Infrared remote control Magic wheel car

Goal

In this lesson, we will learn how to use the infrared remote control of emakefun to control the Magic wheel car.

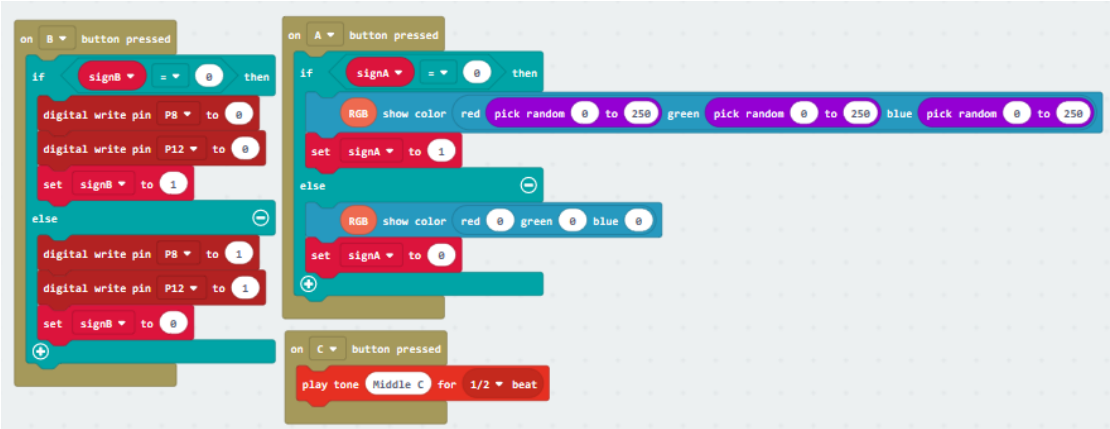
Programming method

(1) online programming: connect micro:bi with the computer through the USB cable, open my computer, find the MICROBIT memory disk and open it, double-click ICROBIT.HTM, and open the browser programming page. After creating a new project, click advanced, click expand, enter the extension package address https://github.com/emakefun/pxt-magicbit.git and press enter or search, add the Microbit extension package, you can start programming Infrared remote control Magic wheel car

(2) offline programming: open the offline programming software, enter the programming interface, create a new project, click advanced, click expand, enter the address https://github.com/emakefun/pxt-magicbit.git of the extension package, press enter or search, add the Microbit extension package, and then you can start programming Infrared remote control Magic wheel car

