

## Lifting platform

**Note:** Please use the double-headed data cable provided by us to connect the Micro:bit board and expansion board to the computer, otherwise it will not be possible to drive the servo due to insufficient power.

### 1. Learning target

In this lesson, we will use the micro:bit board, building blocks and sensor modules to build a lifting platform. The lifting platform can use the joystick to control the lift, and we can also trigger the lifting platform by pressing the button.

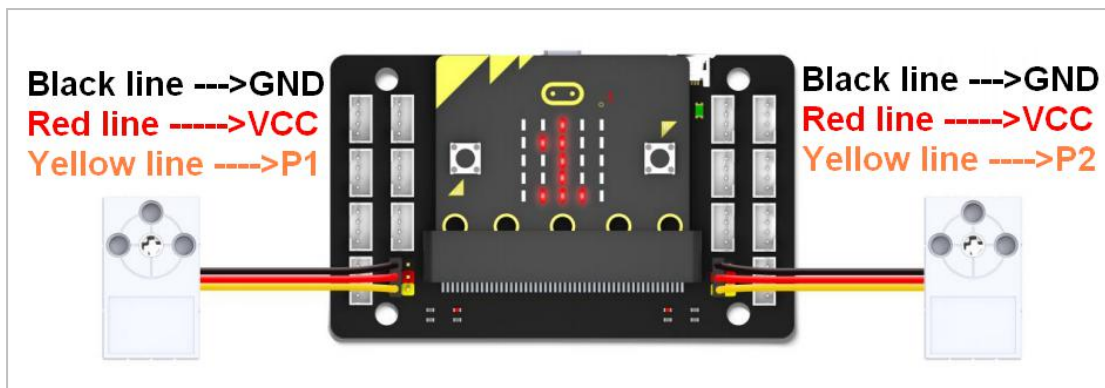
### 2. Servo calibration

Before assembling the building blocks, we need to use code to calibrate the servo to a fixed angle. If servo is not calibrated before using, it is easy to jam the servo during use and cause the servo to stall and damage the servo.

Calibration method:

2.1 Connect the brown line of the servo to GND (black), the red line of the servo to VCC (red), and the yellow line of the servo to IO on expansion board.

The left servo is connected to P1, and the right servo is connected to P2. As shown below.



2.2 Then connect the computer to the Micro:bit board and expansion board through the double-head micro USB cable we provided.

2.3 Download the servo calibration code ([Servo-calibration-Lifting-platform.hex](#)) to the micro:bit board.

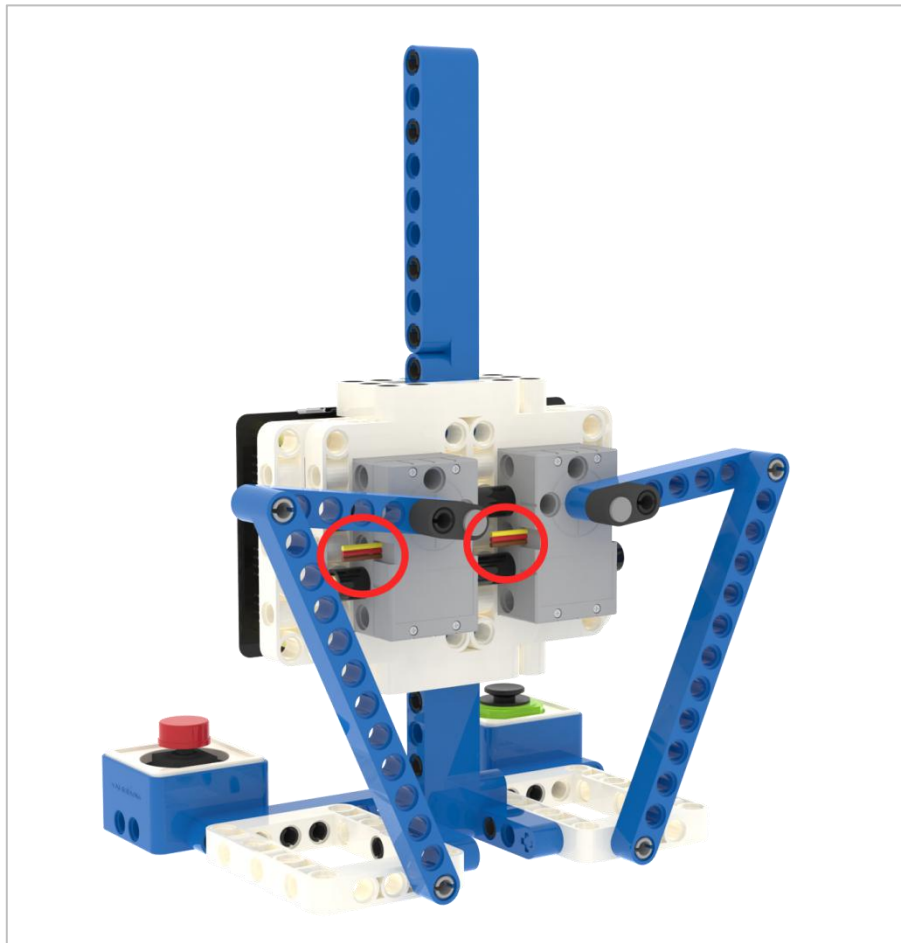
2.4 When a "3" pattern is displayed on the dot matrix of the Micro:bit board, it means the servo be calibrated successfully.

