building blocks, please refer to the installation drawings of [Assembly course]-[Lifting platform] in the materials or the building blocks installation album.

3. Motor wiring

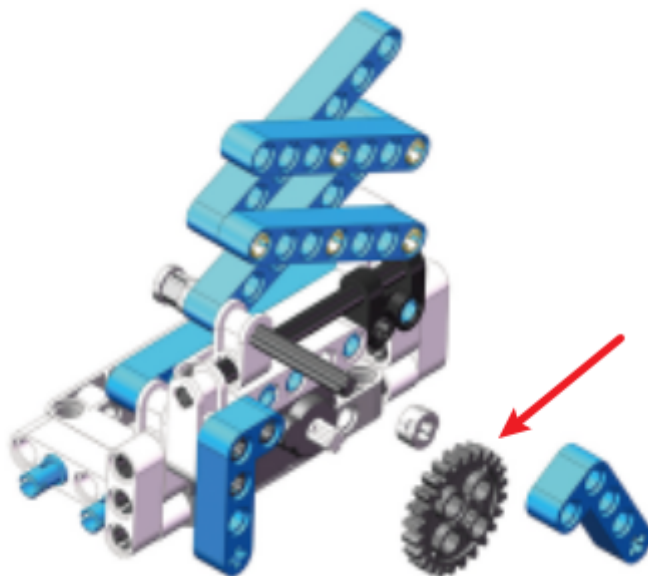
The building block servo wiring is inserted into the S1 interface of the Super:bit expansion board, and the orange servo wiring is inserted into the yellow pin of S1.

As shown in the figure below:



! Notes:

When taking a course related to building block servos for the first time, we need to remove the gears on the servos and upload the program of this course to the micro:bit; then turn on the power switch of the Super:bit expansion board and wait for the building block servos to turn to the initial position; then, we can turn off the power, adjust the lifting platform to the lowest position, as shown in the figure below, and then install the servo gear. (If you have used the lifting platform and servo-related programs before, you can skip this step)



4. Code analysis

For the program of this course, please see the **Button control platform.py** file.

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

First, import the libraries needed for this lesson from microbit: the superbit library is compatible with the superbit expansion board;

```
display.show(Image.HAPPY)  
superbit.servo270(superbit.S1, 90)
```

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

superbit.servo270(superbit.S1, 90): Initialize the building block servo to rotate to about 90°;

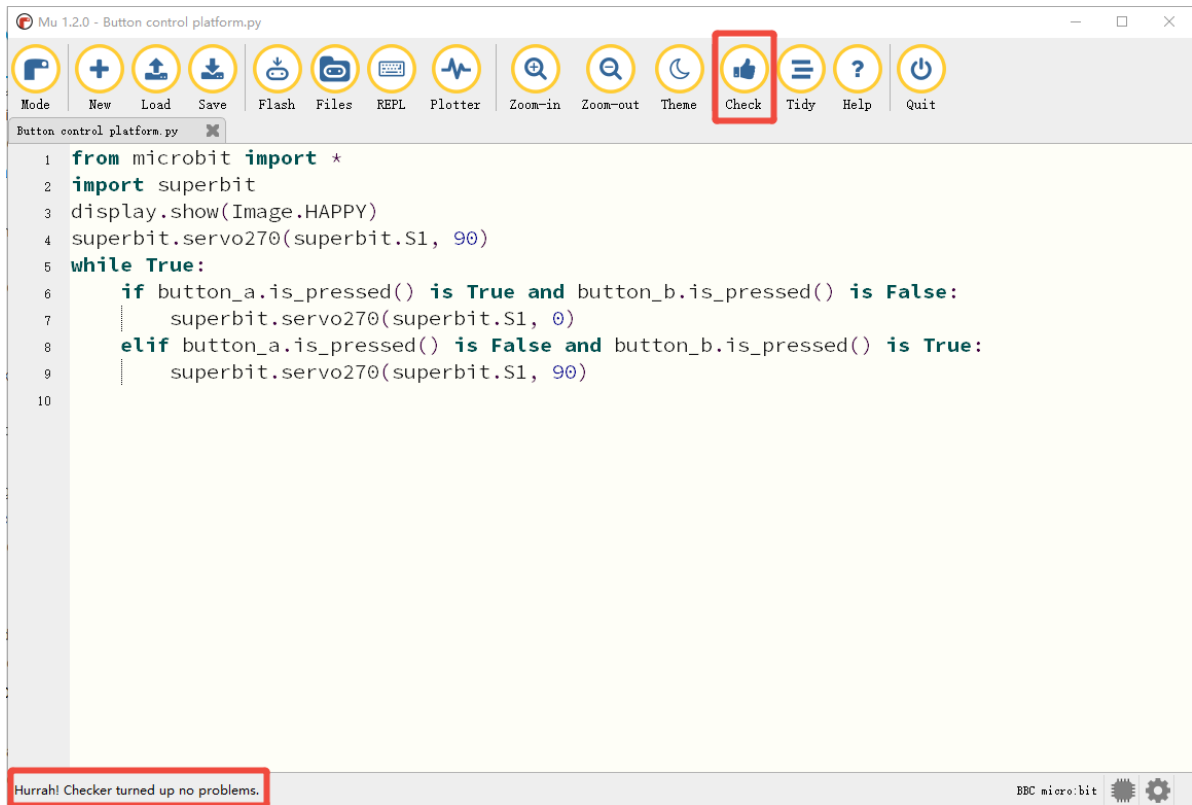
```
while True:  
    if button_a.is_pressed() is True and button_b.is_pressed() is False:  
        superbit.servo270(superbit.S1, 0)  
    elif button_a.is_pressed() is False and button_b.is_pressed() is True:  
        superbit.servo270(superbit.S1, 90)
```

