Button control shovel

1. Learning objectives

In this course, we mainly learn how to use MakeCode graphical programming to achieve that when the A button on the micro:bit motherboard is pressed, the shovel is placed flat; when the B button on the micro:bit motherboard is pressed, the shovel is unloaded; when the AB buttons on the micro:bit motherboard are pressed at the same time, the shovel is lifted.

2. Building blocks

For the building blocks steps, please refer to the installation drawings of **[Assembly Course]--[Proficient carrier]** in the materials or the building blocks installation brochure.

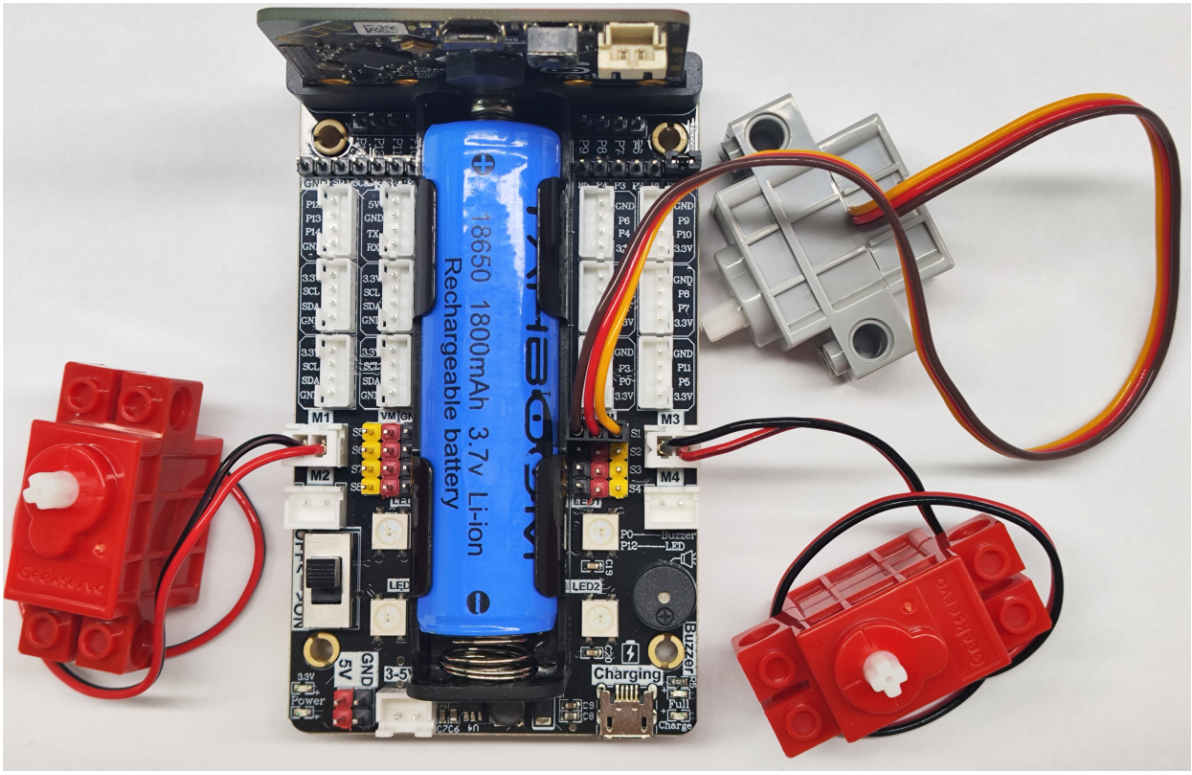
3. Motor wiring

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 wire 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 wire is close to the battery side;