### 3. Building blocks assembly

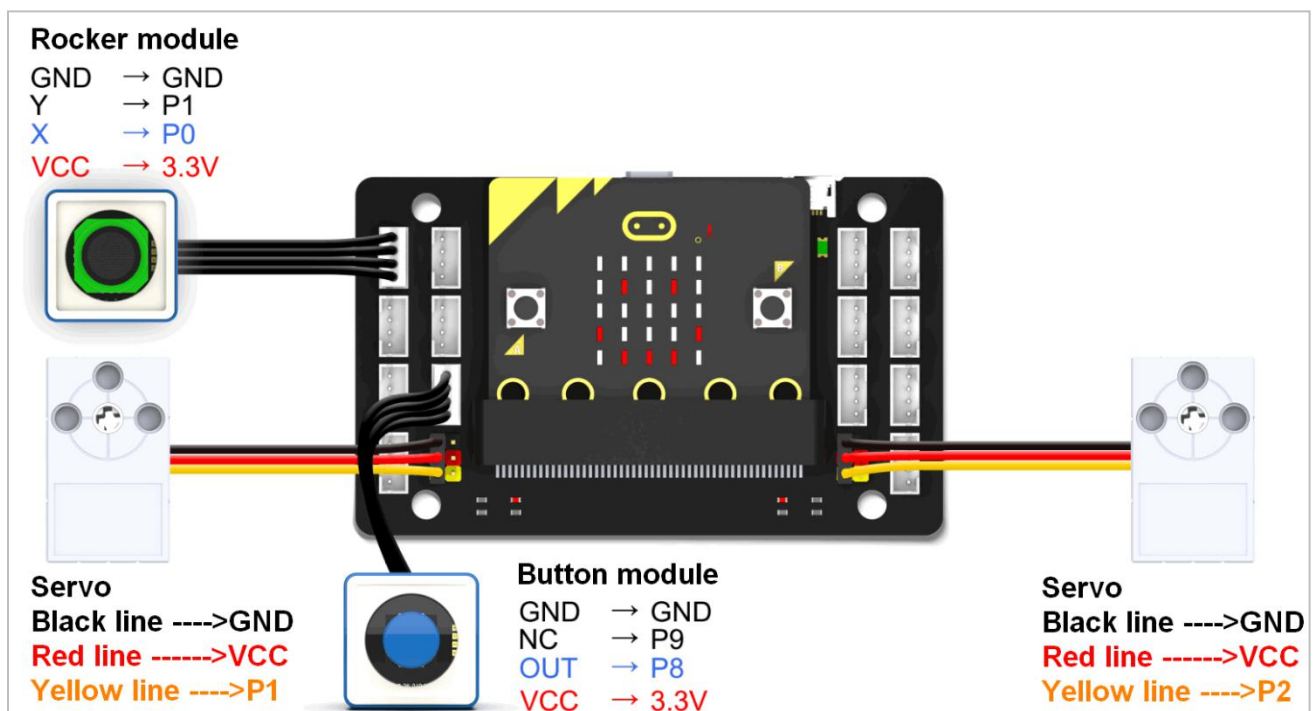
Please follow the steps we provide to assemble the building block models.

Pay attention to the installation direction of the servo when assembling, otherwise the servo will be damaged due to the wrong angle of the servo after running the program.

After the assembly is completed, please check the wiring of the servo as shown below.



