

Unicycle Micro:bit handle control

1.Learning goals

In this course, we mainly learn how to use handle control Unicycle.

The principle of unicycle walking:

We can change the friction of the front wheels by adjusting the 1# bolt connection snap ratchet to control the direction of the unicycle.

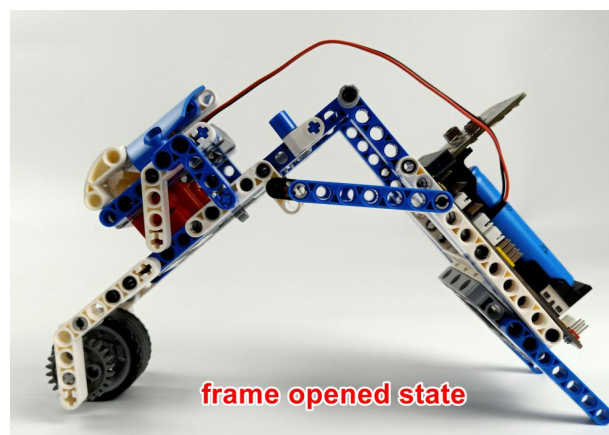
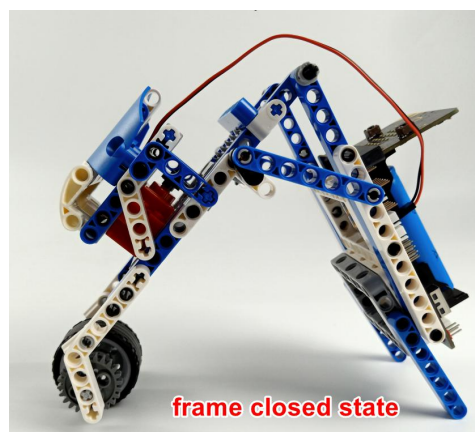
When the 1# bolt connector is located on the front side of the 24-tooth gear, the front wheel can only move forward, so the unicycle forward;

When the 1# bolt connector is located on the rear side of the 24-tooth gear, the front wheels can only move backwards, and the unicycle backwards.

2.Building block assembly steps

For the building block construction steps, please refer to the installation manual or building block installation picture of [Assembly course]-[Unicycle].

After the assembly is completed, the frame of the unicycle needs to be adjusted to a closed state.

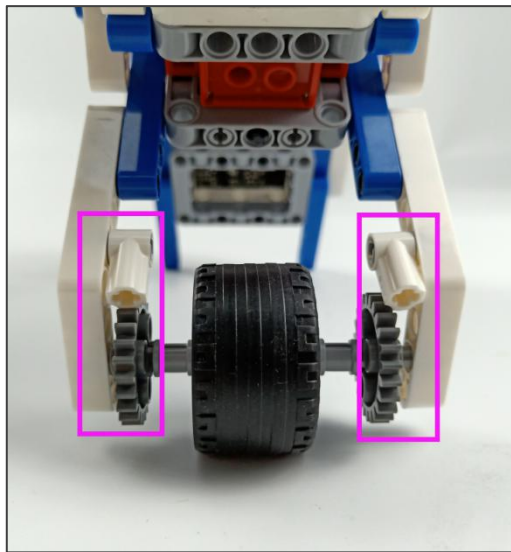


! Note

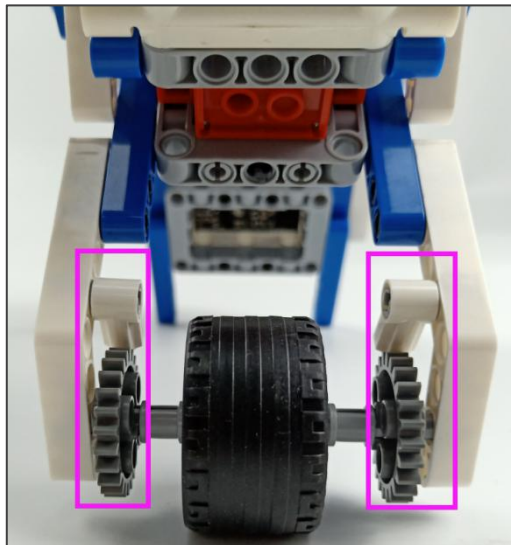
When 1# bolt connector are placed in front of the 24-tooth gear, the unicycle can

move forward.

