

(<https://www.dfrobot.com/product-1783.html>)

Introduction

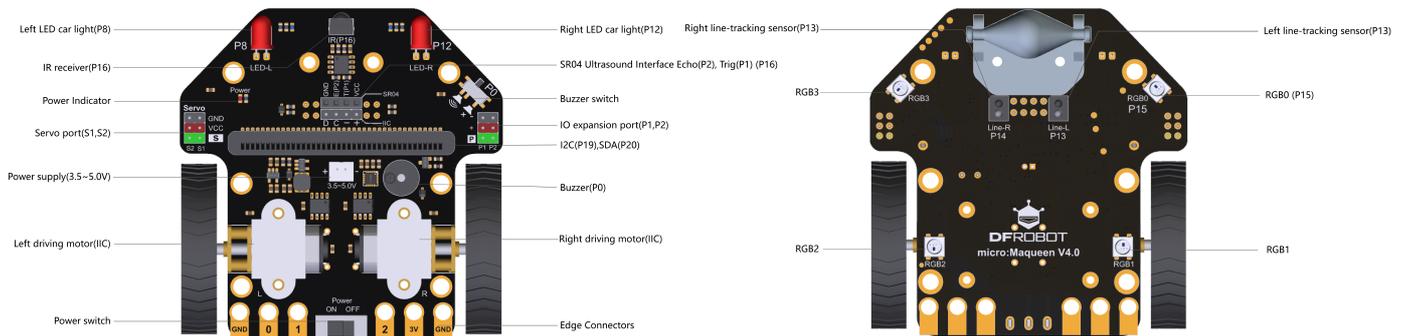
I am Maqueen

Hello, my name is Maqueen, I'm a graphical programming robot for STEM education, which inherits playability and simple operation of micro:bit. The Mini-body, interesting features and plug-and-play allow children to quickly learn graphic programming in entertaining, nurturing children's interest in science and logical thinking.

What are the features of Maqueen?

- Support for Makecode, will support Scratch and python later.
- Small size, flexible movement.
- All-metal miniature gear motor, good quality, strong driving force.
- Line patrol, ambient light, LED lights, ultrasonic interface, servo interface, buzzer, I2C interface, mechanical expansion screw hole, etc. ... full-featured, highly expandable.
- Exclusive customized POM bearing wheel, flexible and reliable, strong obstacle crossing ability.
- Easy to install, easy to use.

Function Diagram



Specification

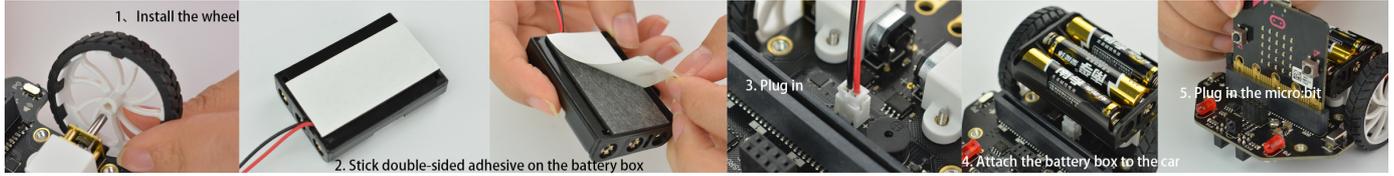
- Supply Voltage: 3.5V-5V DC (Three AAA batteries or 3.6V~3.7V lithium battery)
- Infrared Grayscale Sensor(High-low level) x 2
- Buzzer x 1
- Infrared Receiver (NEC decoder) x 1
- LED Lights (High-low level control) x 2
- RGB Ambient Light (16 million colors) x 4
- SR04, SR04P Ultrasonic Interface(5V) x 1
- IIC Interface (3.3V) x 1
- Servo Interface (S1 S2)x 2
- Gravity Extension Interfaces (P1, P2) x 2
- N20 All-metal Gear Motor x 2
- Motor Reduction Ratio: 1:150
- Maximum Rotate Speed: 133 rpm
- Motor Drive Mode: PWM motor drive
- Bracket and Protective Cover Extension M3 Screw Hole x 6
- Programming Method: Makecode graphical programming, Mind graphical programming (based on Scratch 3.0)
- Dimension: 81mm x 85 mm x 44mm/3.19 x 3.35 x 1.73in
- Weight: 75.55g

