Magic wheel car left and right rotation

Goal

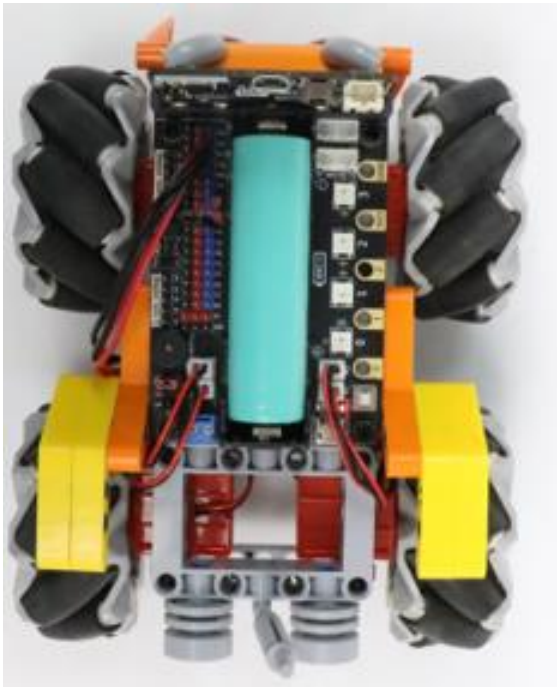
In this lesson, we will learn to control the left and right rotation of the Magic wheel car

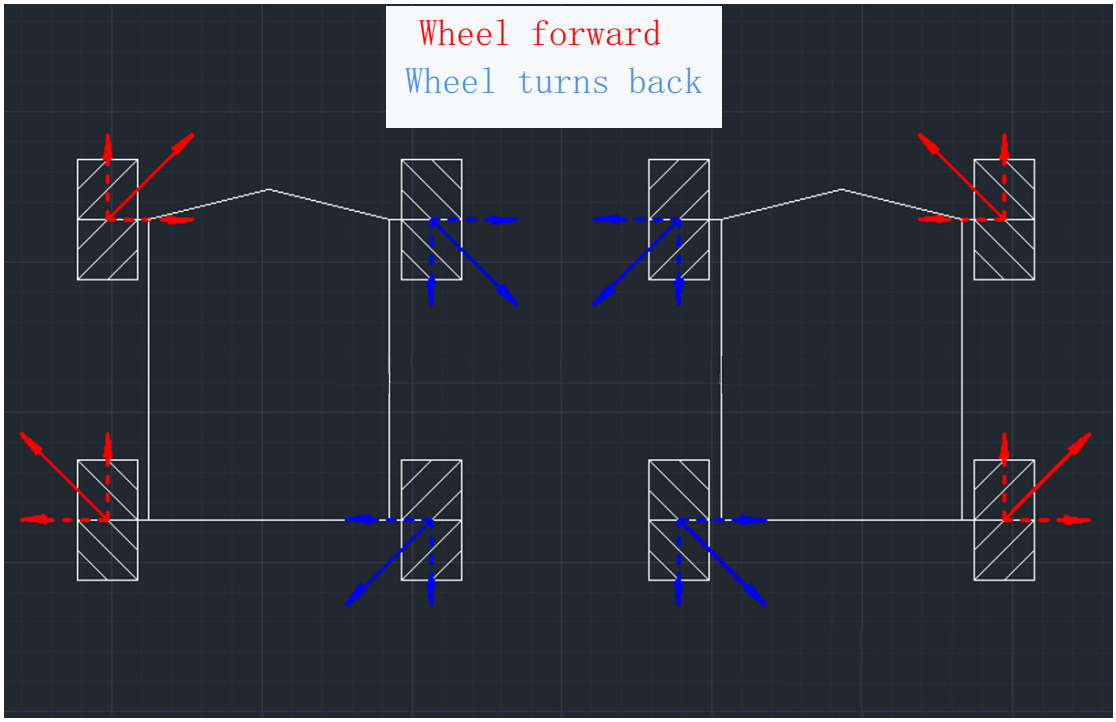
Programming method

(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 control 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 control the car