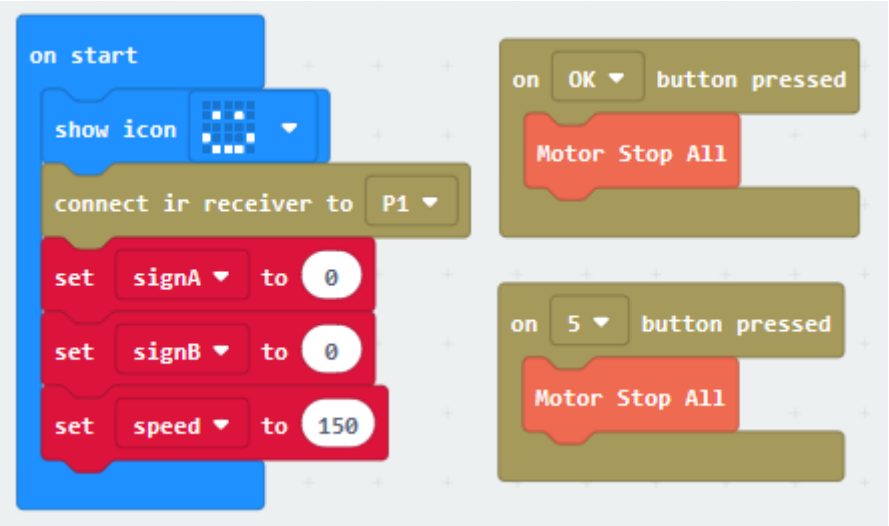
Block programming

1、 Program building block module analysis

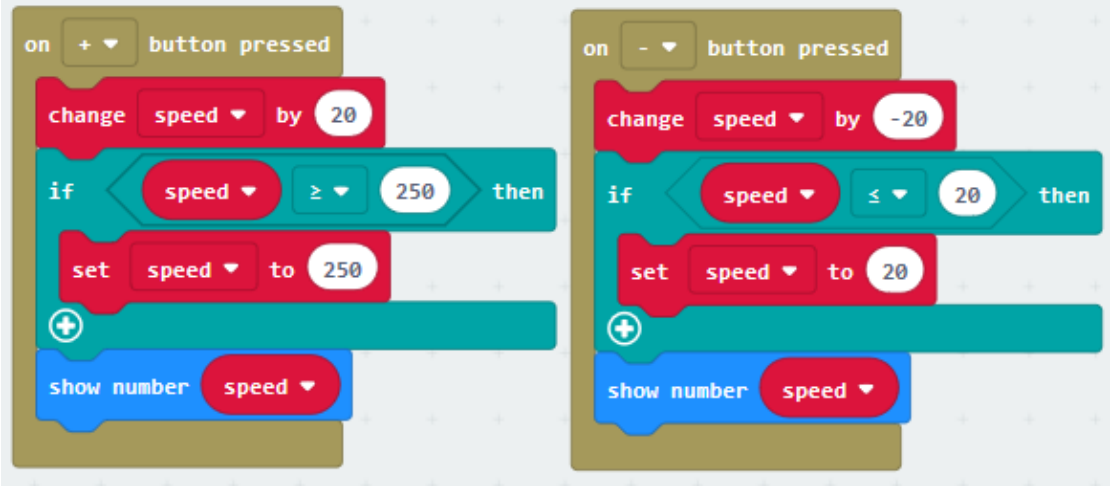


This part of the program building block module represents the function module of the infrared remote control when keys A, B and C are pressed, in which key B controls two car headlights connected to the P8 pin, if... Otherwise... In order to realize the effect of

pressing B on and then pressing B off by judging the value of marked variables. When displaying RGB color, set the random value of RGB three data to realize the random transformation of countless colors. When key C is pressed, the buzzer emits a sound in the tone of 1/2 beat of medium C.