#### 4. About wiring



#### 5. Programming method

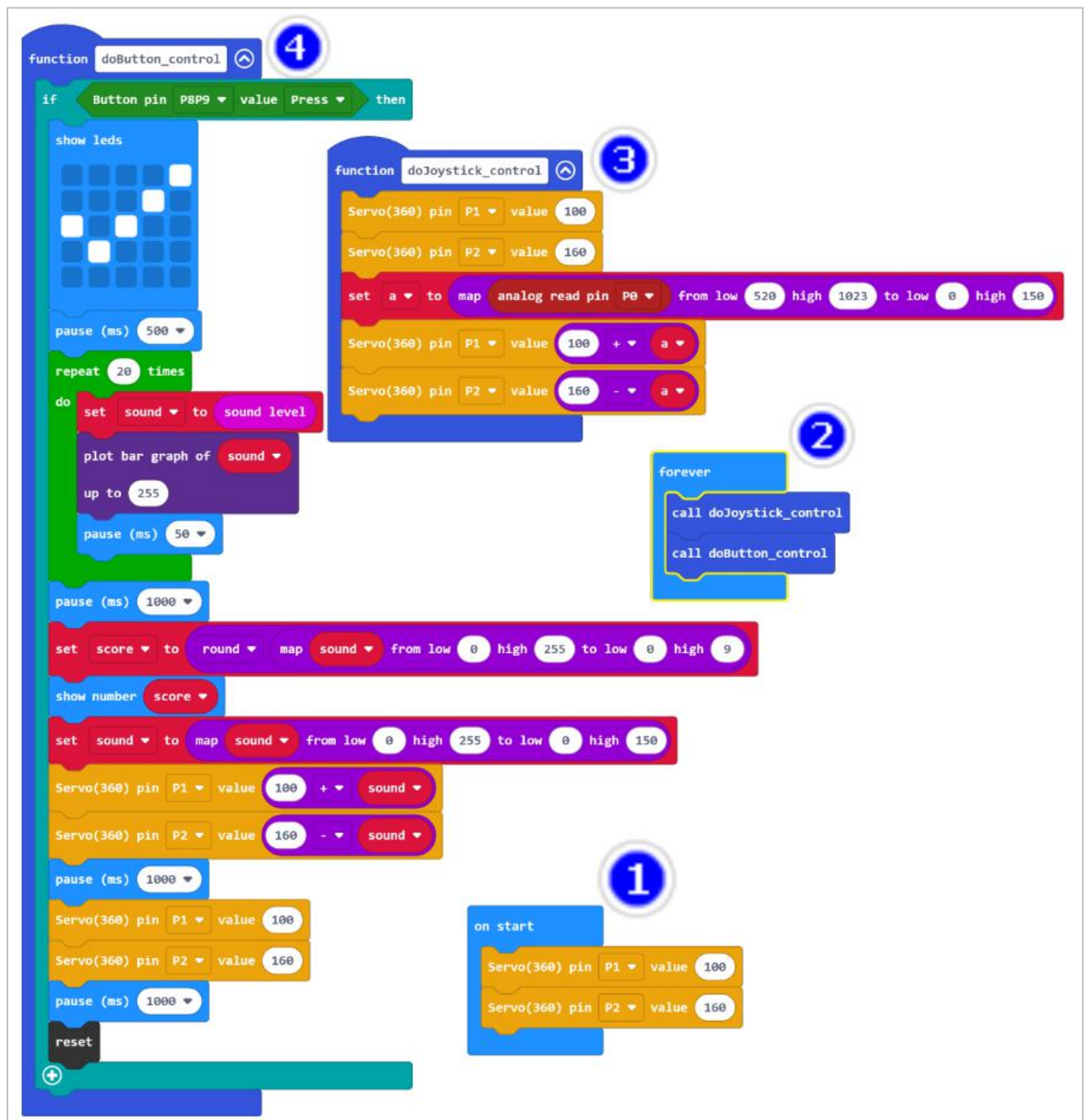
**Mode 1 online programming:** First, we need to connect the micro:bit to the computer by USB cable.

The computer will pop up a USB flash drive and click on the URL in the USB flash drive:  
<http://microbit.org/> to enter the programming interface. Add the Yahboom package  
<https://github.com/YahboomTechnology/Module-World> to program.

**Mode 2 offline programming:** We need to open the offline programming software. After the installation is complete, enter the programming interface, click 【New Project】 , add Yahboom package: <https://github.com/YahboomTechnology/Module-World> , you can start programming.

## 6. Code

The summary program is shown below.



Code-① Indicating initialization. The lifting platform drops to the bottom.

Code-② It is the main loop function of the program, which continuously calls the button control function and joystick control function. If the button or joystick is triggered, the corresponding function will be executed.

Code-③ The joystick controls lifting platform rise and fall.

Code-④ The button controls start lifting platform to enter sound control mode.

## **7. Experimental phenomena**

When we push the rocker forward, the lifting platform will rise, the rocker will return to the middle, and the lifting platform will fall to the bottom.

We can also use buttons to control the lifting platform. When the button module is pressed, a "v" will be displayed on the dot matrix, and then the current sound intensity will be detected. The louder the sound, the more LED on Micro:bit board are lit, and finally a sound score will be obtained on the dot matrix, the score range is 1-9.

Finally, the lifting platform will rise to the corresponding height. The higher the score, the higher the lifting platform will rise.