Product Configuration List

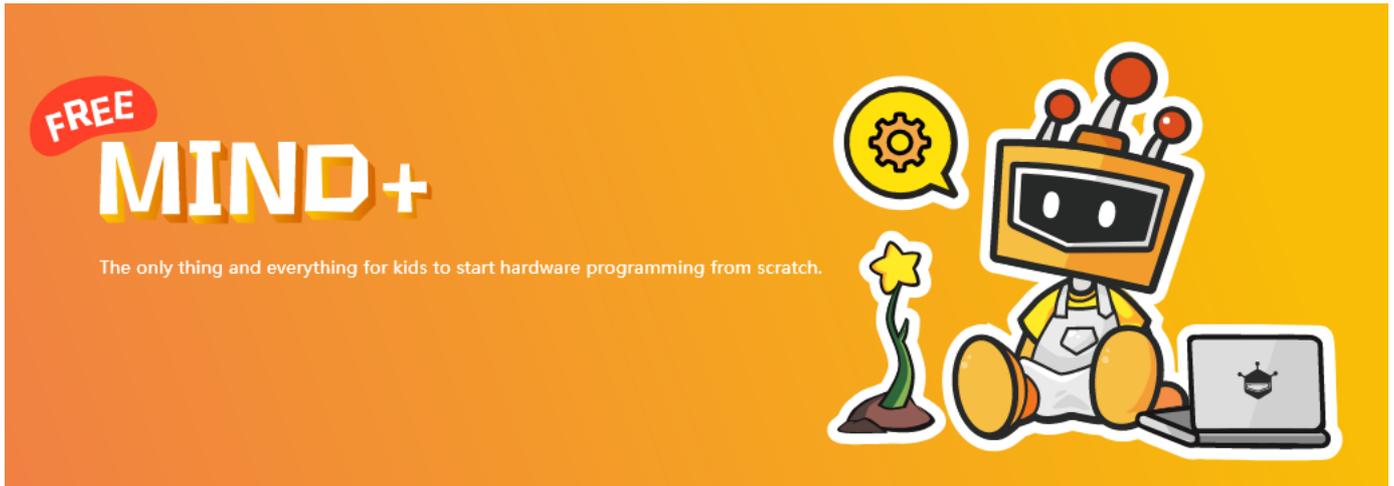
- Car Body x 1 (Motors and bearing wheel have been assembled before leaving factory)
- Wheel x 2
- Three AAA batteries Box x 1

- Double Sided Adhesive Tape x 1

Product Installation



Silly Maqueen Tutorial(Scratch 3.0-based)



(<https://github.com/Frances9/ROB0148/raw/master/Crazy%20Maqueen%20Tutorial-English.pdf>)

Download address: click here (<https://github.com/DFRobot/Silly-Maqueen->

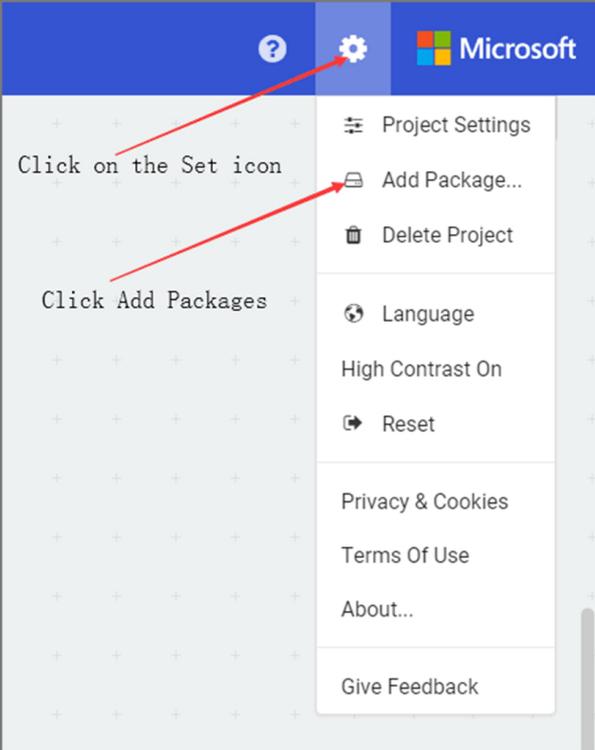
Makecode/blob/master/Silly%20Maqueen-Makecode-V1.0-2019-11-20-EN.pdf)

More tutorial: click here (<https://mindplus.dfrobot.com/maqueen>)

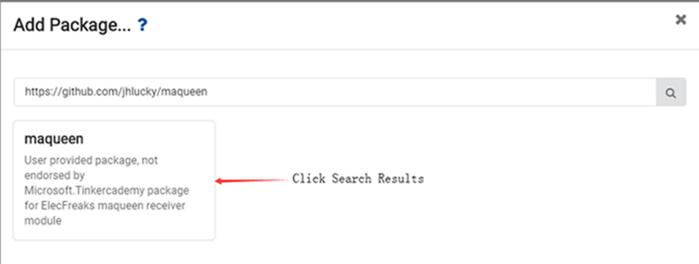
Import the Makecode Graphical Library

1. Click the link: makecode.microbit.org (<https://makecode.microbit.org/>), enter the makecode graphical online programming platform. (Note: Loading will be slow in the first time, please wait patiently)
2. Import the library: Copy the Maqueen library's address: <https://github.com/DFRobot/pxt-maqueen> (<https://github.com/DFRobot/pxt-maqueen>)
3. Import the library by following the steps.

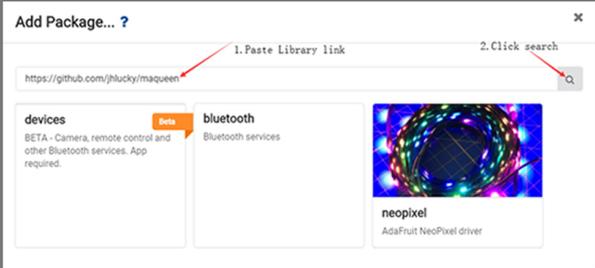
1. Click on the Set icon, then click Add Library.