Left and right rotation principle

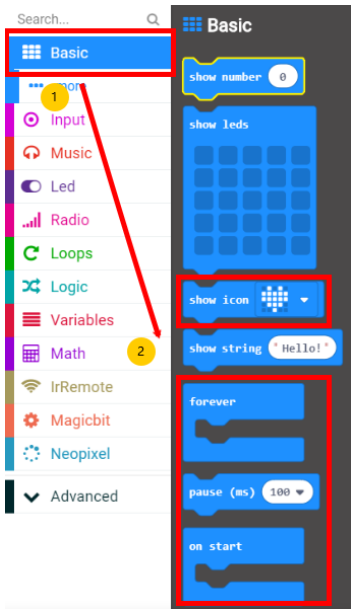


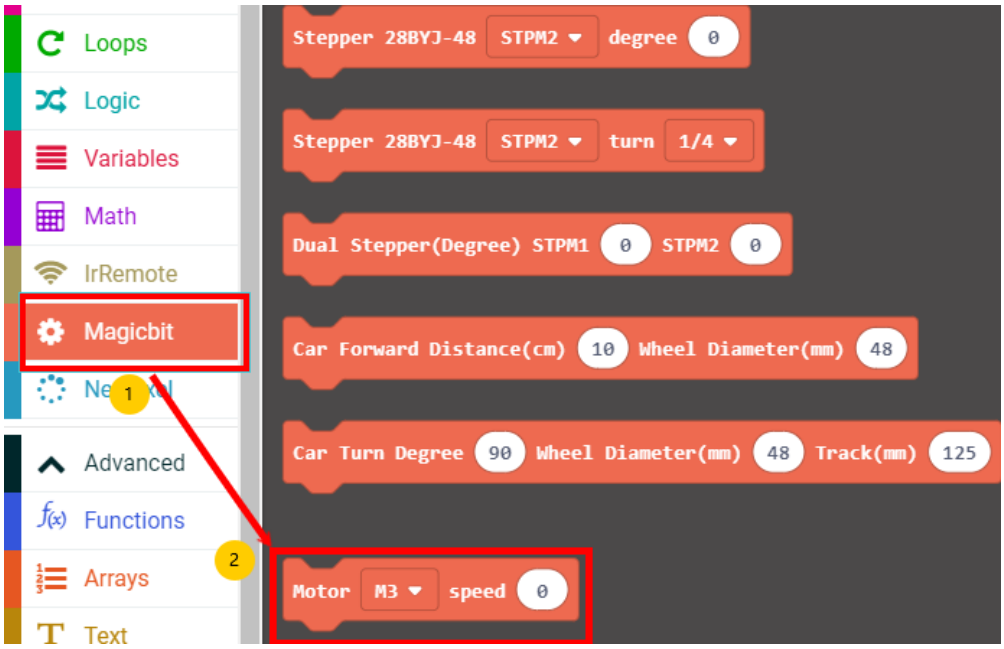


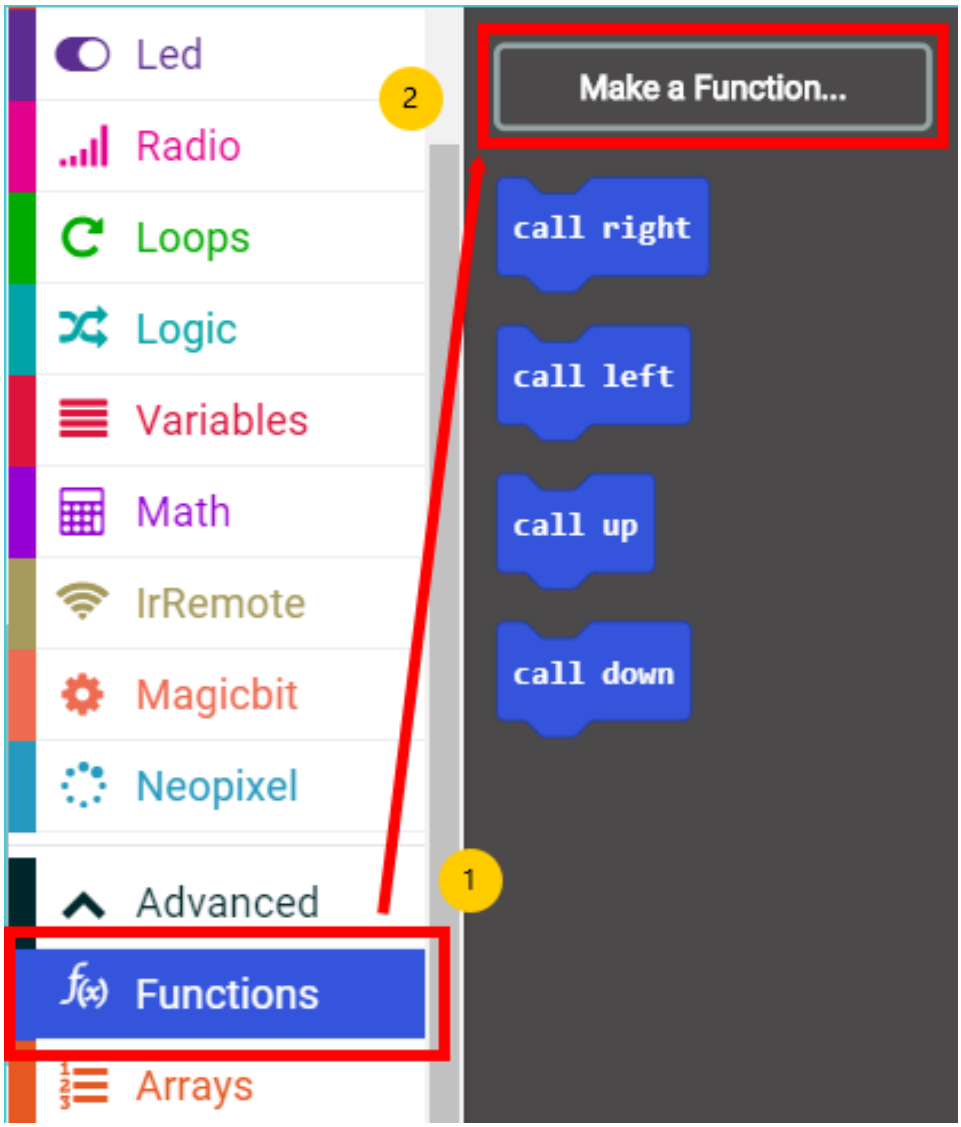
In the figure, the solid red arrow is the friction caused by the wheel turning forward, the solid blue arrow is the friction caused by the wheel turning backward, and the dotted line is the component force. Through the cancellation and enhancement of the dotted line forces, the car on the left will move to the right, and the car on the right will move to the left