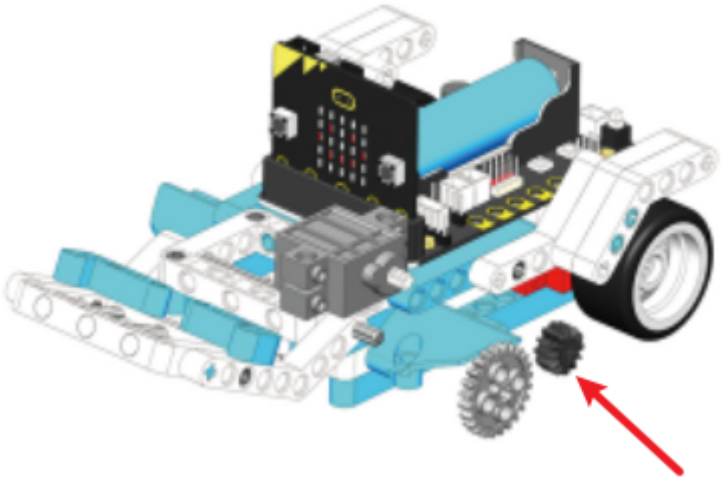
The building blocks servo wiring is inserted into the S1 interface of the Super:bit expansion board, and the orange servo wiring is inserted into the yellow pin of S1.

As shown below:



! Notes:

When taking a course related to the building block servo for the first time, we need to remove the gear on the servo 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 servo to turn to the initial position; then, we can turn off the power, adjust the angle of the shovel of the car to be parallel to the ground, and then install the servo gear. (If you have used Proficient carrier and servo-related programs before, you can skip this step)



4. Programming

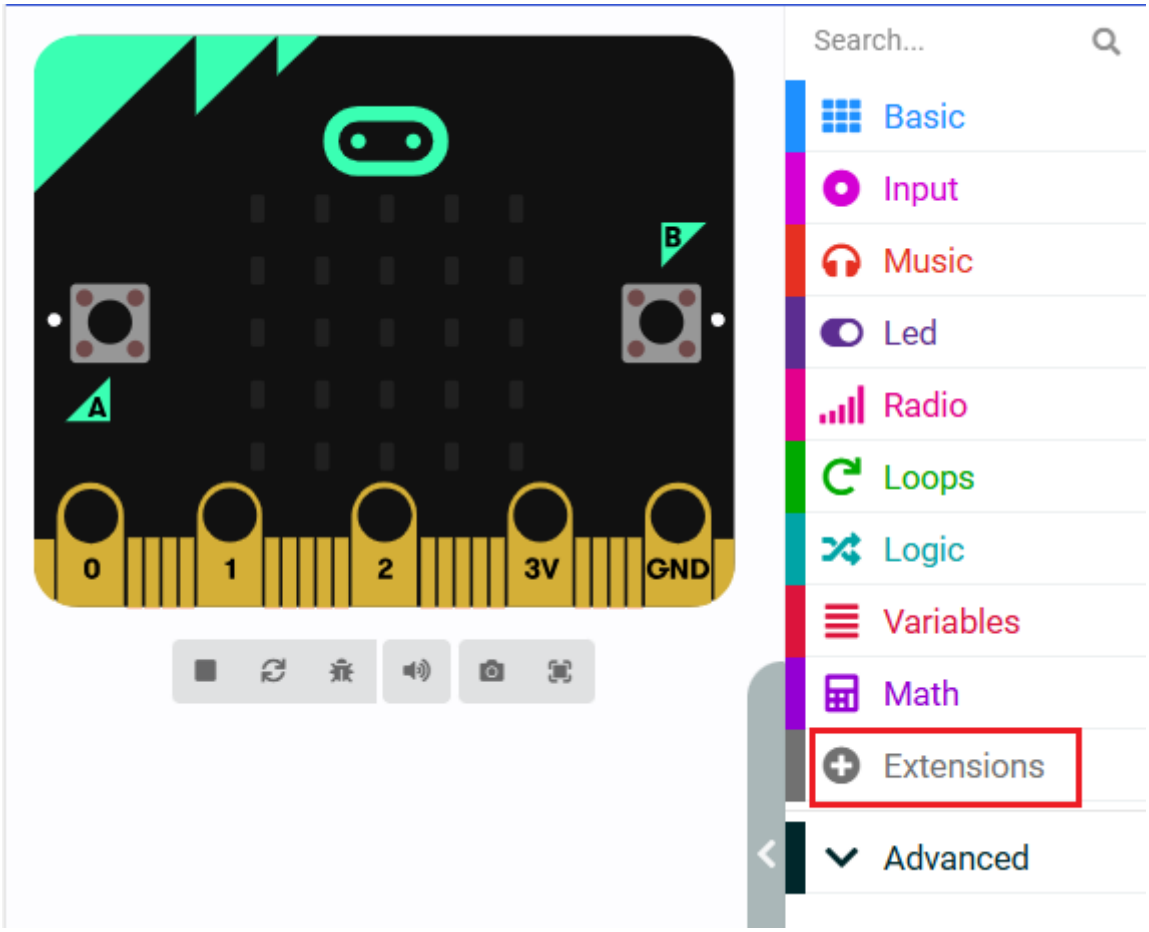
Method 1 Online programming:

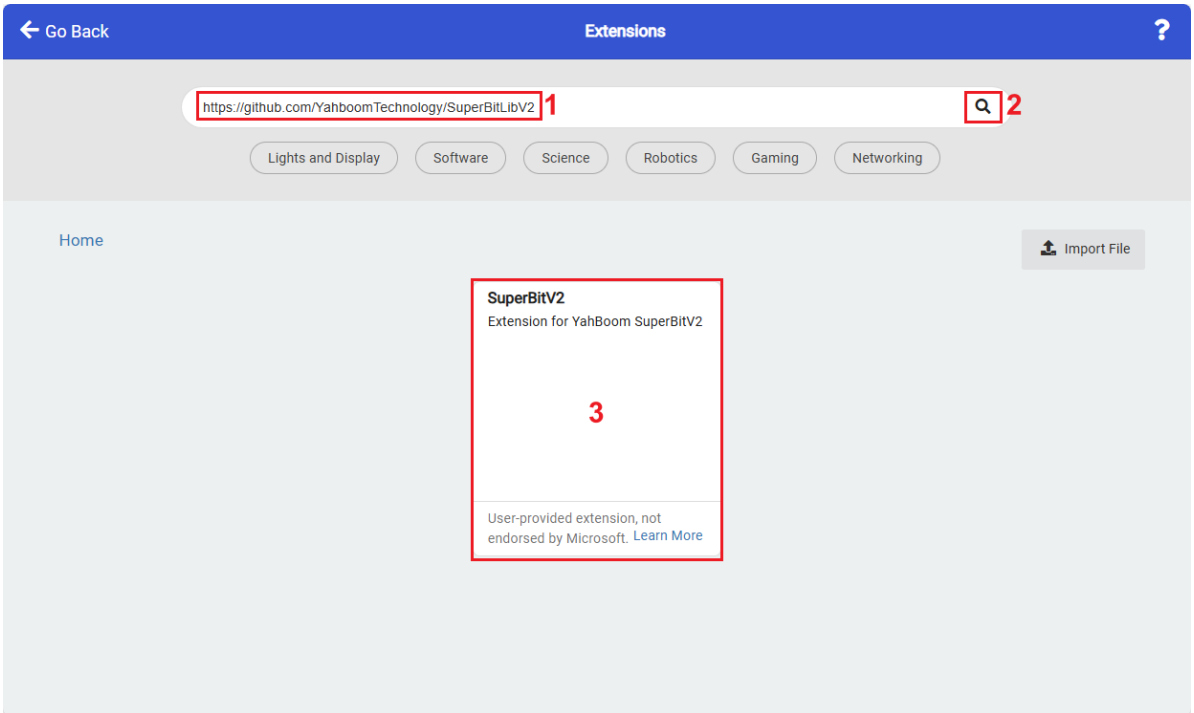
First, connect micro:bit to the computer via a USB data cable. The computer will pop up a U disk. Click the URL in the U disk: https://makecode.microbit.org/ to enter the programming interface. Then, add the Yahboom software package **https://github.com/YahboomTechnology/SuperBitLibV2** to start programming.

