Color sorter

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 micro:bit board, building blocks and sensor modules to build a color sorter. It can distinguish red, green, blue three colors.

2. Servo calibration

Before assembling the building blocks, we need to use code to calibrate the servo to a fixed angle. If calibration is not calibrated before using, it is easy to jam the servo during use and cause the steering gear 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, 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-color-sorter.hex**) to the micro:bit board.

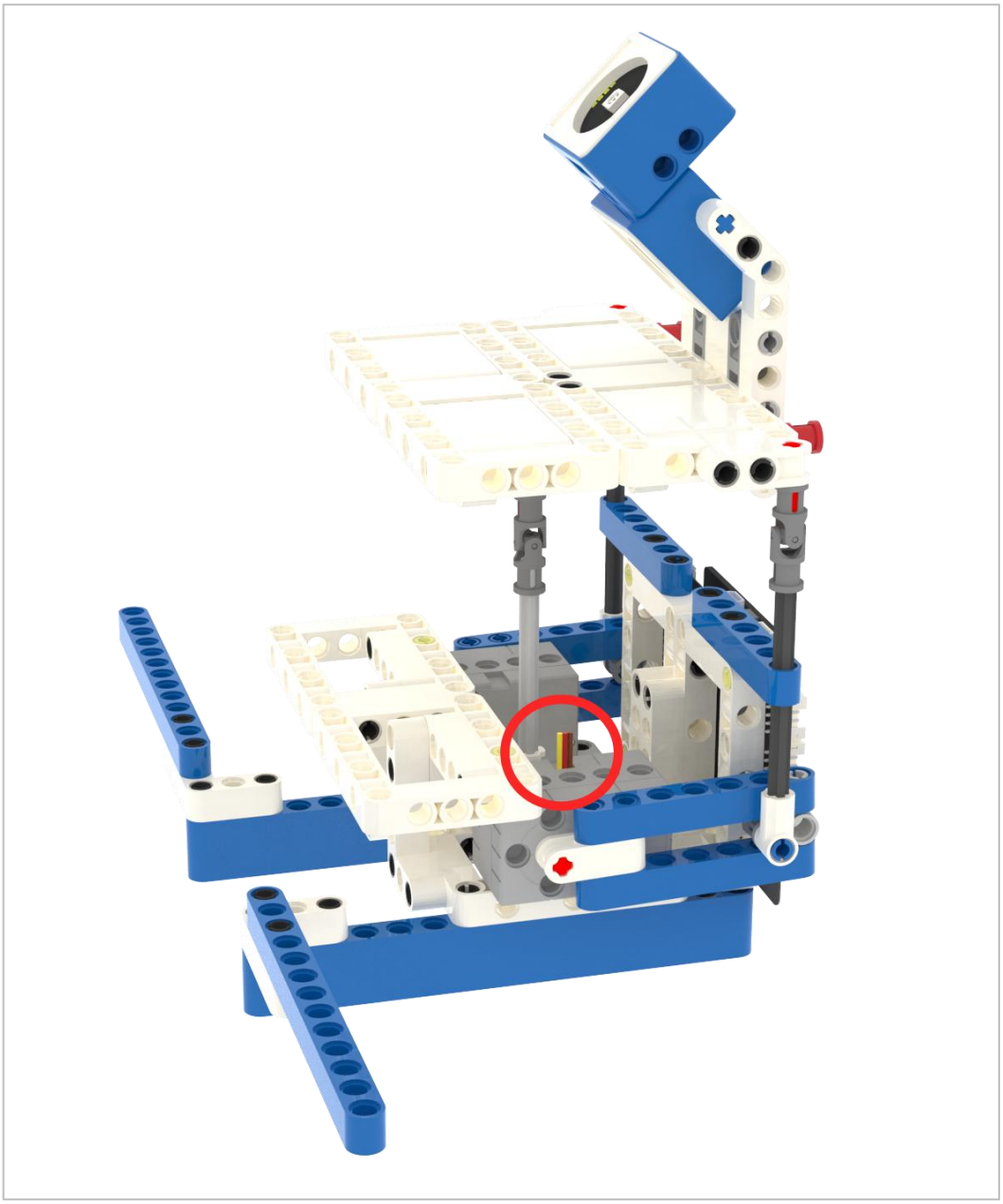
2.4 When a "0" pattern is displayed on the dot matrix of the Micro:bit board, it means the servo be calibrated successfully.