When 1# bolt connector are placed behind the 24-tooth gear, the unicycle can move backwards.



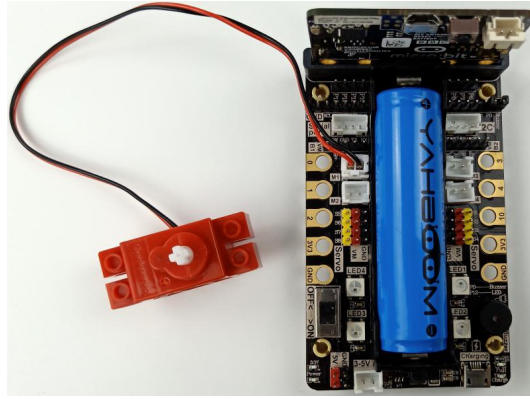
【1# bolt connector are placed in front of the 24-tooth gear】



【1# bolt connector are placed behind the 24-tooth gear】

3.Wiring of motor

The motor wiring is inserted into the M1 interface of the Super:bit expansion board, and the black wire is close to the battery side;
As shown below.



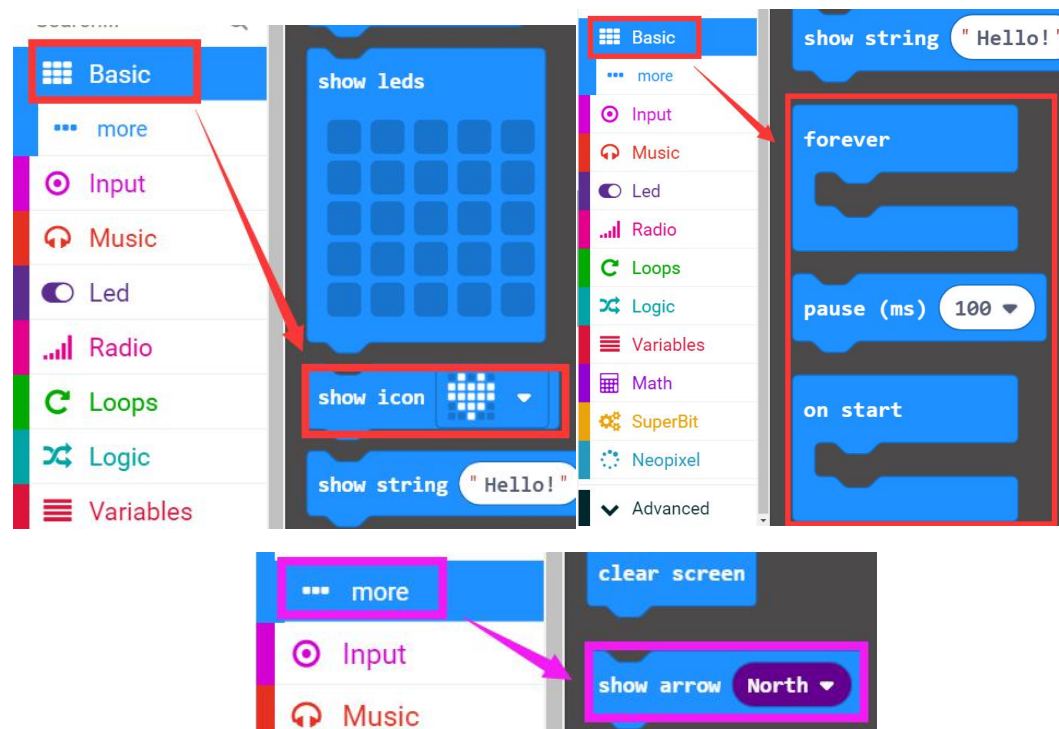
4. Programming method

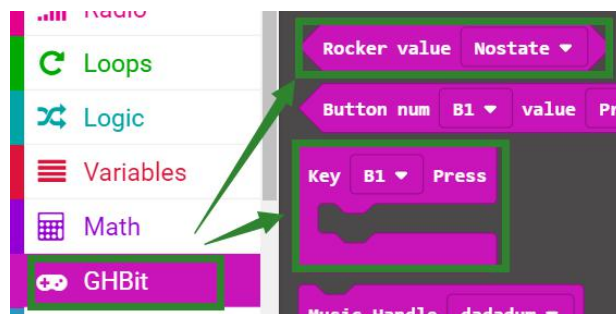
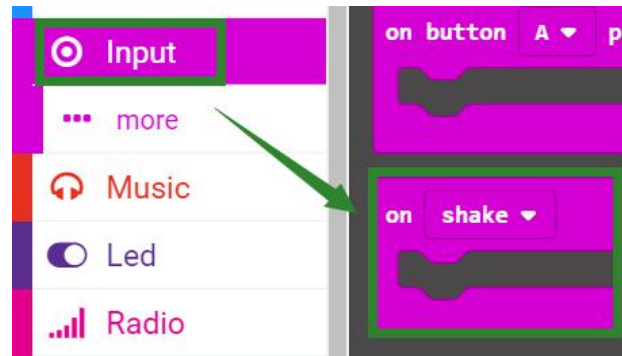