Block programming

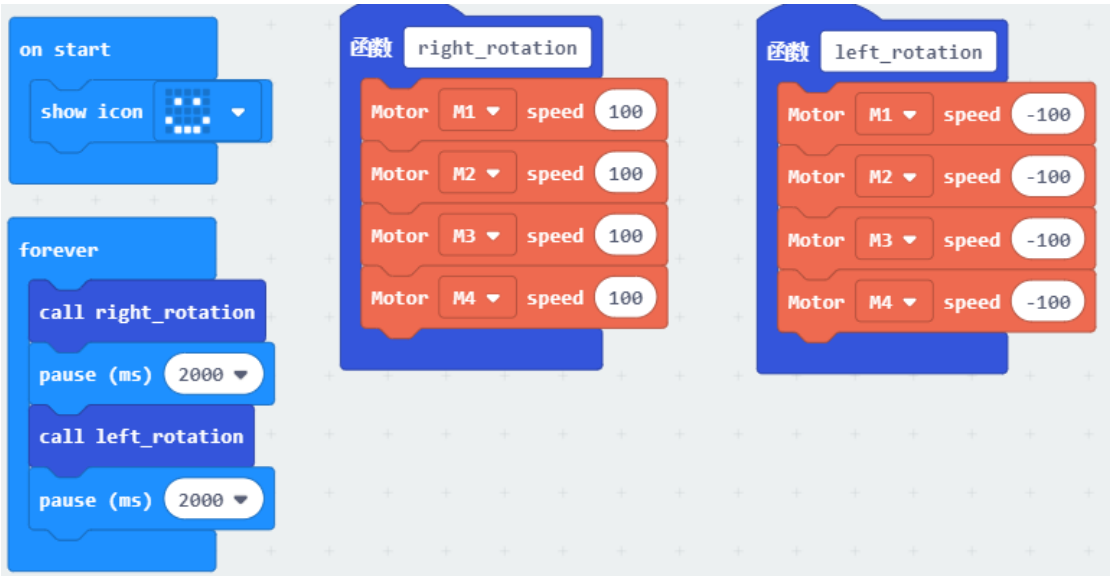
1、 Location of building blocks required




Loops
Logic
Variables
Math
IrRemote
Magicbit
Advanced
Functions
Arrays
Text
1
2
Stepper 28BYJ-48 STPM2 degree 0
Stepper 28BYJ-48 STPM2 turn 1/4
Dual Stepper(Degree) STPM1 0 STPM2 0
Car Forward Distance(cm) 10 Wheel Diameter(mm) 48
Car Turn Degree 90 Wheel Diameter(mm) 48 Track(mm) 125
Motor M3 speed 0


Led
Radio
Loops
Logic
Variables
Math
IrRemote
Magicbit
Neopixel
Advanced
Functions
Arrays
2
1
Make a Function...
call right
call left
call up
call down

2、 Final program building block combination



Wiring

1. Motor connection;
The motor of the car's right front wheel is connected to the extension plate M2 interface
The motor of the right rear wheel of the car is connected to the extension plate M1 interface
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
2. Connection of headlights;
The two headlights of the car are connected to the IO port with pins P8 and P12, respectively. The red line of the car lights is connected to the red pin of the 3.3v extension plate, and the black line is connected to the blue IO pin of the extension plate.

The experimental results

After downloading the program to the microbit motherboard of the Magic wheel car, open the main switch of the expansion board, the microbit will display a smiley face, and the car will turn right for two seconds, then left for two seconds, and so on.