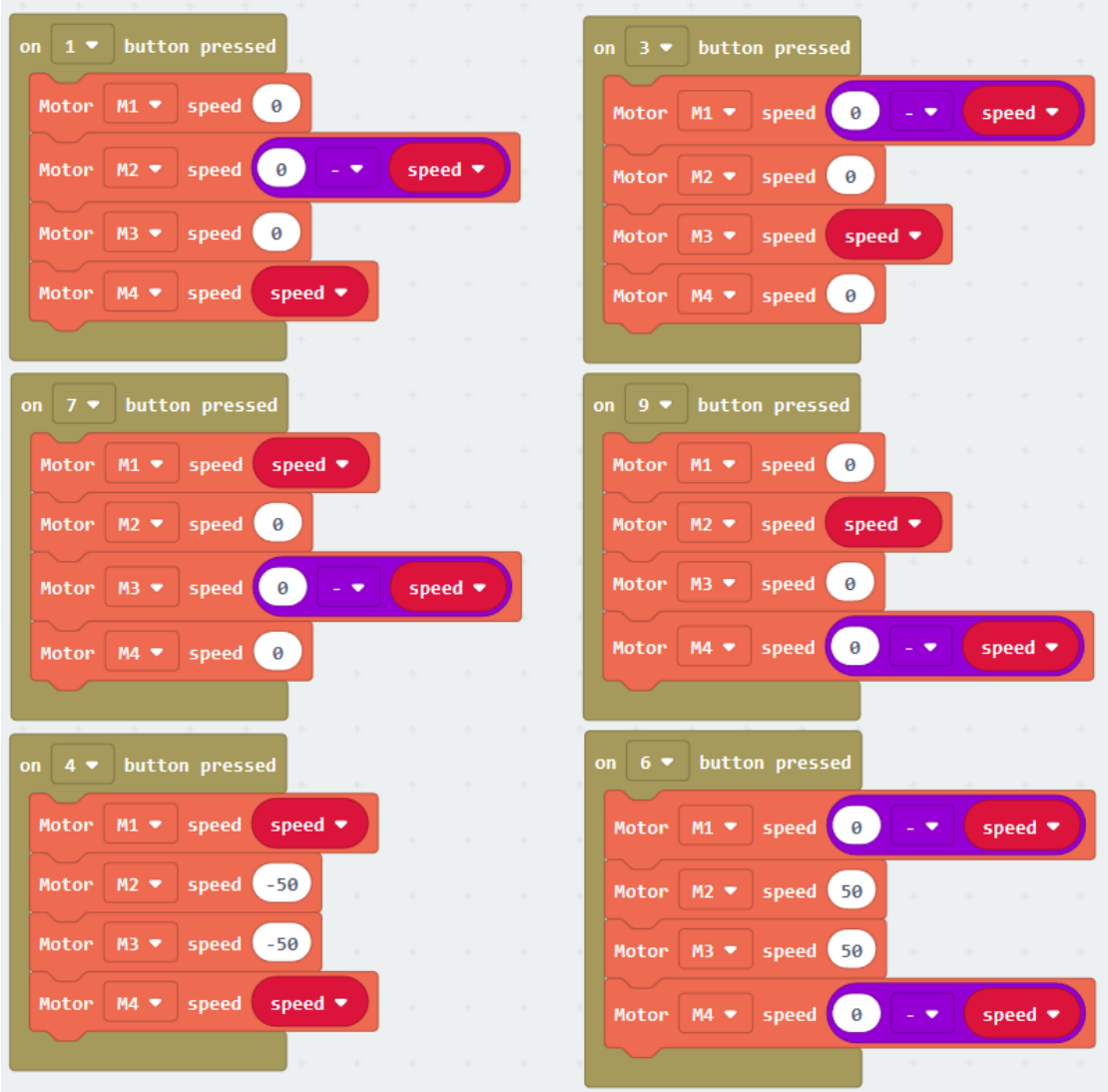


When start up, the program block module will run first at each boot up. At startup, initialize the required variable value and define the infrared pin as P1. When the buttons OK and 5 are pressed, all motors will be stopped and the car will stop.



The '+' and '-' on the infrared remote control are used to adjust the speed of the car. Each time '-' is pressed, the speed decreases by 20 until it reaches 20; And every time you press "+" or "-", the screen will display the changed speed value (the screen display takes up the response time of the main board, so it is only valid to press other keys after the display ends. If you want to improve the response speed of the button press, you can delete the screen display).

When the button UP is pressed, the car moves forward
When the DOWM button is pressed, the car moves backwards
When the LEFT button is pressed, the car moves to the left
When the RIGHT button is pressed, the car moves to the right
When the D is pressed, the car turns right
When the 0 is pressed, the car turns left