Mode 1 online programming: First, we need to connect the micro:bit to the computer by USB cable. The computer will pop up a USB flash drive and click on the URL in the USB flash drive: <http://microbit.org/> to enter the programming interface. Add the Yahboom package <https://github.com/lzty634158/SuperBit> and <https://github.com/lzty634158/GHBit> to program.

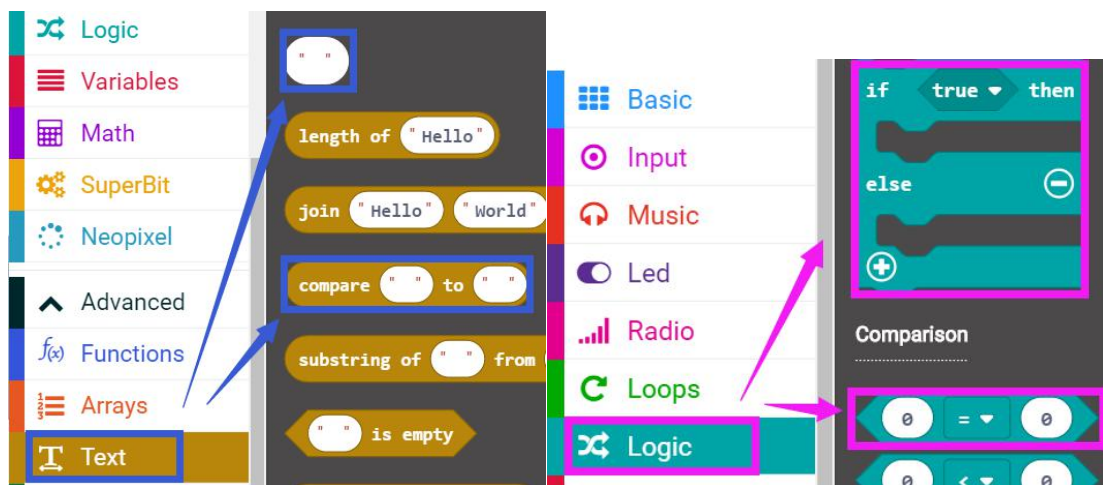
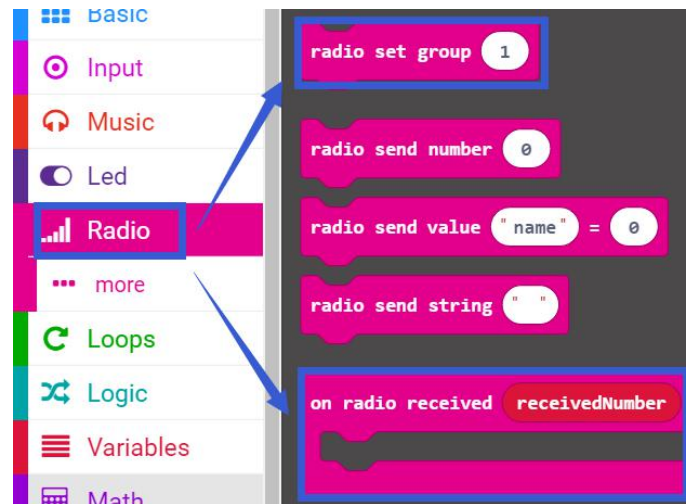
Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click 【New Project】 , add Yahboom package: <https://github.com/lzty634158/SuperBit> and <https://github.com/lzty634158/GHBit> , you can program.