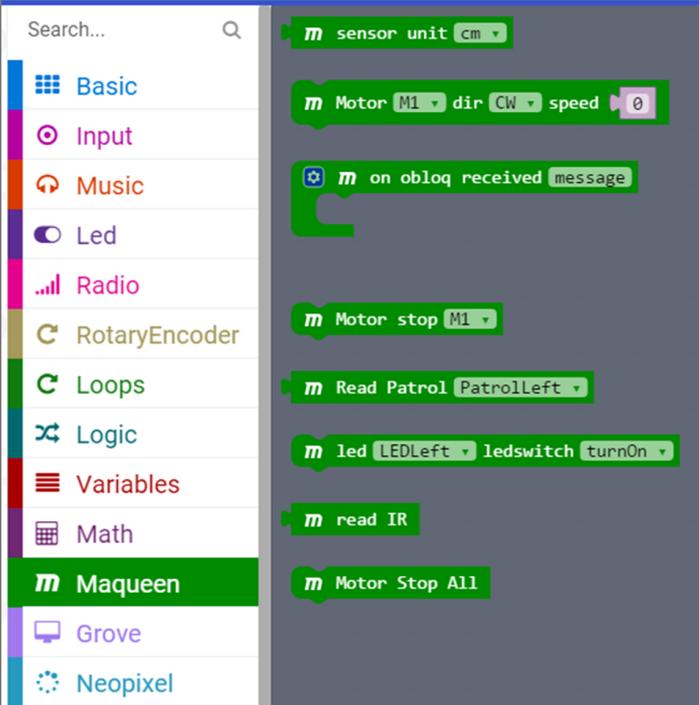
3. Click Search Results



2. Paste Library link, click Search



4. Import Complete



Makecode Programming Example

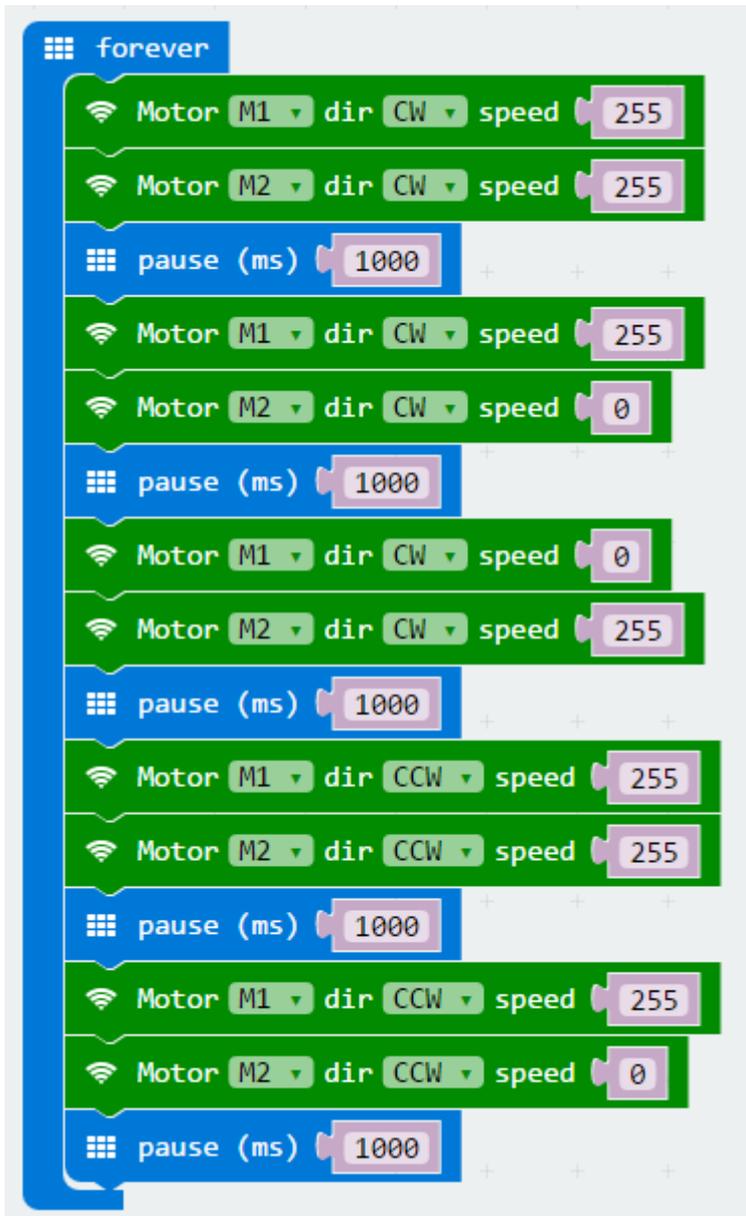
Motor Control

- Learning Target: Mastering the basic method of motor control.
- Effect: The car forward 1 second, right turn 1 second, left turn 1 second, back 1 second, back and right turn 1 second.