When 1 is pressed, car moves 45° diagonally to the left

When 3 is pressed, car moves 45° diagonally to the upper right

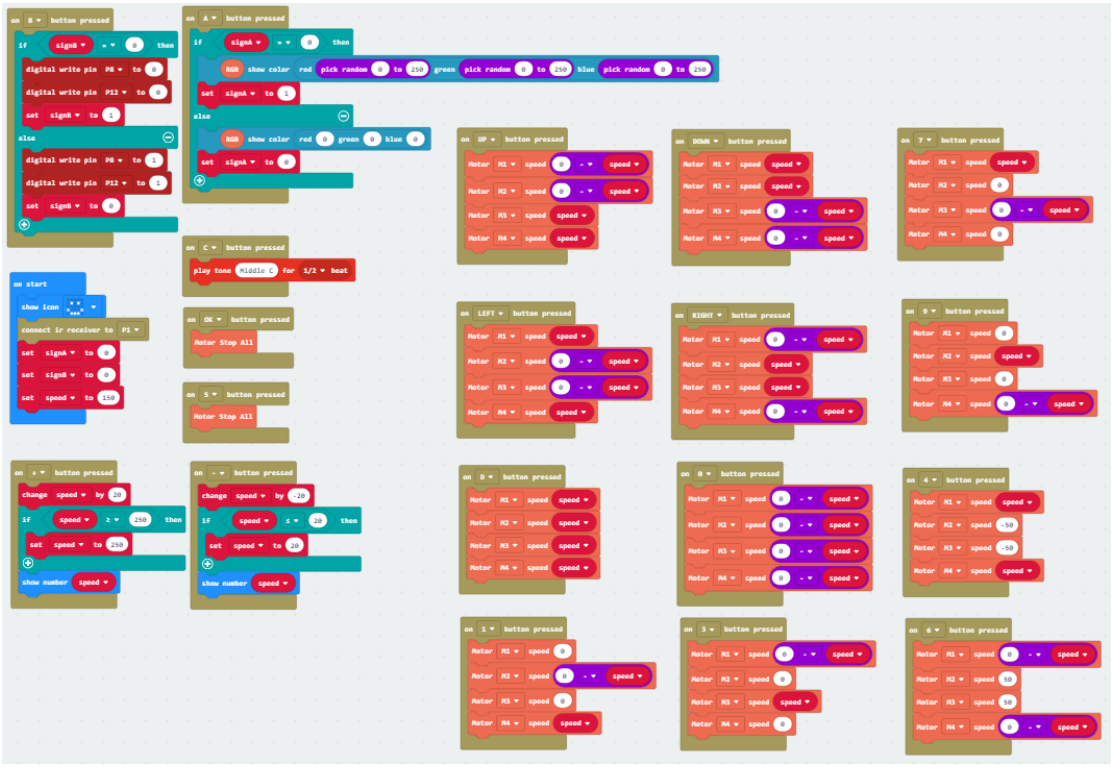
When 7 is pressed, car moves 45° to the lower left

When 9 is pressed, car moves 45° to the lower right

When 4 is pressed, car drifts to the left

When 6 is pressed, car drifts to the right

2、 Final program building block combination



Wiring

1. Motor connection;
The motor of the car's left front wheel is connected to the extension plate M3 interface
The motor of the car's left rear wheel is connected to the extension plate M4 interface
The motor of the car's right front wheel is connected to the extended version M2 interface
The motor of the right rear wheel of the car is connected to the expanded M1 interface
2. Connection of headlights;
The two multi-colored lights of the car can freely switch the color of the round gusset plate according to the needs of the scene, thus changing the color of the light. The red line of the colored lights is connected to the 3.3v red pin of the extension board, and the black line is connected to the blue IO pins P8 and P12 of the extension board.

The experimental results

After downloading the program to the microbit motherboard of the Magic wheelcar, open the main switch of the expansion board, and the microbit will display a smiling face. When the button up of the remote control is pressed, the wheelcar will advance. When the DOWN button of the remote control is pressed, the wheelcar will go back; When the LEFT button of the remote control is pressed, wheelcar will move to the LEFT; When the RIGHT button of the remote control is pressed, wheelcarwill move to the RIGHT; When the remote control A is

pressed, the RGB light switches on and off and changes color. When the remote control button B is pressed, the headlights will be turned on or off. When the remote control button C is pressed, the buzzer will sound; When the remote control button ok or 5 is pressed, the car will stop; When the remote control button '+' or '-' press, the car speed will accelerate or slow down; When key D is pressed, wheeltrolley turns right; When the key 0 is pressed, wheeltrolley turns to the left; When the key 1 is pressed, the wheelcarmoves 45° diagonally to the left; When the key 3 is pressed, the wheelcarmoves 45° diagonally to the upper right; When key 7 is pressed, wheelcarmoves 45° to the lower left; When button 9 is pressed, wheelcarmoves 45° diagonally to the lower right; When key 4 is pressed, wheelcardrifts to the left; When button 6 is pressed, wheelcardrifts to the right.