5. Looking for blocks

The following is the location of the building blocks required for this programming.

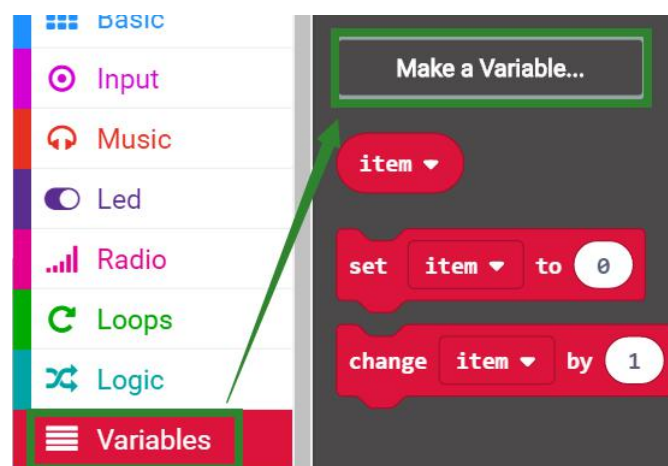






How to create a new variable

- ① Find the [Variable] option in the building block column-[Make a Variable]



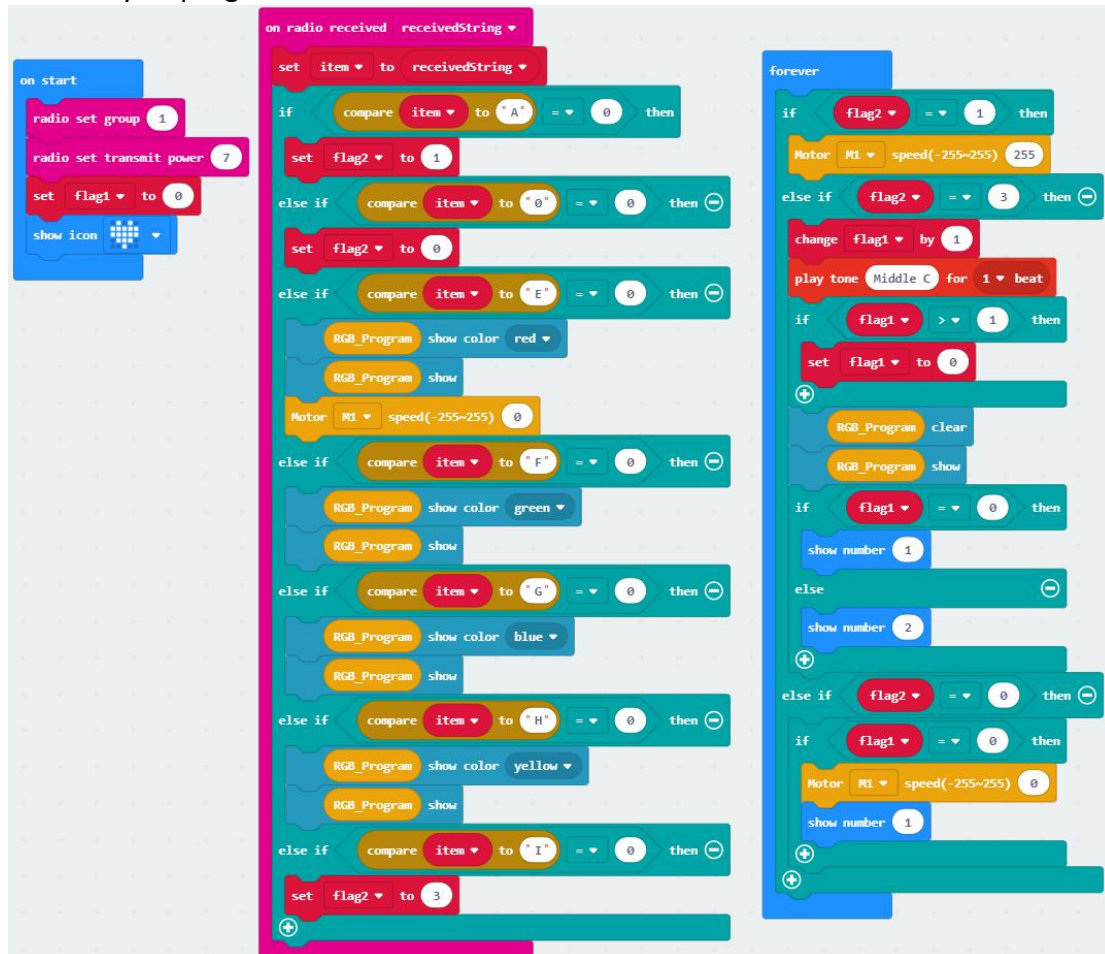
- ② Enter the name of variable to complete the new variable.

