# APP control

**APP control**
1. Learning objectives
2. Building blocks
3. Motor wiring
4. Programming
5. Experimental phenomenon
    5.1 Download APP
    5.2 APP remote control
        APP interface function introduction:

**! Note: Due to the structure of the building blocks, Carousel only supports clockwise rotation. That is, the speed needs to be set to -255 during programming, and cannot be set to a positive number.**

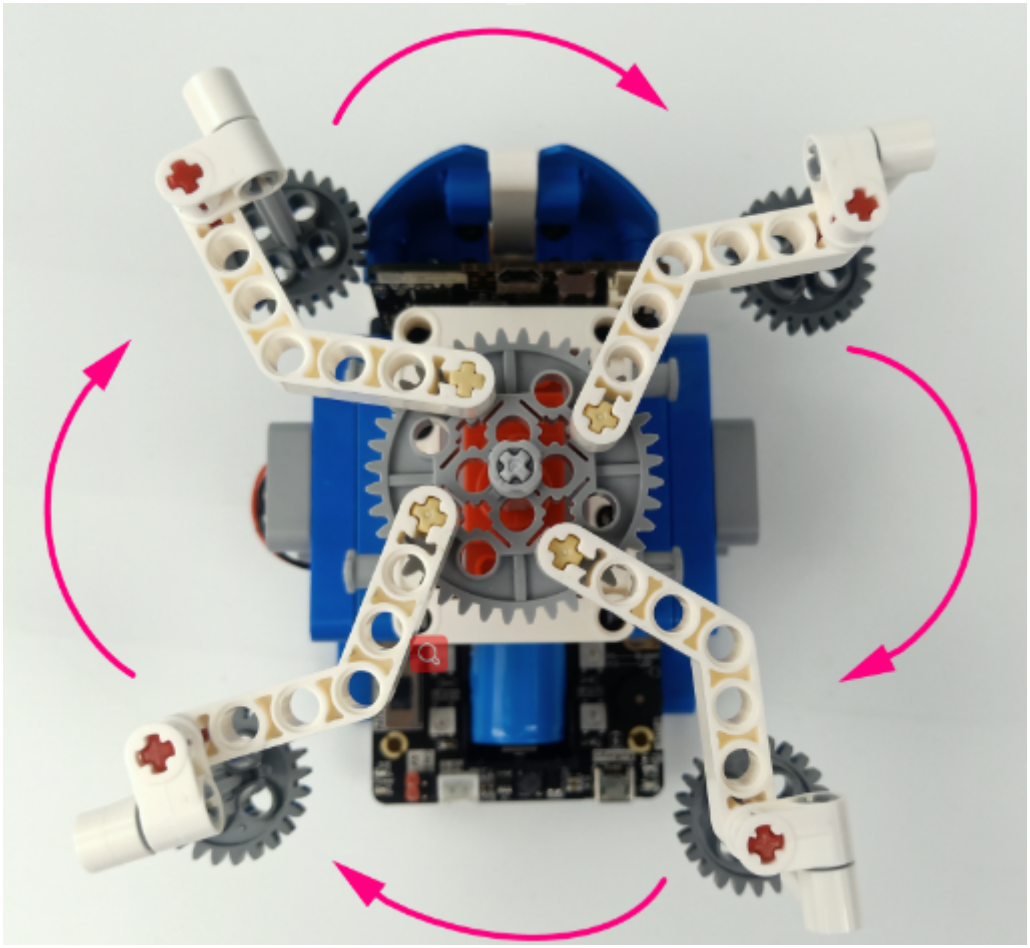
## 1. Learning objectives

In this course, we mainly learn how to use MakeCode graphical programming to achieve Bluetooth APP remote control of Carousel.

