

# APP control

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## APP control

1. Learning objectives
2. Building blocks
3. Motor Wiring
4. Programming
5. Experimental phenomenon
  - 5.1 Download APP
  - 5.2 APP remote controlAPP interface function introduction:

## 1. Learning objectives

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

Unicycle walking principle:

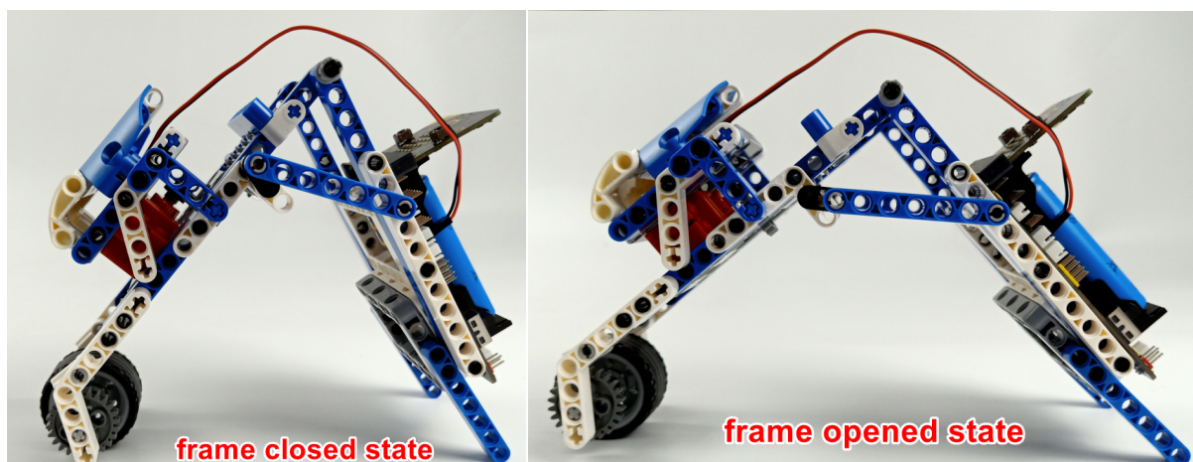
The friction of the front wheel is changed by adjusting the 1# bolt connection buckle ratchet to control the forward direction of the car. When the 1# bolt connection is located in front of the 24-tooth gear, the front wheel can only move forward, so the car creeps forward; when the 1# bolt is connected to the back of the 24-tooth gear, the front wheel can only move backward, and the car creeps backward.

## 2. Building blocks

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

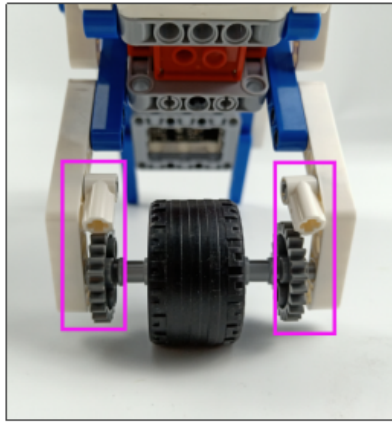
After assembly, the frame of the Unicycle needs to be adjusted to the closed state.



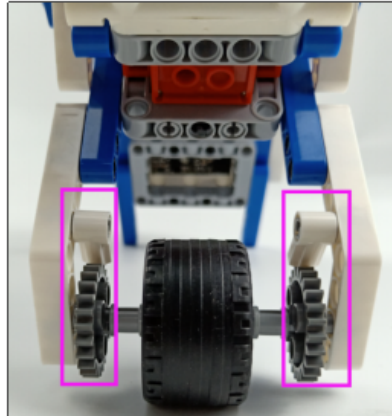
### ! Special Notes:

Place the two ratchets in front of the 24-tooth gear so that the Unicycle can move forward.

Place the two ratchets behind the 24-tooth gear so that the Unicycle can move backward.