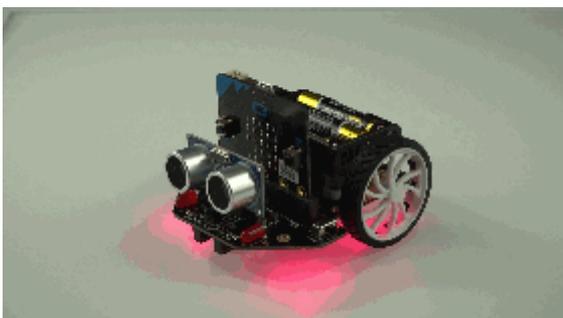
Makecode Program Link: https://makecode.microbit.org/_2Cc9gM5P5aDs
(https://makecode.microbit.org/_2Cc9gM5P5aDs)

Screenshot of Makecode Graphical Program:



RGB Breathing Ambient Light

- Learning Target: Learn the basic way of using ambient light.
- Effect: The RGB ambient light at the bottom of the Maqueen shows a variety of colors and presents a gradient effect.



Makecode Program Link: https://makecode.microbit.org/_WkgPLpAotP3t
(https://makecode.microbit.org/_WkgPLpAotP3f)

Screenshot of Makecode Graphical Program:

```
on start
  set item to NeoPixel at pin P15 with 4 leds as RGB (GRB format)

forever
  set RED to 0
  set GREEN to 0
  set BLUE to 255

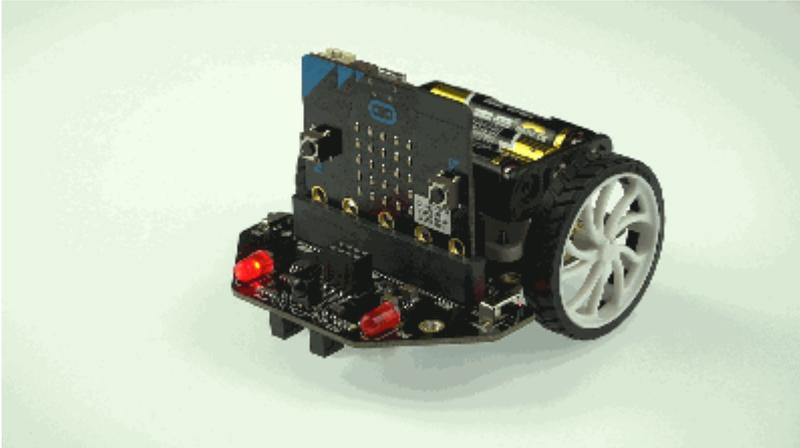
  repeat 255 times
    do
      change RED by 1
      change BLUE by -1
      item show color (red RED green GREEN blue BLUE)
      pause (ms) 1

  repeat 255 times
    do
      change GREEN by 1
      change RED by -1
      item show color (red RED green GREEN blue BLUE)
      pause (ms) 1

  repeat 255 times
    do
      change BLUE by 1
      change GREEN by -1
      item show color (red RED green GREEN blue BLUE)
      pause (ms) 1
```

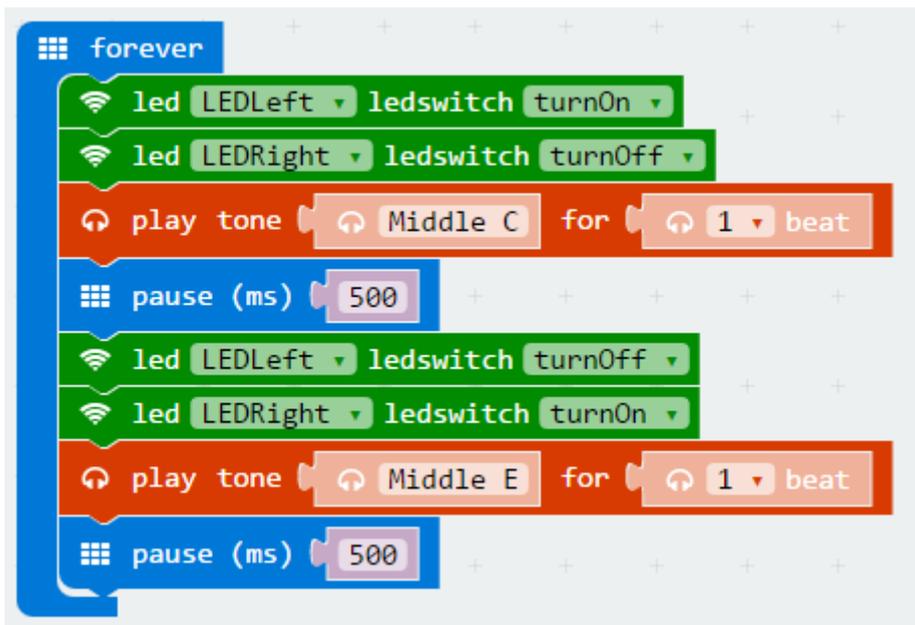
LED Light Flash

- Learning Target: Learn the using way of LED light and buzzer.
 - Effect: The left and right LED lights flash alternately, and the buzzer emits two different tone frequencies at intervals of 500 milliseconds.