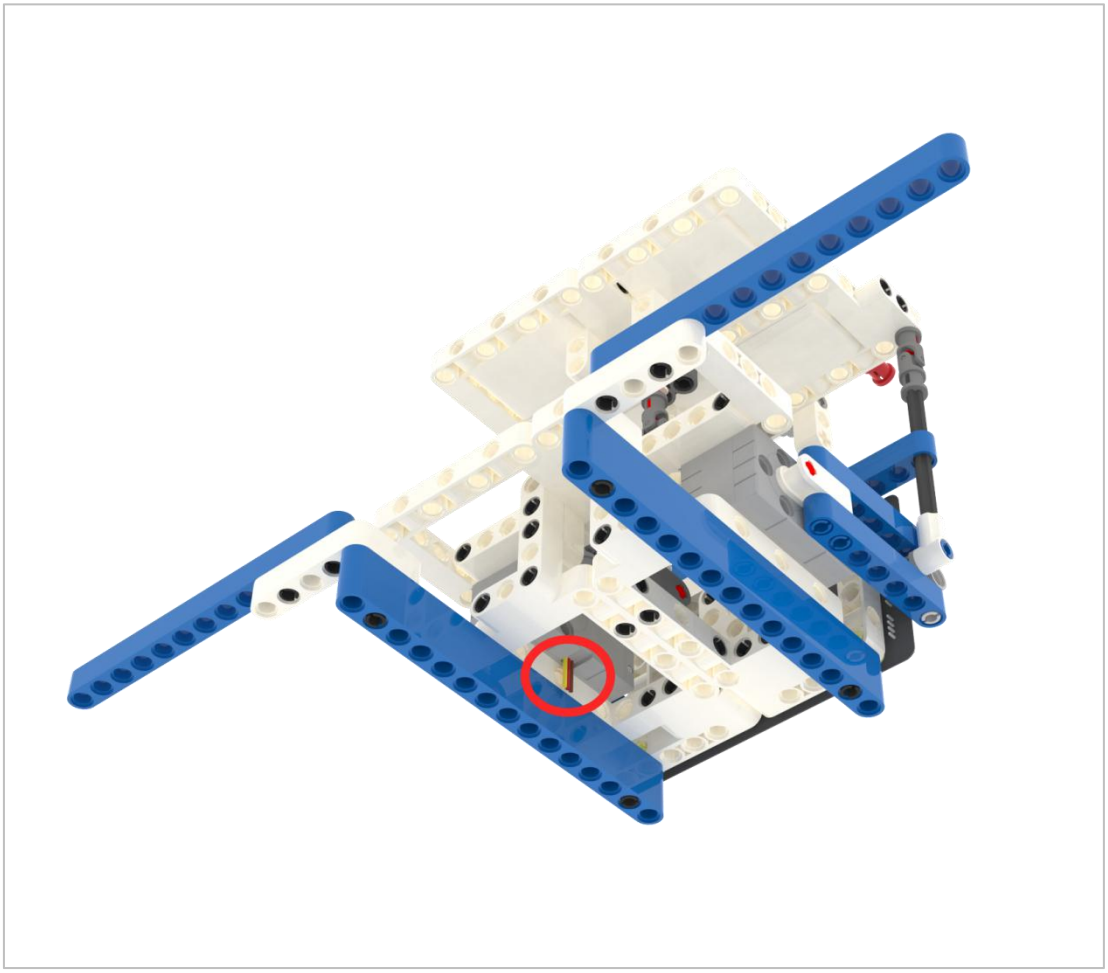
3. Building blocks assembly

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

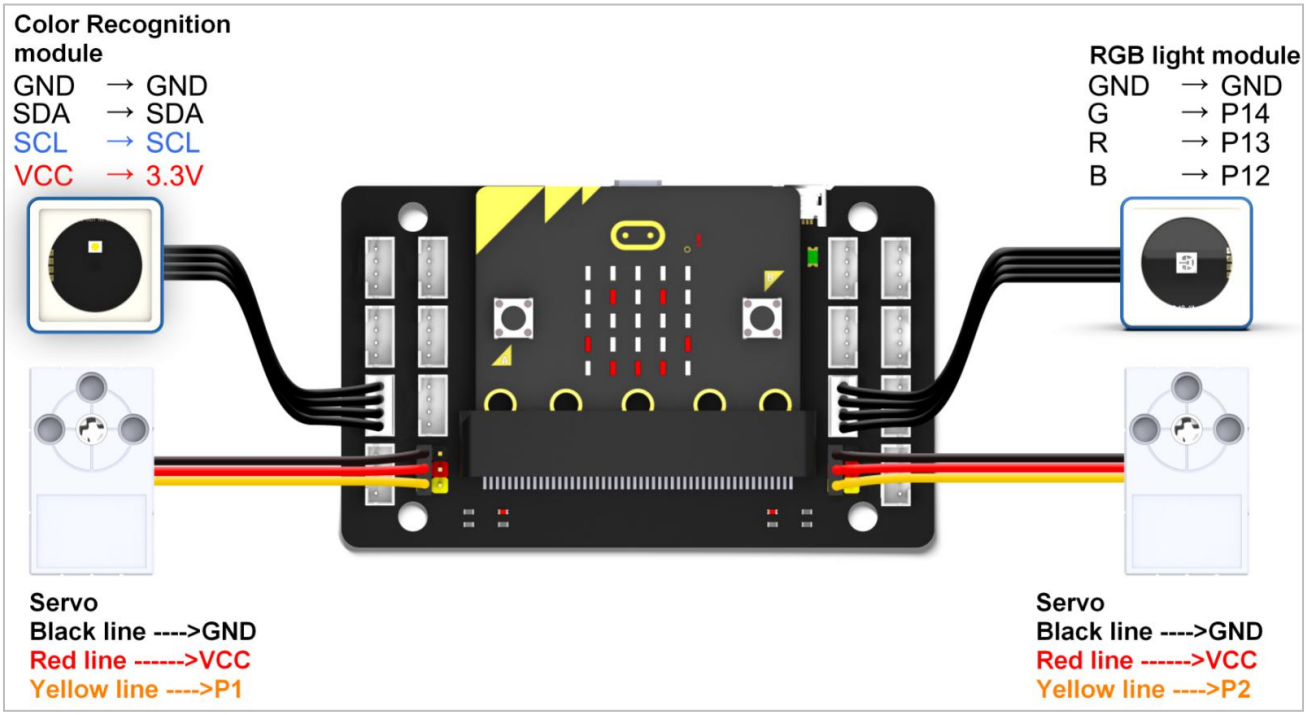
Pay attention to the installation direction of the servo when assembling, otherwise the servo will be damaged due to the wrong angle of the servo after running the program.

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

Please the hex file we provided.

7. Experimental phenomena

After the program is downloaded successfully. We control UFO catcher movement and Gripping-release by rocker module.

We can place red, green, and blue blocks on the color sorter to allow the machine to sort.

Place a red block under the color recognition module on the platform. The color sorter will tilt to the left and the blocks will fall.

Place a green block under the color recognition module on the platform. The color sorter will tilt to the right and the blocks will fall.

Place a blue block under the color recognition module on the platform. The color sorter will tilt to the front and the blocks will fall.