**[1# bolt connector are placed in front of the 24-tooth gear]**

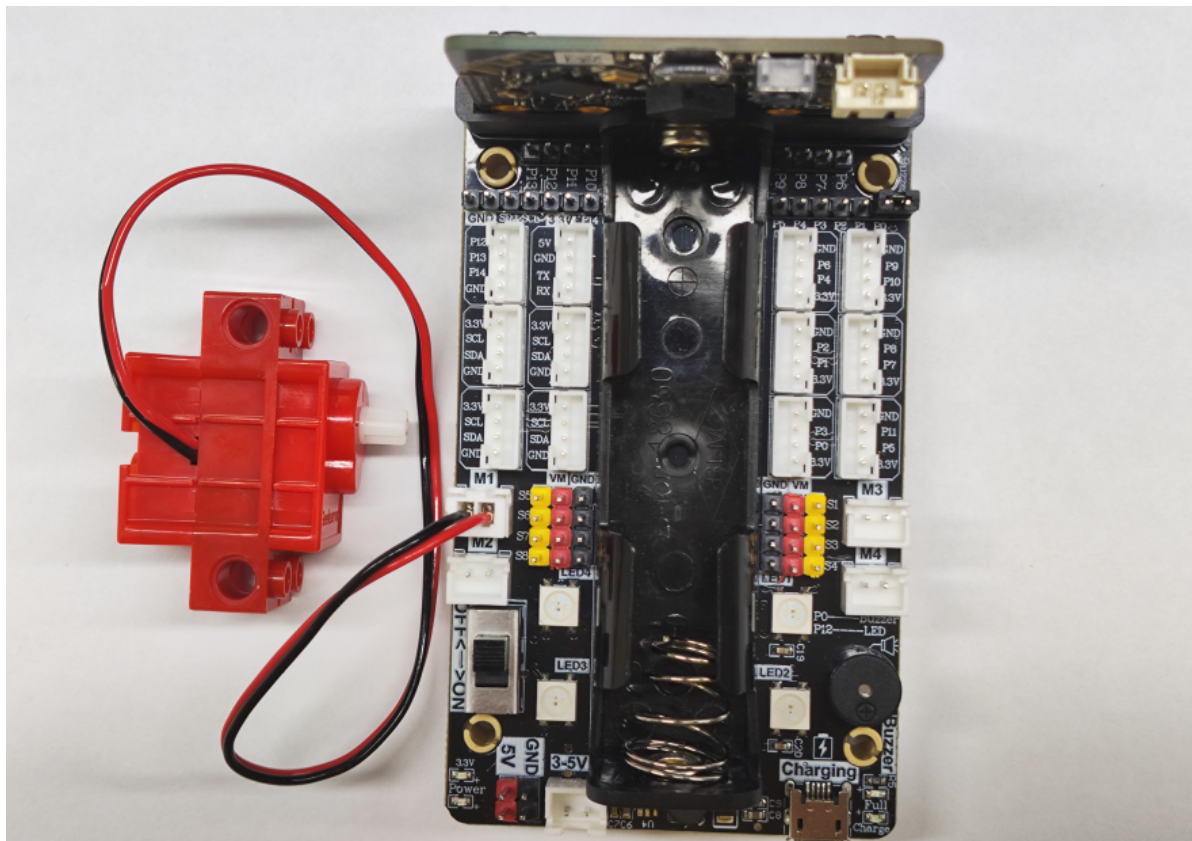


**[1# bolt connector are placed behind the 24-tooth gear]**

### 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 wire close to the battery side;

As shown below:



## 4. Programming

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### Method 1 Online Programming:

First, connect the 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-UnicycleAPP-control.hex** we provided in the MakeCode programming interface to view it.

## 5. Experimental phenomenon

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### 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