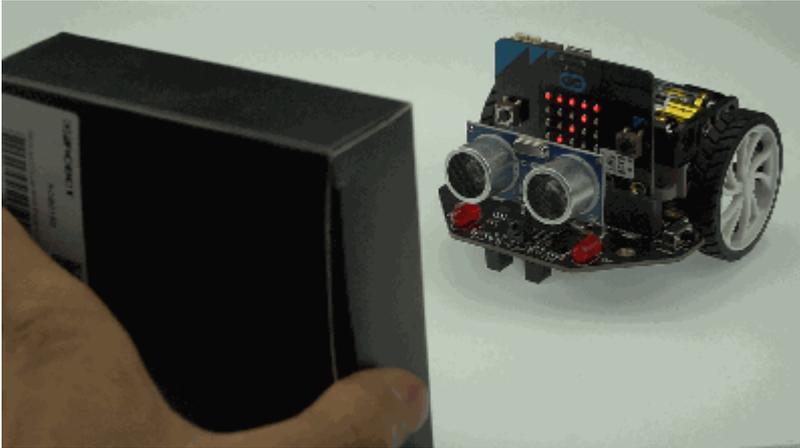
Makecode Program Link: https://makecode.microbit.org/_6gKRm1RVsDxY
 (https://makecode.microbit.org/_6gKRm1RVsDxY)

Screenshot of Makecode Graphical Program:



Read Ultrasonic Distance

- Learning Target: Learn to read the distance of ultrasound, so that later can be flexible use of these data.
- Effect: The ultrasonic detects the obstruction in front and the distance will be displayed on the dot-matrix screen in centimeters.



Makecode Program Link: https://makecode.microbit.org/_4gi4Dj7yTWgK
 (https://makecode.microbit.org/_4gi4Dj7yTWgK)

Screenshot of Makecode Graphical Program:



Read Infrared Key Assignments

- Learning Target: Learn to read the key assignments of infrared, so that later can be flexible use of these data.
- Effect: Put the the IR receiver toward the IR remote control, when you press any key on the IR remote control. The key assignments that corresponds to the pressed key will displayed on the dot matrix, in decimal notation the last two digits of the key assignments are displayed.



Makecode Program Link: https://makecode.microbit.org/_361V7bbp0UAg
 (https://makecode.microbit.org/_361V7bbp0UAg)

Screenshot of Makecode Graphical Program:



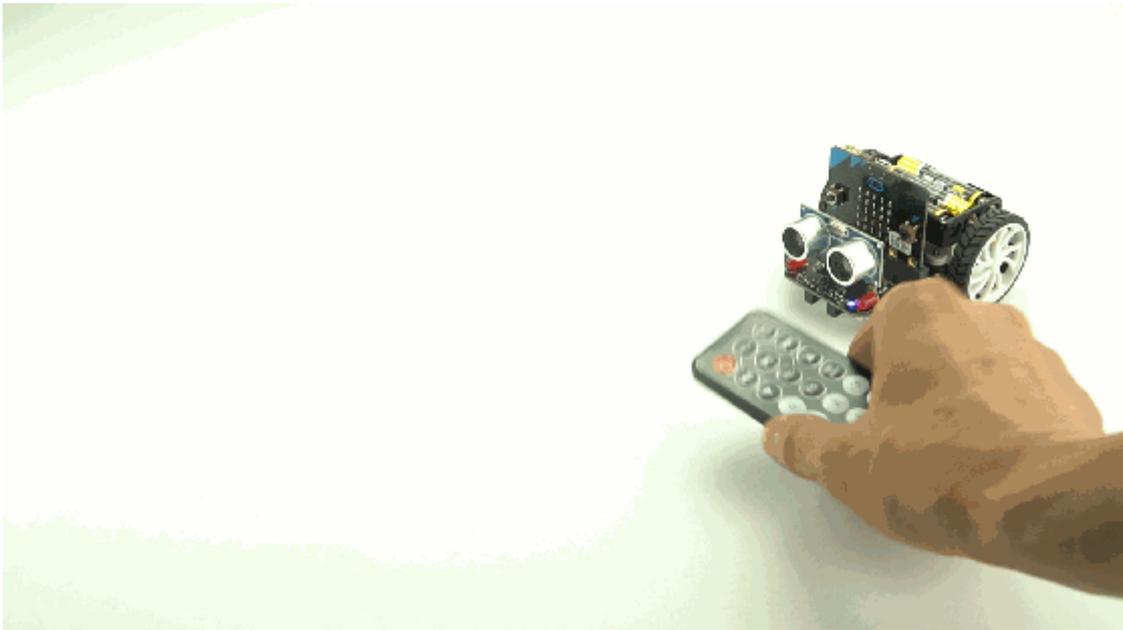
IR Remote Control and Its Key Assignments The key assignments in the following table are in hexadecimal. In this product, we read the last two digits of the key assignments and automatically convert them to decimal data.

Key	Key Assignments
Power	0xff00
VOL	0xfe01
FUNC/STOP	0xfd02
Left	0xfd04
Pause	0xfa05
Right	0xf906
Down	0xf708
VOL-	0xf609
Up	0xf50a
0	0xf30c
EQ	0xf20d
ST/REPT	0xf10e
1	0xef10
2	0xee11
3	0xfa05
4	0xeb14
5	0xea15

6	0xe916
7	0xe718
8	0xe619
9	0xe51a

IR Remote Control

- Learning Target: Learn to use the IR remote control to command the car.
- Effect: Control car forward, left, right, back with 4 keys of IR remote control 2, 4, 6, 8.