while True: infinite loop

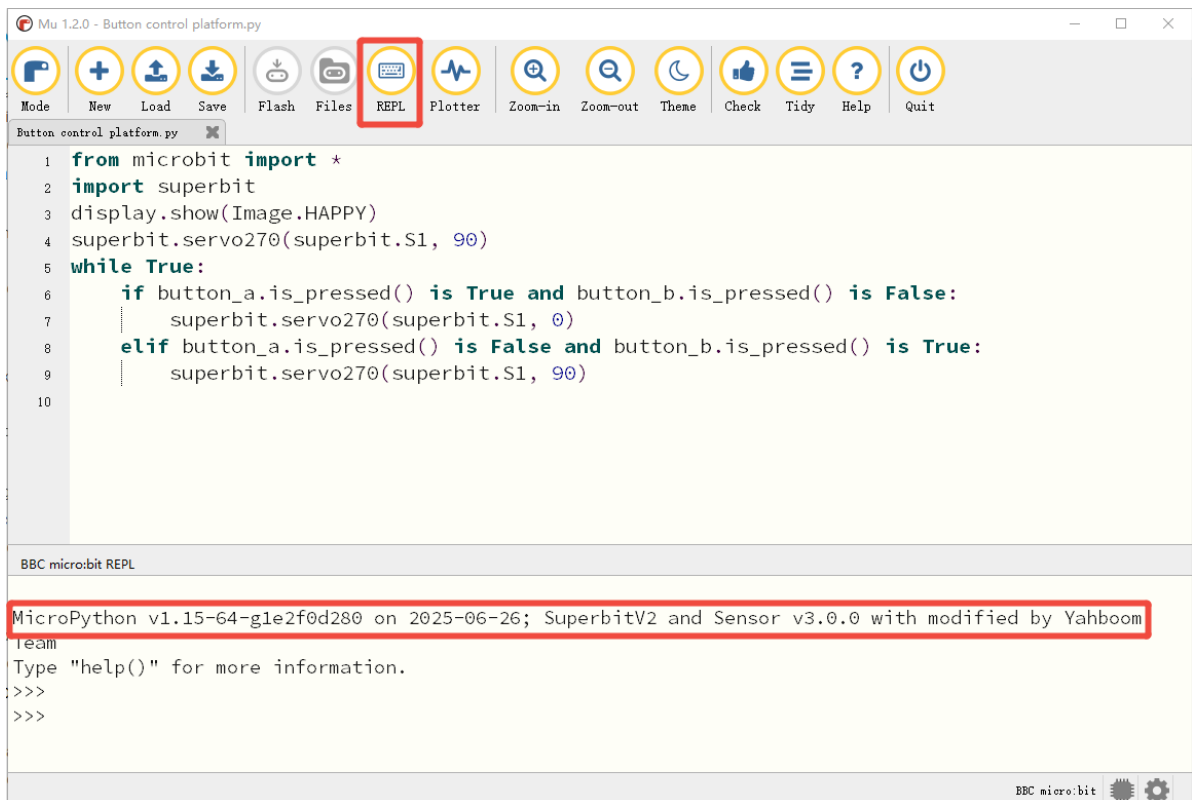
In the infinite loop, determine whether the A and B buttons on the microbit mainboard are pressed. If the A button is pressed, the servo rotates to 0° and the platform rises; if the B button is pressed, the servo rotates to 90° and the platform descends.