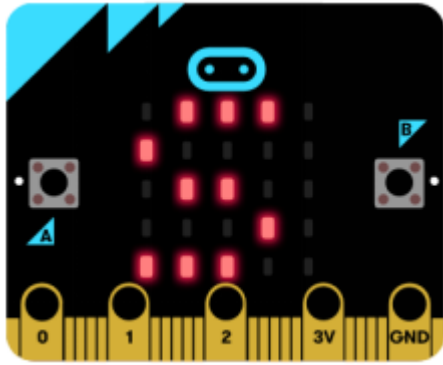


Android

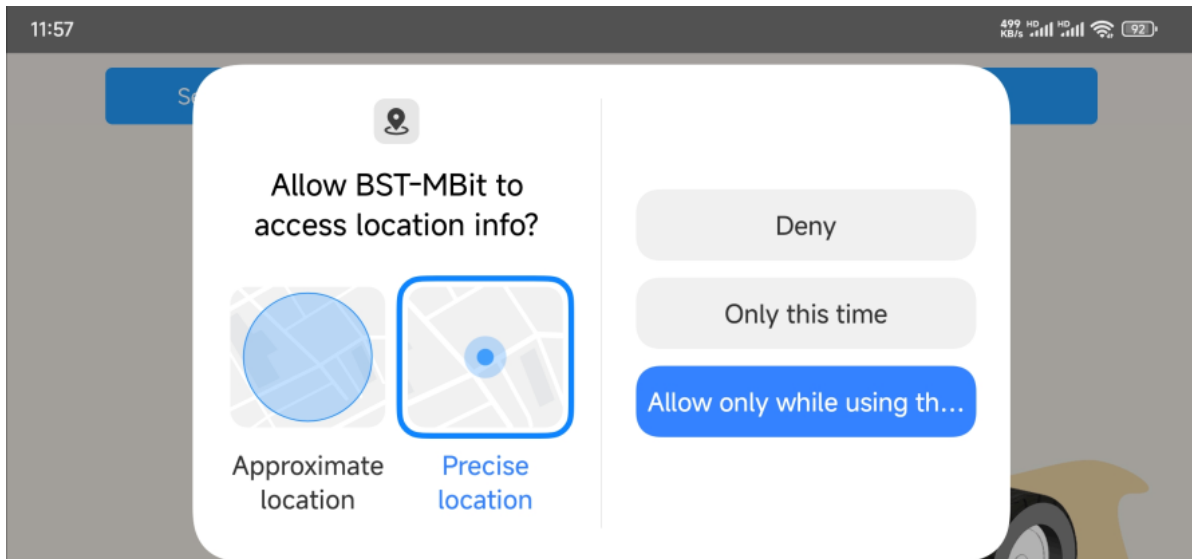
**! Note: During the installation or use of the APP, if the mobile phone prompts that any permissions need to be obtained, please select "Agree".**

### 5.2 APP remote control

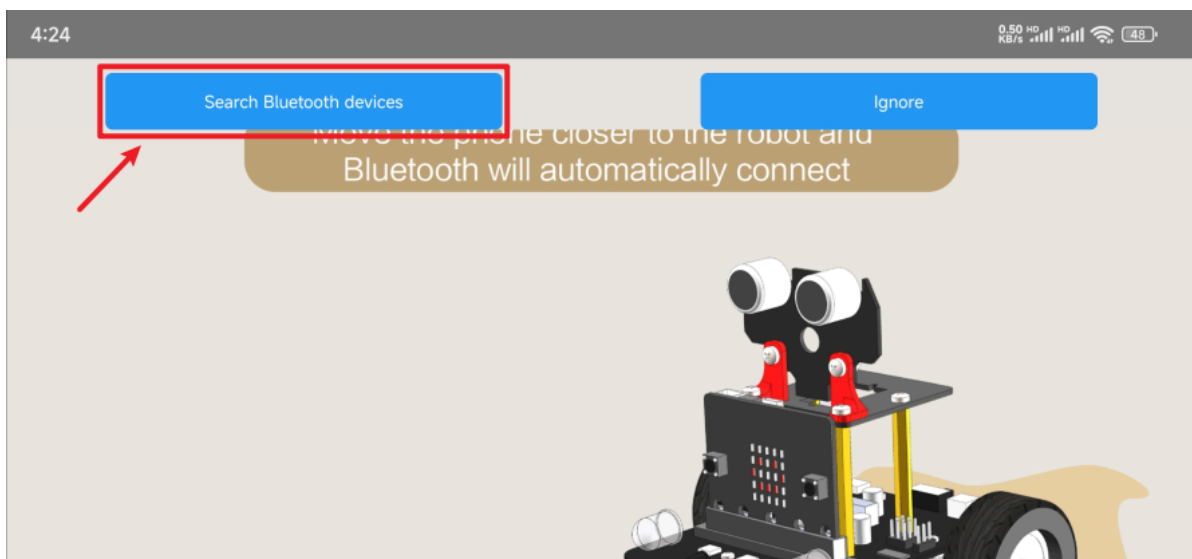
1) After the program is downloaded successfully, turn on the power switch of the car, and the micro:bit dot matrix will display an "S" pattern, as shown in the figure below. This is the state of Bluetooth disconnection.