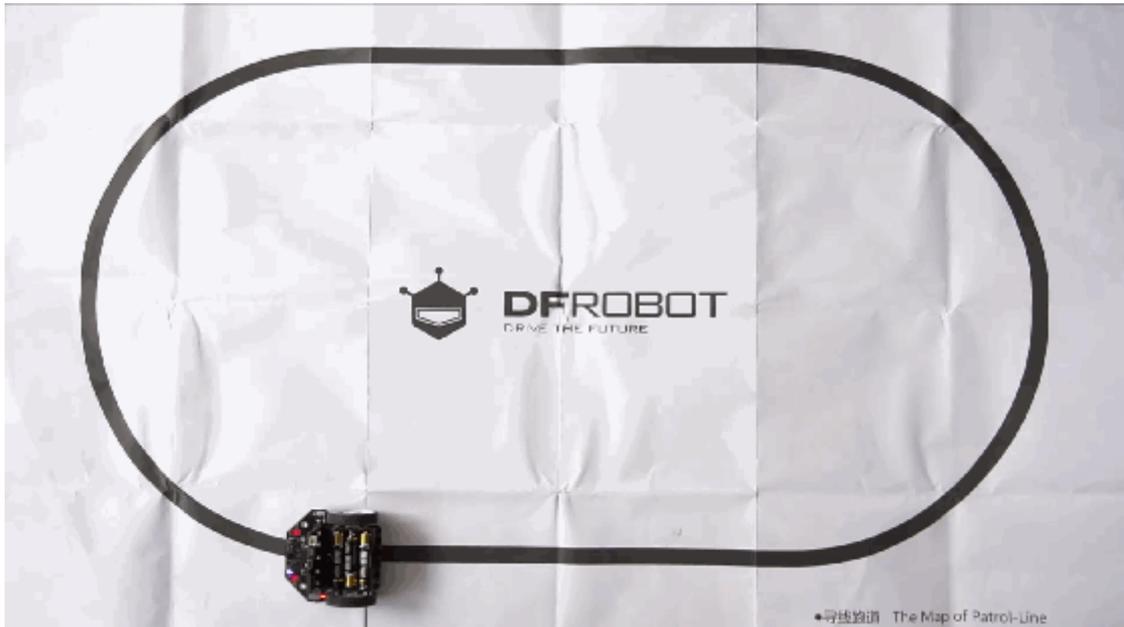
Makecode Program Link: https://makecode.microbit.org/_MfDXhX6MM35X
(https://makecode.microbit.org/_MfDXhX6MM35X)

Screenshot of Makecode Graphical Program:

```
on obloq received message
  if (message = 17)
    then
      Motor M1 dir CW speed 150
      Motor M2 dir CW speed 150
      led LEDLeft ledswitch turnOn
      led LEDRight ledswitch turnOn
  if (message = 25)
    then
      Motor M1 dir CCW speed 150
      Motor M2 dir CCW speed 150
      led LEDLeft ledswitch turnOff
      led LEDRight ledswitch turnOff
  if (message = 20)
    then
      Motor M1 dir CW speed 0
      Motor M2 dir CW speed 150
      led LEDLeft ledswitch turnOn
      led LEDRight ledswitch turnOff
  if (message = 22)
    then
      Motor M1 dir CW speed 150
      Motor M2 dir CW speed 0
      led LEDLeft ledswitch turnOff
      led LEDRight ledswitch turnOn
  if (message = 21)
    then
      Motor Stop All
      led LEDLeft ledswitch turnOff
      led LEDRight ledswitch turnOff
```

Line-tracking

- Effect: The car is running along the black line.



Makecode Program Link: https://makecode.microbit.org/_1VzX7LLAC3im
 (https://makecode.microbit.org/_1VzX7LLAC3im)

Screenshot of Makecode Graphical Program:

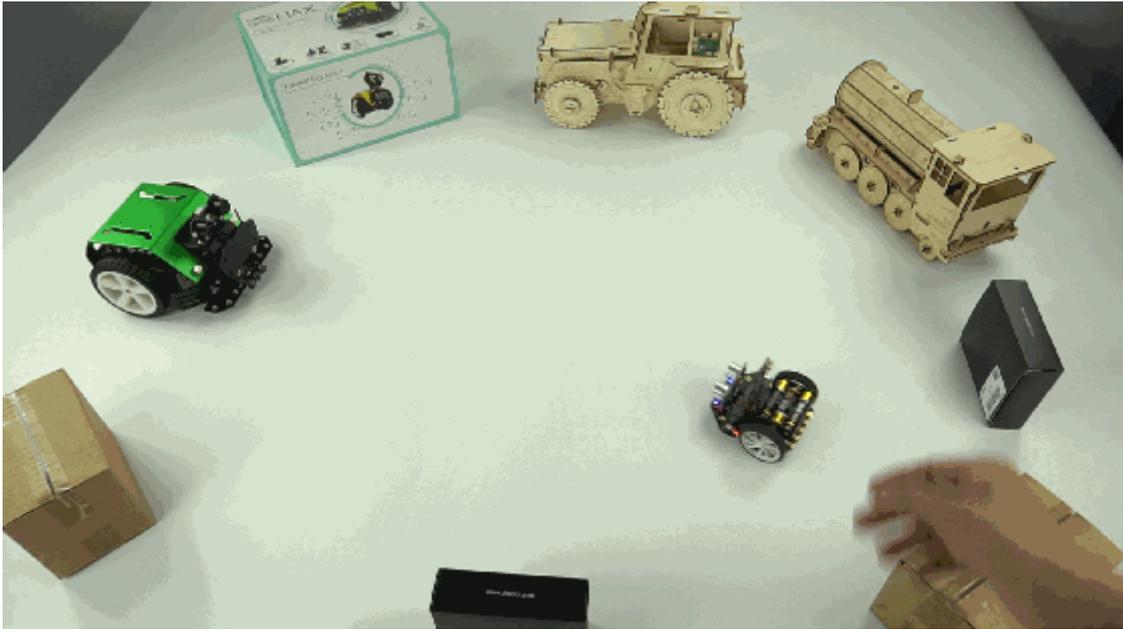
```

forever
  if (Read Patrol PatrolLeft == 0 and Read Patrol PatrolRight == 0)
  then
    Motor M1 dir CW speed 255
    Motor M2 dir CW speed 255
  else
    if (Read Patrol PatrolLeft == 0 and Read Patrol PatrolRight == 1)
    then
      Motor M1 dir CW speed 0
      Motor M2 dir CW speed 255
      if (Read Patrol PatrolLeft == 1 and Read Patrol PatrolRight == 1)
      then
        Motor M1 dir CW speed 0
        Motor M2 dir CW speed 255
    else
      if (Read Patrol PatrolLeft == 1 and Read Patrol PatrolRight == 0)
      then
        Motor M1 dir CW speed 255
        Motor M2 dir CW speed 0
        if (Read Patrol PatrolLeft == 1 and Read Patrol PatrolRight == 1)
        then
          Motor M1 dir CW speed 255
          Motor M2 dir CW speed 0
        if (Read Patrol PatrolLeft == 1 and Read Patrol PatrolRight == 0)
        then
          Motor M1 dir CW speed 255
  