## 2. Building blocks

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

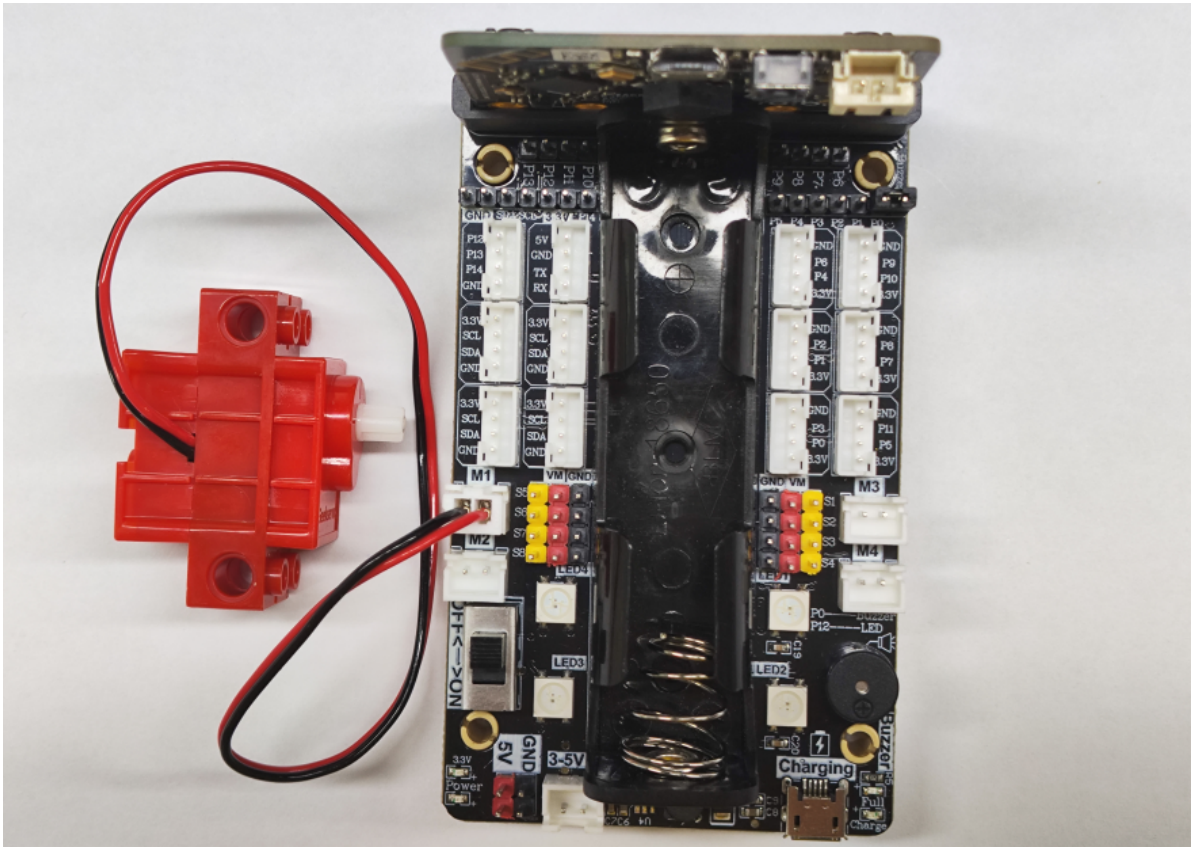
Please make sure that the direction of the L-shaped hole arm of the building block is as shown in the figure below.



## 3. Motor wiring

Insert the motor wiring on the left side of the car into the M1 interface of the Super:bit expansion board, with the black line close to the battery side;

As shown below:




# 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.

For the summary program of this course, please open the **microbit-Carousel-APP-control.hex** we provide in the MakeCode programming interface to view it.

# 5. Experimental phenomenon

## 5.1 Download APP

Android users, please use the mobile browser to scan the following QR code to download and install the APP;

Apple users, please use the hand camera to scan the QR code to download and install the APP.