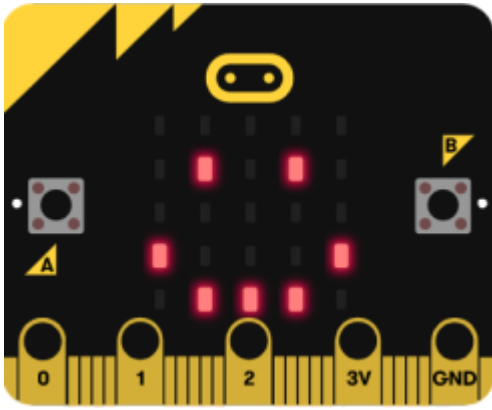
2) Turn on the Bluetooth of the mobile phone, open our APP, you can see the interface as shown in the figure below, click **Allow APP to use positioning information**.



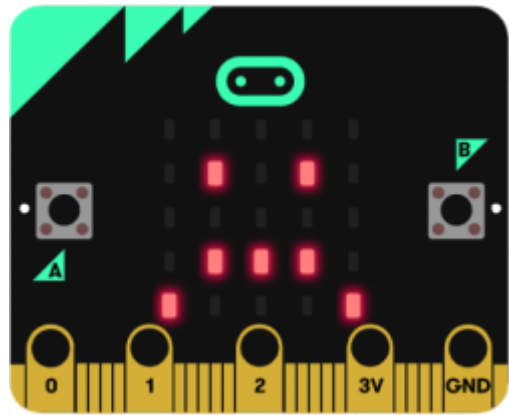
3) After the mobile phone is close to the car and waits for a while, the Bluetooth will automatically connect; if it does not automatically connect, we can click [Search Bluetooth devices] to search for the device to connect.



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]

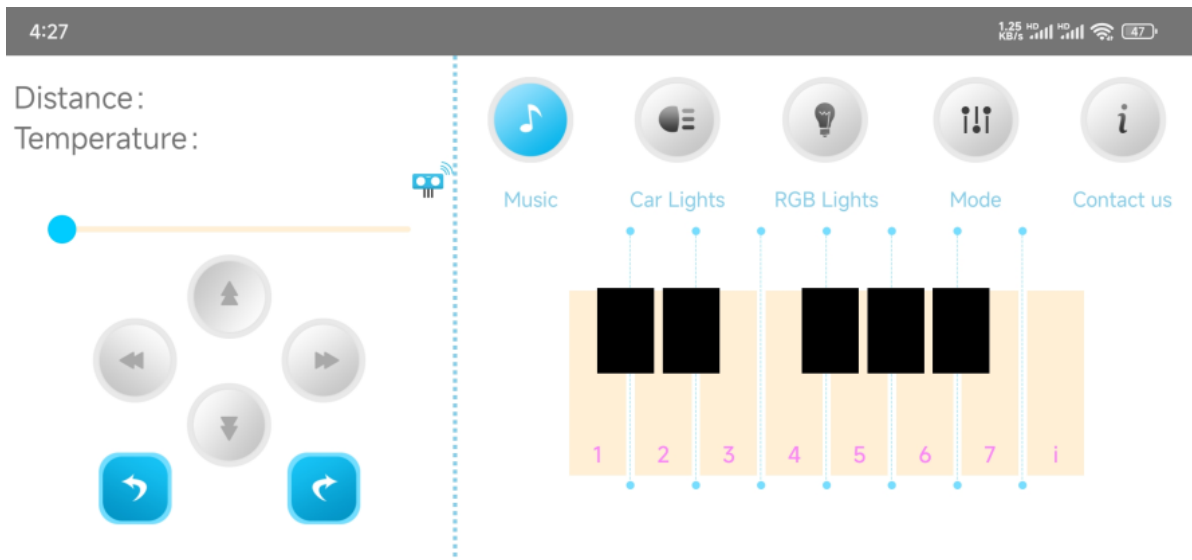


[Bluetooth disconnection status]