```



Ultrasonic Obstacle-avoiding

- Effect: Ultrasonic detects the distance between the car and the obstacle in front of it. If the distance is less than 35cm, the car will randomly choose to turn left or right to avoid obstacles.
- Fittings: SR04 Ultrasonic Module x 1 or SR04-P Ultrasonic Module x 1



Makecode Program Link: https://makecode.microbit.org/_Fa4Ef3DwyXW7
(https://makecode.microbit.org/_Fa4Ef3DwyXW7)

Screenshot of Makecode Graphical Program:

centerUltrasonic Obstacle-avoiding-CN

Light-operated Sprite

- Effect: The car does not move in the darker light, and as the flashlight illuminates the LED, the vehicle's forward speed begins to increase as the intensity of the light increases.

Light-operated Sprite

Makecode Program Link: https://makecode.microbit.org/_fi6DWjCKeM9v
(https://makecode.microbit.org/_fi6DWjCKeM9v)

Screenshot of Makecode Graphical Program:

Light-operated Sprite-CN

Wireless Remote Control

WIRELESS REMOTE CONTROL

- Learning Target: Learn the way of using micro:bit wireless.
- Effect: Use gamepad to control the car's movement. micro:bit Micro:bit Gamepad (<https://www.dfrobot.com/product-1711.html>)