New variable name:

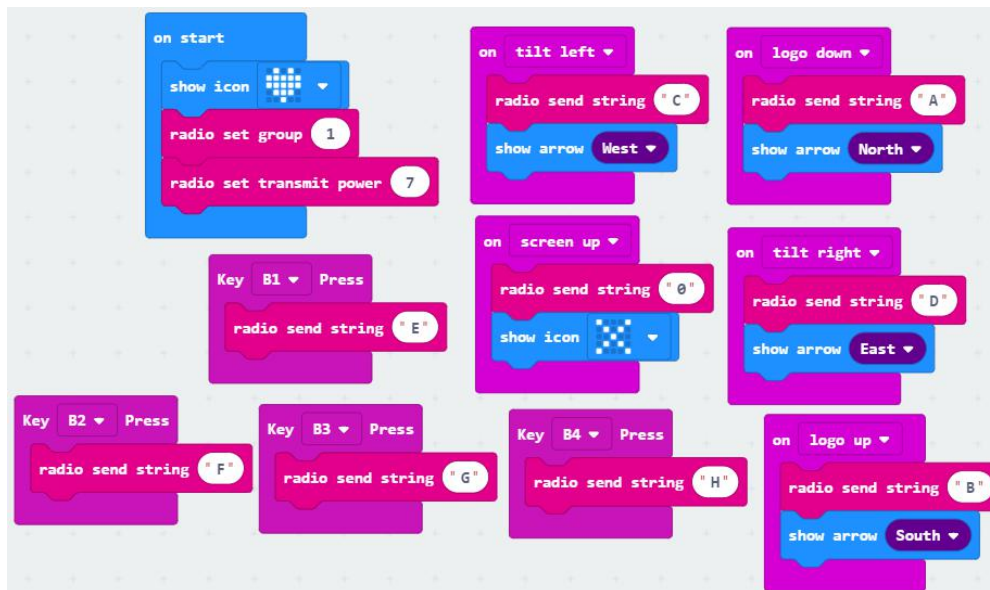
Ok ✓ Cancel ✕

6.Combine block

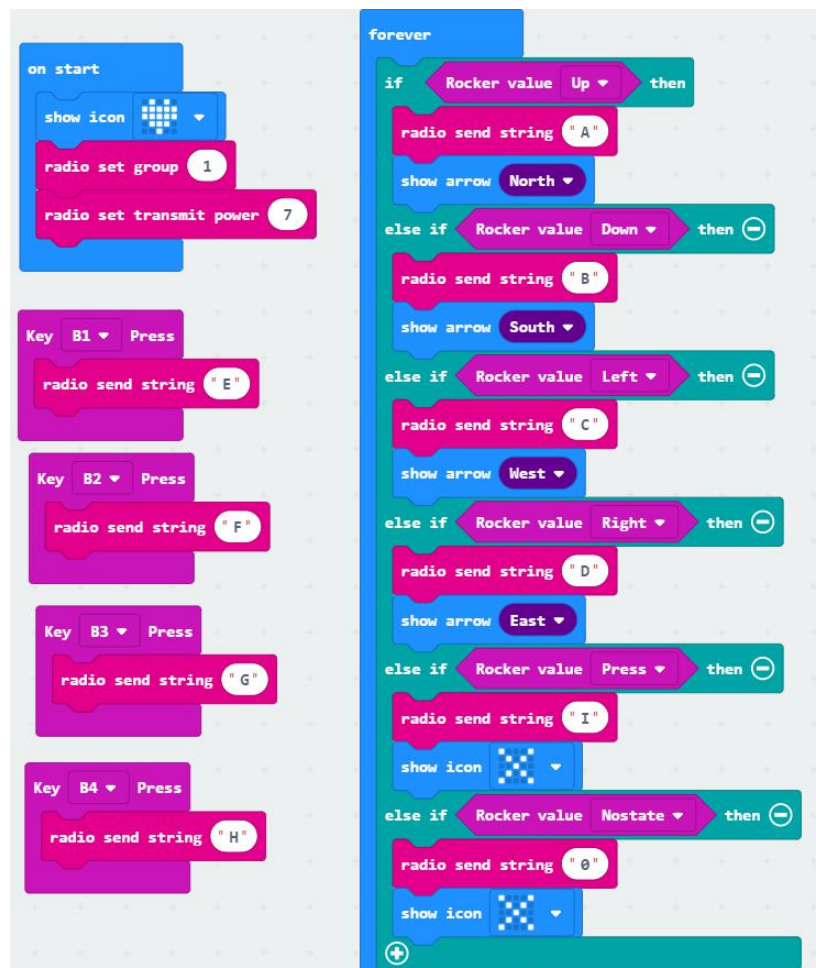
The Unicycle program is shown below.



Handle gravity control code, as shown below.



Handle rocker control code, as shown below.



7.Experimental phenomena

We need to download the Unicycle code into the micro:bit board of the Unicycle.

Open the power switch of the Unicycle, we can see a heart pattern displayed on the micro:bit dot matrix;

We need to download the Handle code into the micro:bit board of the handle.

Open the power switch of the handle, we can see that the micro: bit dot matrix will initially display a heart pattern, and then display an "X" pattern, indicating that the handle is in the default(no data is sent).

They will automatically pairing, then, we can start remote control the Unicycle by handle.

The handle functions are shown below.



Rocker control

After the handle and the Unicycle are paired successfully, we can see that the Unicycle displays the number 1 on the micro:bit dot matrix, which indicating it in mode 1 at this time.

In the case of mode 1:

- The rocker is pushed forward to control the Unicycle walking and it stops when you release your hand;
- Press the red button to light up the red RGB light;
- Press the green button to light the green RGB light;
- Press the yellow button to light the yellow RGB light;
- Press the blue button to light up the blue RGB light.

In the case of mode 2:

- Push the rocker forward to control the Unicycle walking, and it will keep walking when you release your hand;
- Press the red button to turn on the red RGB light to stop the unicycle.
- Press the green button to light the green RGB light;
- Press the yellow button to light the yellow RGB light;
- Press the blue button to light up the blue RGB light.

When we press the rocker each time, it will switch Mode 1 and Mode 2, and the RGB light will turn off.

Handle gravity control

After the handle and the Unicycle are paired successfully, we can see that the Unicycle displays the number 1 on the micro:bit dot matrix.

- The handle is tilted forward to control the control the Unicycle walking, and it stops when handle is placed horizontally;



- Press the red button to light up the red RGB light;
- Press the green button to light the green RGB light;
- Press the yellow button to light the yellow RGB light;
- Press the blue button to light up the blue RGB light.

(Note: The handle gravity control only has this mode, not include mode 2)