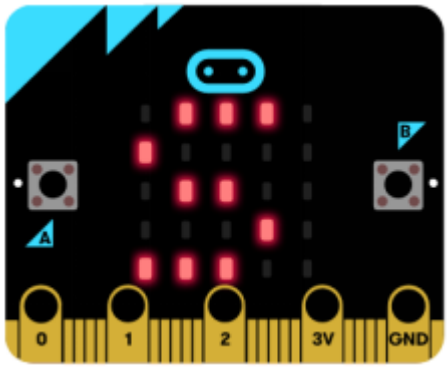
IOS

Android

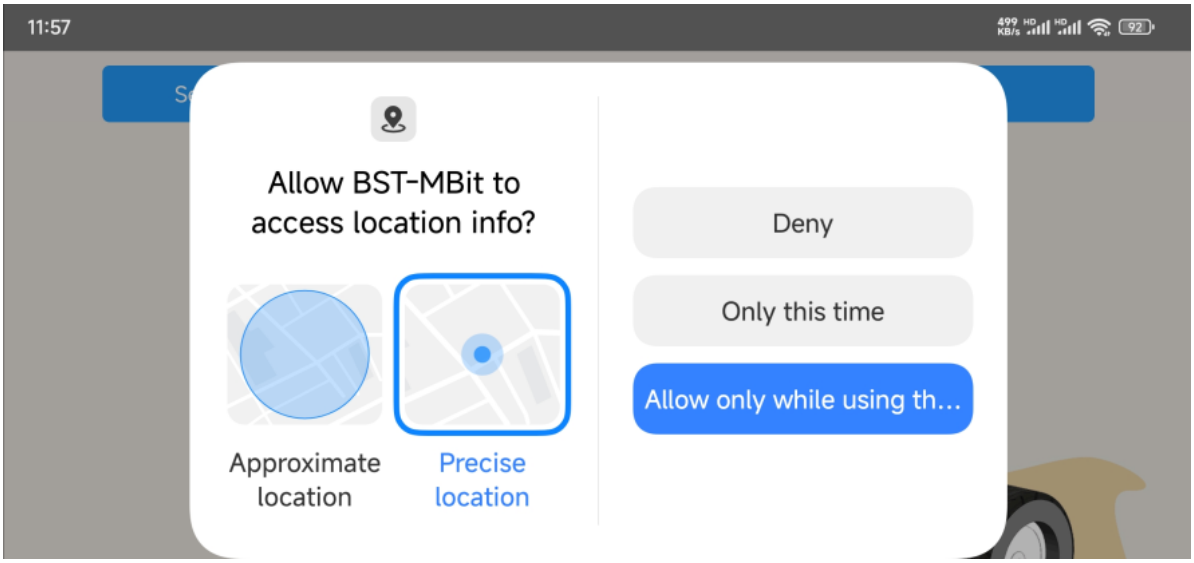
**! Note: During the installation or use of the APP, if the mobile phone prompts that any permissions need to be obtained, please select "Agree".**

## 5.2 APP remote control

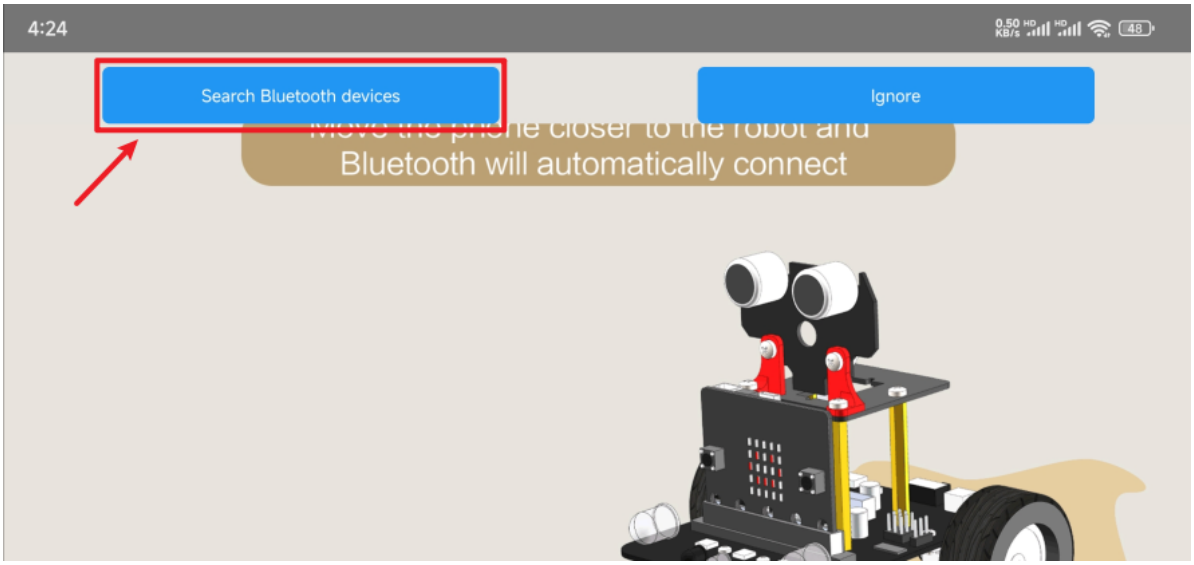
1) After the program is successfully downloaded, turn on the power switch of the car, and the micro:bit dot matrix will display the "S" pattern, as shown in the figure below, which is the state of Bluetooth not connected.