 Gamepad

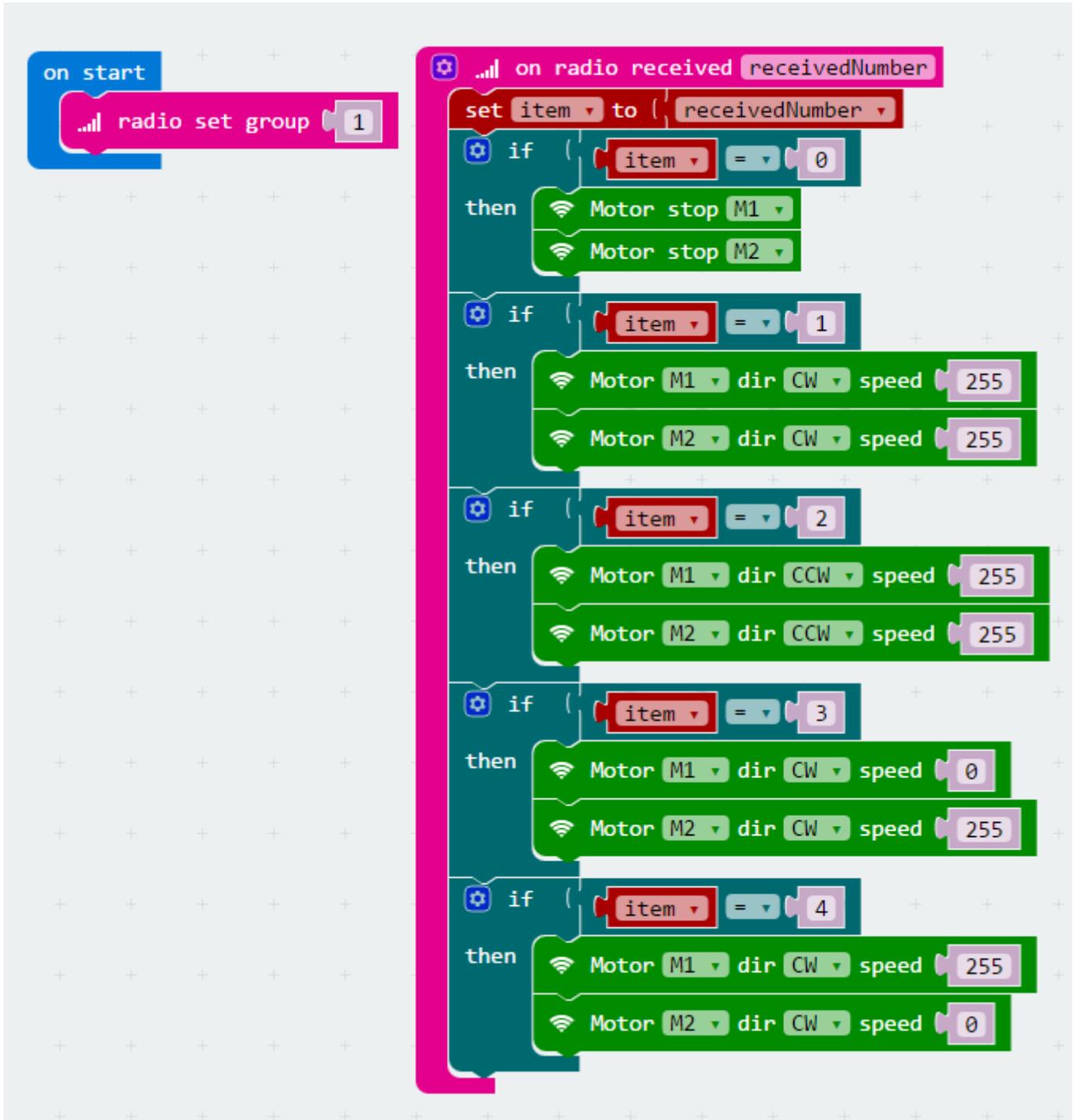


Makecode Program Link of the Car: https://makecode.microbit.org/_ftMMb8WkwDV7
(https://makecode.microbit.org/_ftMMb8WkwDV7)

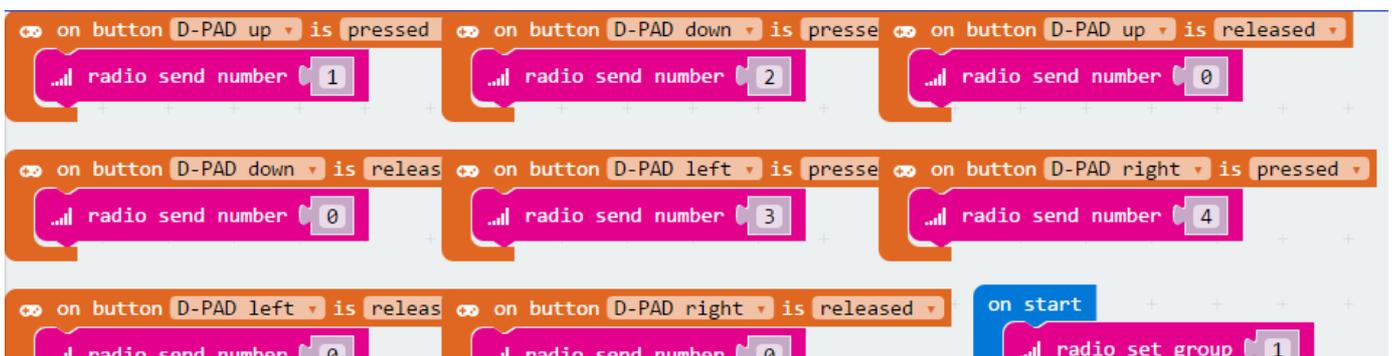
Makecode Program Link of the Gamepad: https://makecode.microbit.org/_gwK0A3JwEW0V
(https://makecode.microbit.org/_gwK0A3JwEW0V)

Screenshot of Makecode Graphical Program:

- Screenshot of Car's Makecode Graphical Program:



- Screenshot of Gamepad's Makecode Graphical Program:



Driving Servo

Program result: S1 and S2 servos repeatedly rotate from 0 to 180 degrees and then rotate from 180 degrees to 0 again.

Fittings: plug 9g servo into S1 and S2 interfaces(Maqueen supports 9g normal servo and metal servo)

Makecode program link: https://makecode.microbit.org/_7eeL8fURRMKK
(https://makecode.microbit.org/_7eeL8fURRMKK)

Screenshot of Makecode graphical program:

Driving Servo

Get Product Information

Program result: the product information is showed on the micro:bit LED panel.

- Display in Simplified Chinese: ROB0148-CN;
- Display in Traditional Chinese: ROB0148-TW;
- Display in English: ROB0148-EN;
- Display in Korean: ROB0148-KR;
- Display in Japanese: ROB148-JP.

Makecode Program link: https://makecode.microbit.org/_YAebP1f7pdsi
(https://makecode.microbit.org/_YAebP1f7pdsi)

Screenshot of the graphical program:

Get Product Information

FAQ

Q&A	Some general Arduino Problems/FAQ/Tips
A	For any questions, advice or cool ideas to share, please visit the DFRobot Forum (https://www.dfrobot.com/forum/).

More Documents

 Get **micro: Maqueen for micro:bit** (<https://www.dfrobot.com/product-1783.html>) from DFRobot Store or **DFRobot Distributor**. (<https://www.dfrobot.com/index.php?>)

route=information/distributorslogo)

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