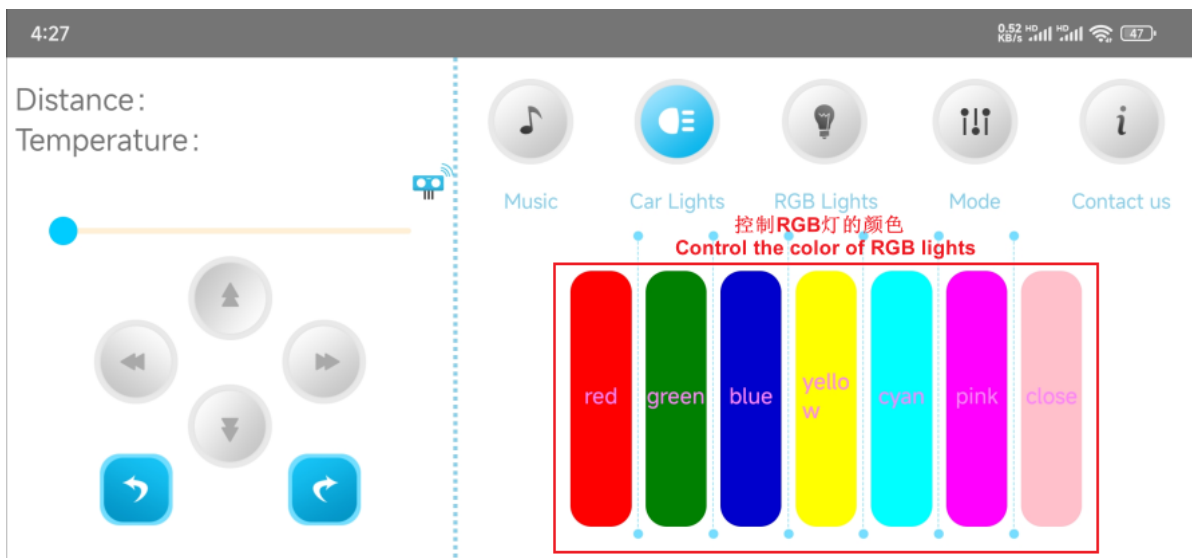
## APP interface function introduction:

### Main control interface:

- The forward button controls the movement of Unicycle, and it stops when released;
- The backward button controls the Unicycle to keep moving;
- Press piano key 1 to stop the car;
- Press the piano key to hear the buzzer play different tones

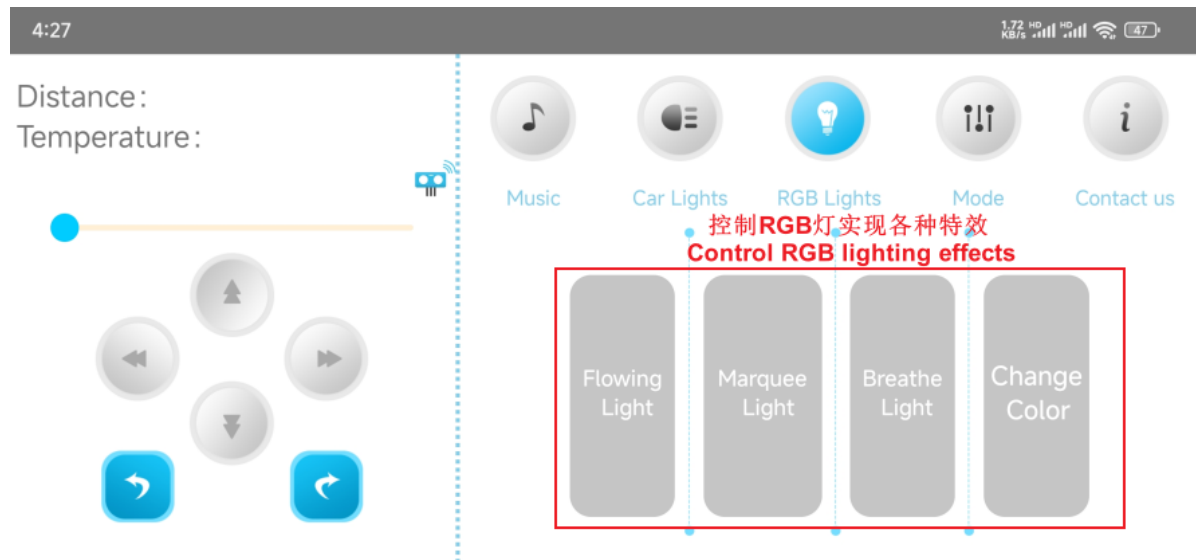


### Car light interface:



### 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.