Method 2 Offline programming:

Open the offline programming software MakeCode and enter the programming interface. Click [New] and add the Yahboom software package https://github.com/YahboomTechnology/SuperBitLibV2 to start programming.

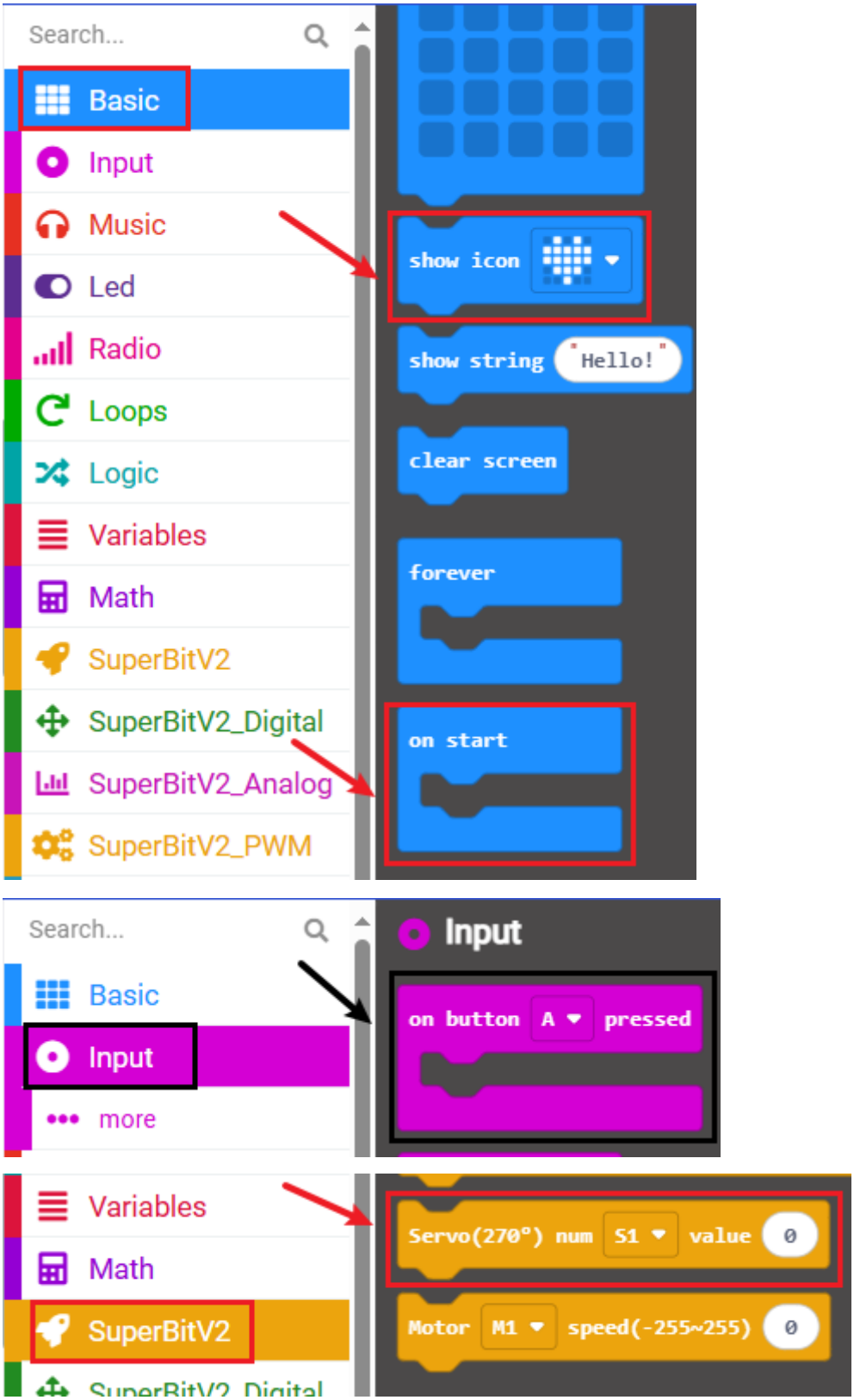
4.1 Adding extension packs





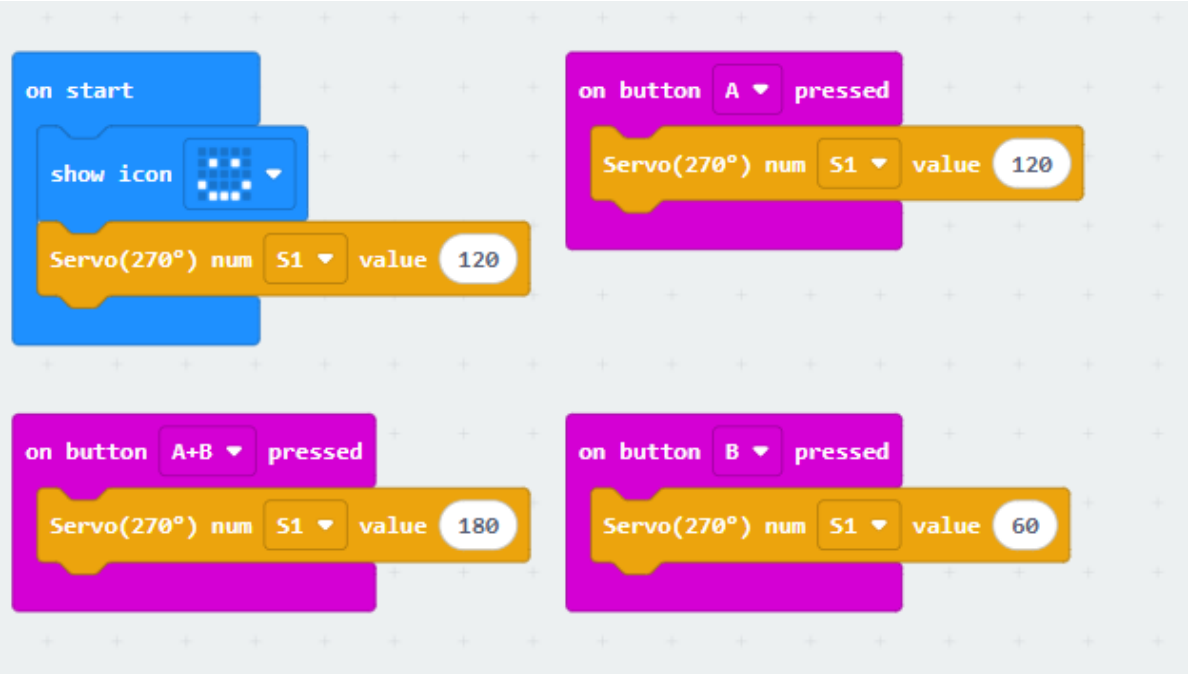
4.2 Building blocks used

The locations of the building blocks required for this programming are shown in the figure below.



4.3 Combining blocks

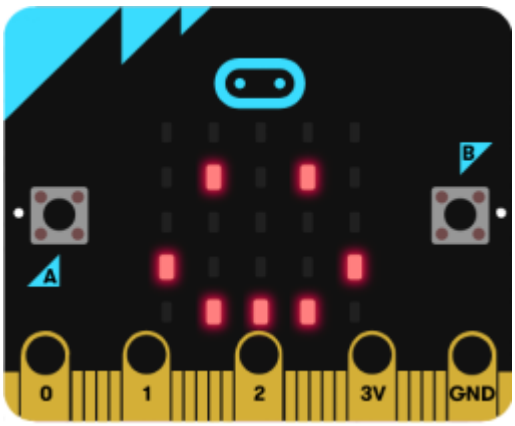
The summary program is shown in the figure below.



You can also directly open the **microbit-Button-control-shovel.hex** file provided in this experiment and drag it into the browser that opens the URL, and the program diagram of this project source code will be automatically opened

5. 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, the catapult will play the music "Ode to Joy", and will move forward-->backward-->rotate left-->rotate right-->turn left-->turn right, the RGB light will switch to different colors, and the projection rod will constantly change position.



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