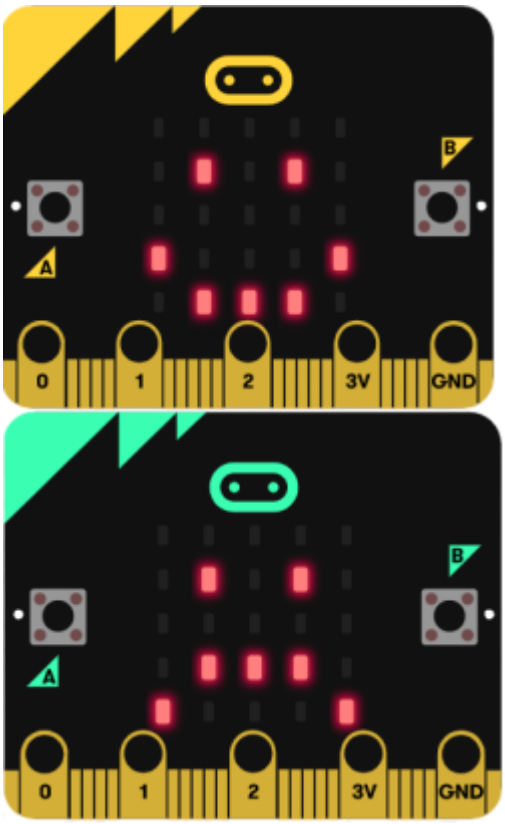

2) Turn on the Bluetooth of your mobile phone and open our APP. You can see the interface as shown below. Click **Allow APP to use location information**.




3) After the mobile phone is close to the car and waits for a while, the Bluetooth will automatically connect; if it is not automatically connected, we can click [Search Bluetooth devices] to search for the device to connect.




After the Bluetooth is successfully connected, a smiley face pattern will be displayed on the micro:bit dot matrix; if the Bluetooth is disconnected, a crying face pattern will be displayed on the dot matrix.




[Bluetooth successful connection status]



