

Control Magic:car steering gear

Goal

In this lesson, we will learn to control the steering gear of the car Magic_Car and realize 100° and 130° rotation of the steering gear

Programming method

(1) online programming: I connected the micro.bit to the computer through the USB cable, opened my computer, found the MICROBIT memory disk and opened it. Double-click MICROBIT.HTM opened 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> enter or search, add the Microbit extension package, and you can start programming the steering wheel of the 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, enter enter or search, add the Microbit extension package, and then you can start the programming control of the car steering gear.

The control principle

Inside the steering gear there is a very simple setup: small dc motors, potentiometers and control circuits. The motor is connected to the control wheel by a gear. The steering gear is controlled by sending electrical pulses of variable width or pulse width modulation (PWM) through the control line. When the motor rotates, the resistance of the potentiometer will change, so the control circuit can precisely adjust the motion and direction of the motor. When the motor's shaft is in the desired position, the power supply to the motor is stopped. If not, the motor rotates in the appropriate direction.

Block programming

- 1、 Location of building blocks required

Search...

Magicbit

2

1

Servo S1 degree 0

Geek Servo S1 degree -45

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

Motor

on start

show icon

forever

Servo S1 degree 100

pause (ms) 1000

Servo S1 degree 130

pause (ms) 1000

Search...

Basic

1

2

show number 0

show leds

show icon

show string "Hello!"

forever

pause (ms) 100

on start

on start

show icon

forever

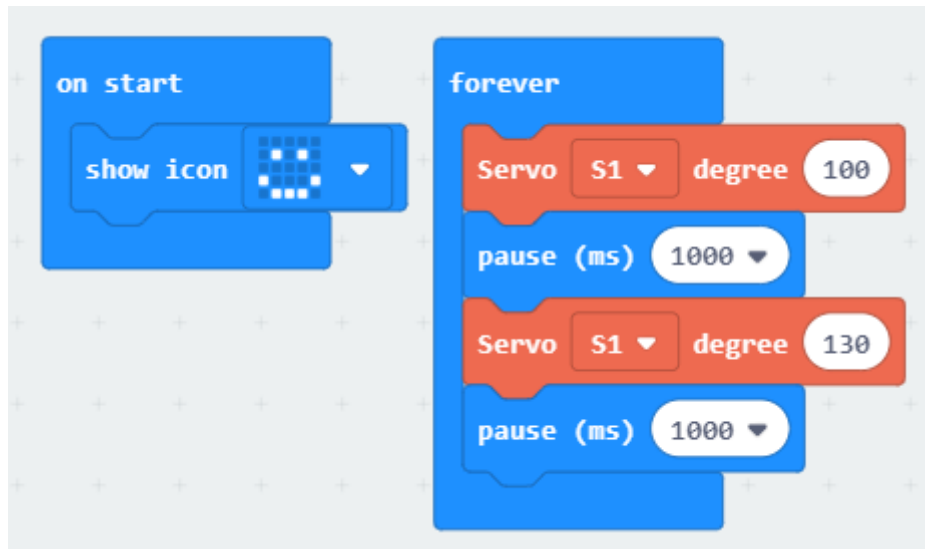
Servo S1 degree 100

pause (ms) 1000

Servo S1 degree 130

pause (ms) 1000

2、Final program building block combination



Wiring

The car steering gear is connected to the S1 pin of the PWM steering gear of the expansion board, in which the yellow line of the steering gear is connected to the blue pin of the expansion board, the red line of the steering gear is connected to the red pin of the control board, and the brown line of the steering gear is connected to the black GND pin of the control board.

The experimental results

After downloading the program to the microbit motherboard of the Magic_Car car, open the main switch of the expansion board, microbit displays the smiley face, Magic_Car steering gear will turn to 100°, then to 130°, and so on.