5. Write and download the program

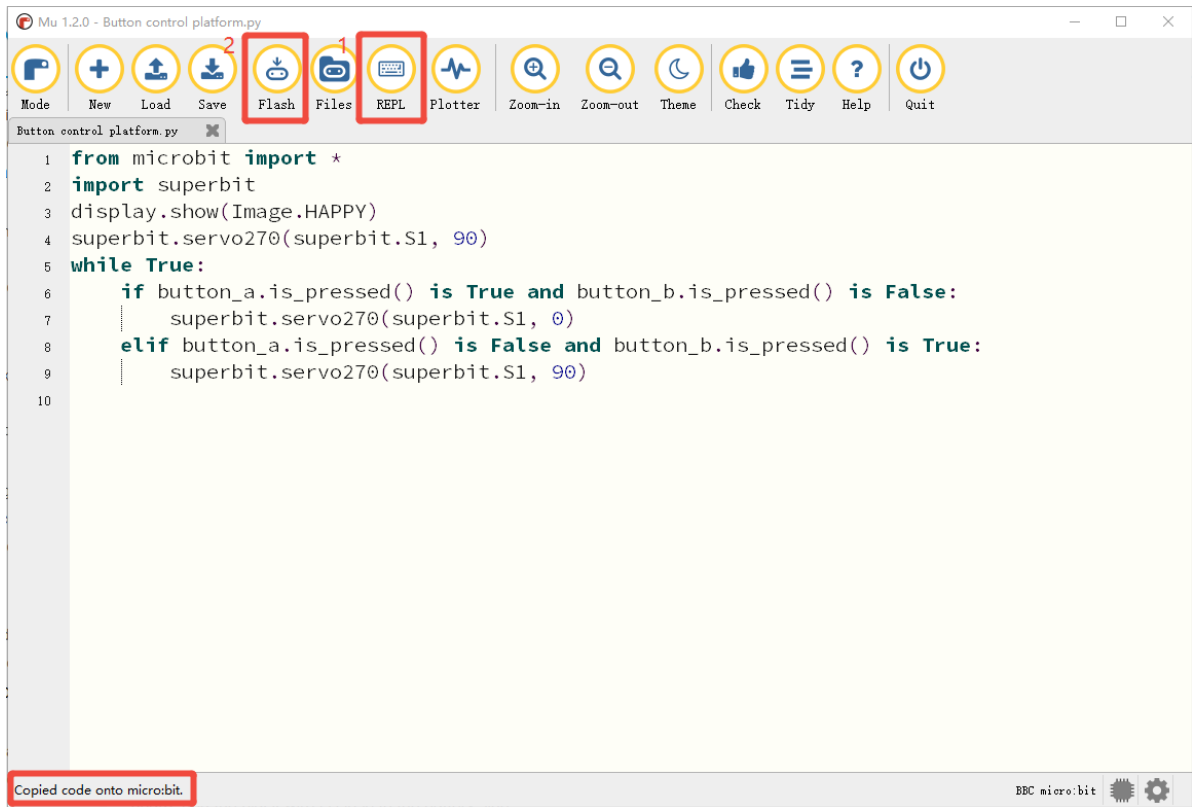
1. Open the Mu software and enter the code in the editing window. **Note! All English and symbols should be entered in English mode, use the Tab key for indentation, and the last line ends with a blank program.**
2. Click the thumb 'Check' button to check if there are any errors in our code. If a cursor 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, please 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).**



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

6. Experimental phenomenon

After the program is successfully downloaded, the micro:bit dot matrix will display a smiley face, as shown in the figure below. Turn on the power switch, and the servo will initialize to 0° (platform descends). When the A button on the micro:bit motherboard is pressed, the lifting platform rises; when the B button on the micro:bit motherboard is pressed, the lifting platform descends.

If you need to restart, press the reset button on the back of the micro:bit motherboard.