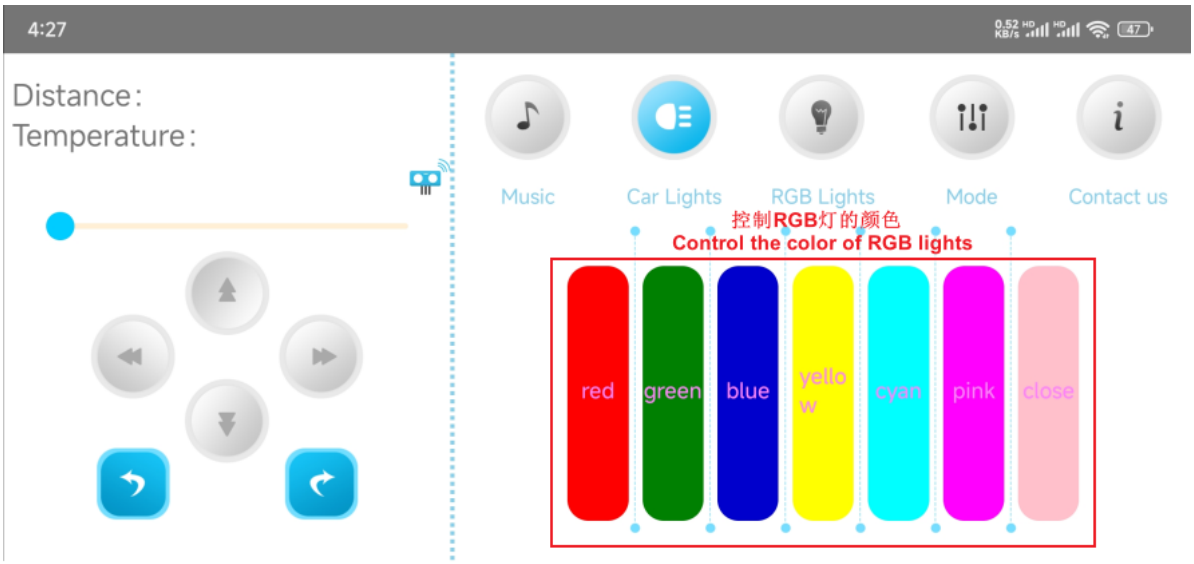

[Bluetooth disconnection status]

**APP interface function introduction:**

**Main control interface:**

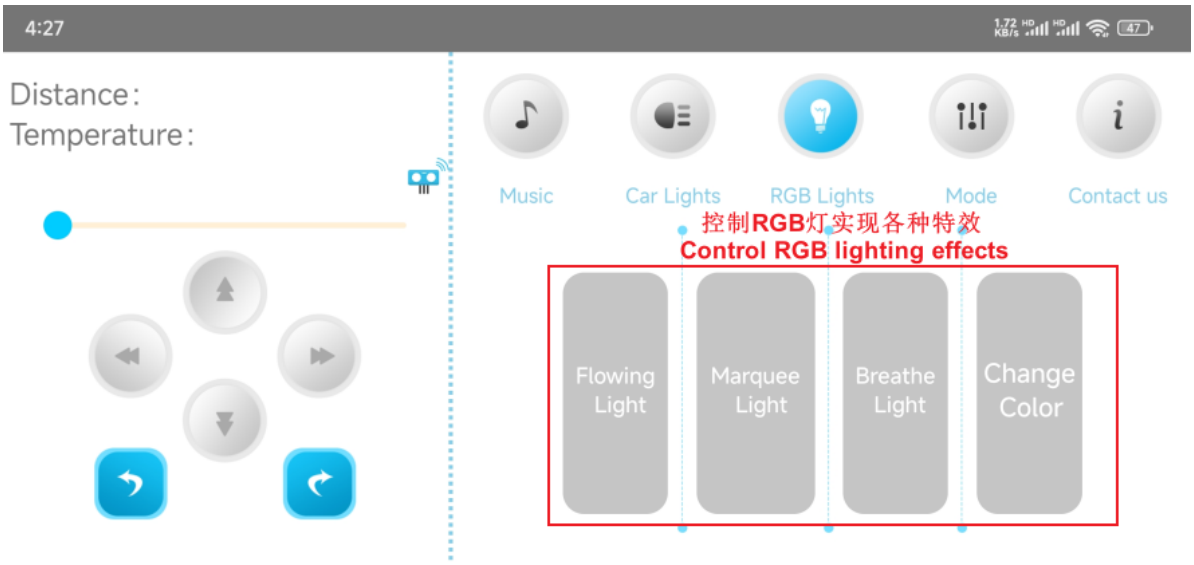
- The forward button controls the Carousel to rotate clockwise, and it stops when released;
- The back button controls the Carousel to keep rotating clockwise;
- The piano key 1 controls the Carousel to stop;
- Press the piano key to hear the buzzer play different tones.


**Car light interface:**




**RGB light interface:**

Due to the upgrade of micro:bit V2 motherboard, the Bluetooth code control has deleted the RGB light control and changed to dot matrix display.




The buttons under the mode option have not yet defined any functions.