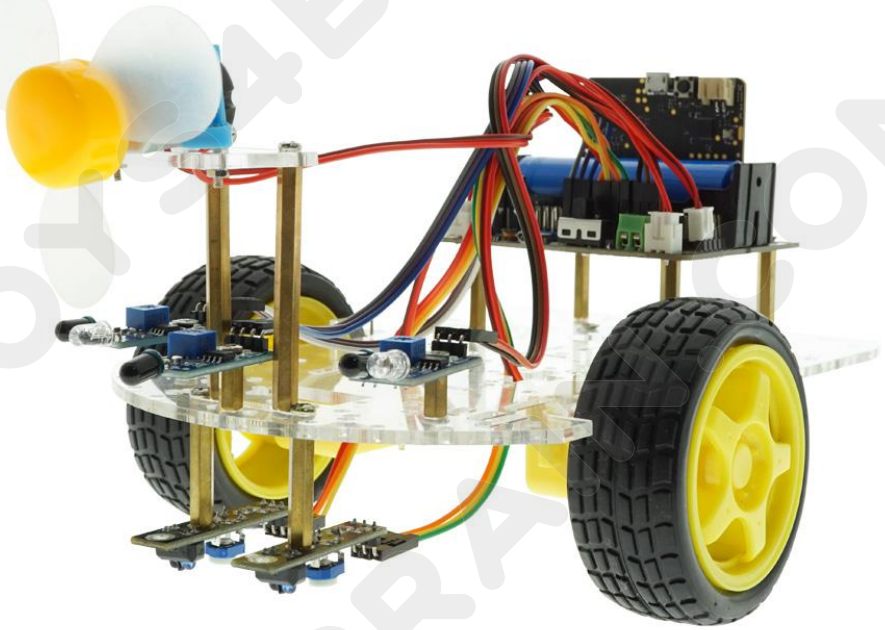
OKYSTAR DIY Car Tutorial



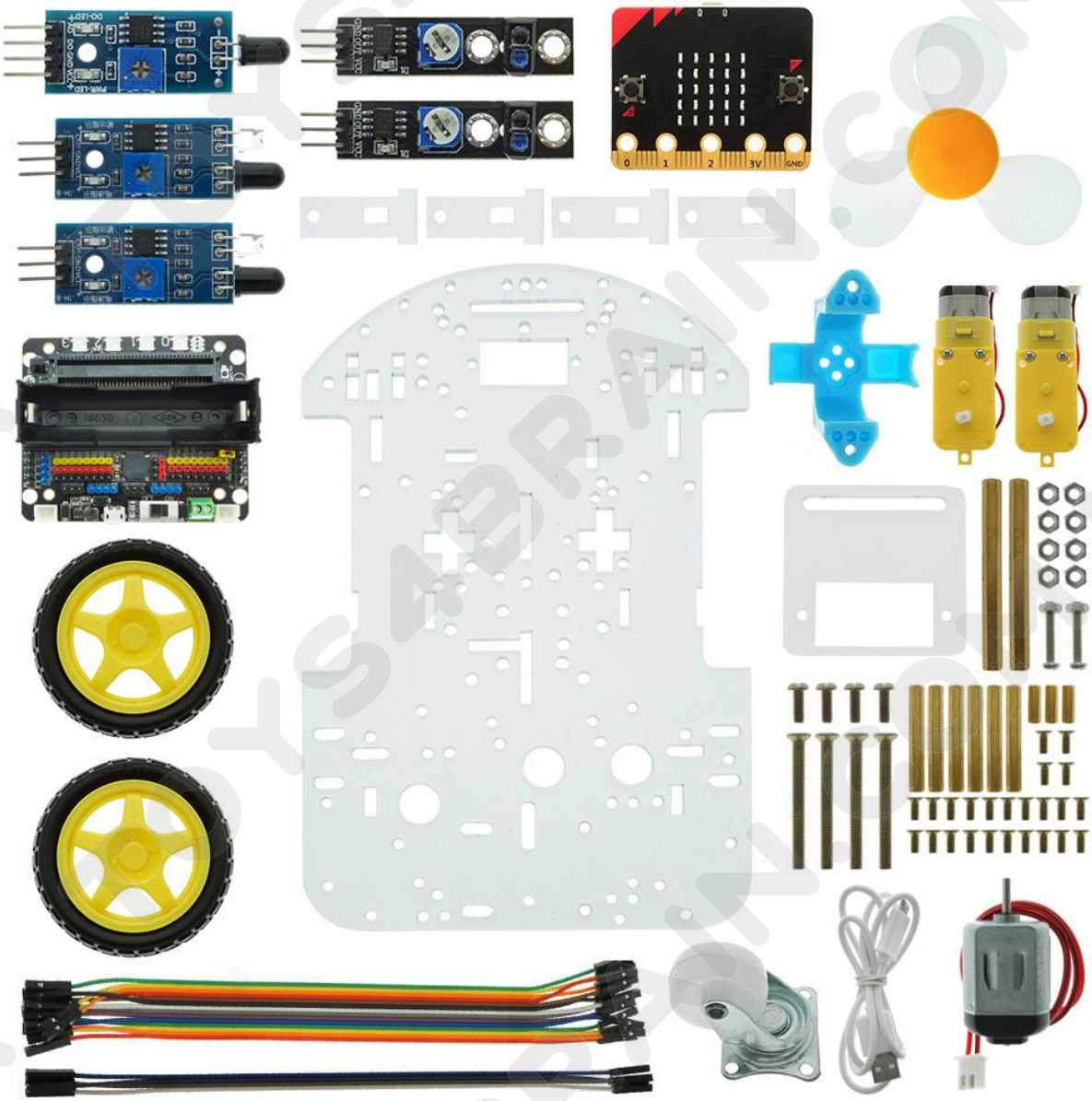
V1.0.19.6.11

Preface

Our OKYSTAR Car is fully compatible with micro:bit Car. We will show you how to use OKYSTAR Car. You will learn several innovative projects through OKYSTAR Car, including the most common and useful electronic components. In this tutorial We will show you our powerful and interesting OKYSTAR Car.

To find out more, you can visit our website:**http://okystar.com/**

OKYSTAR DIY Car list

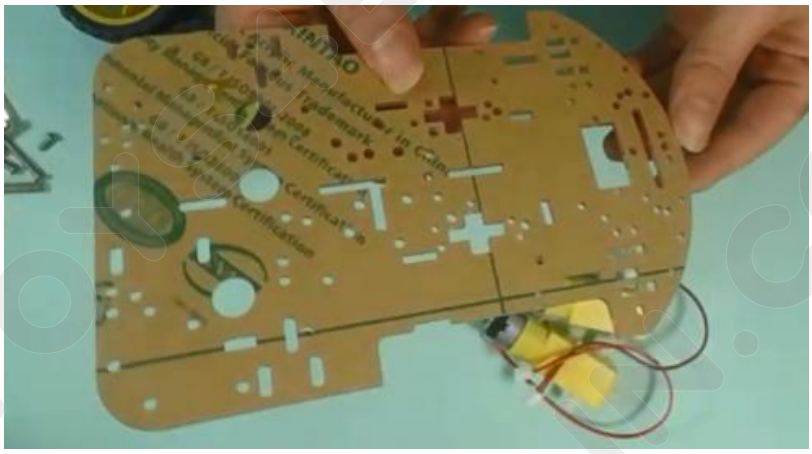


Content

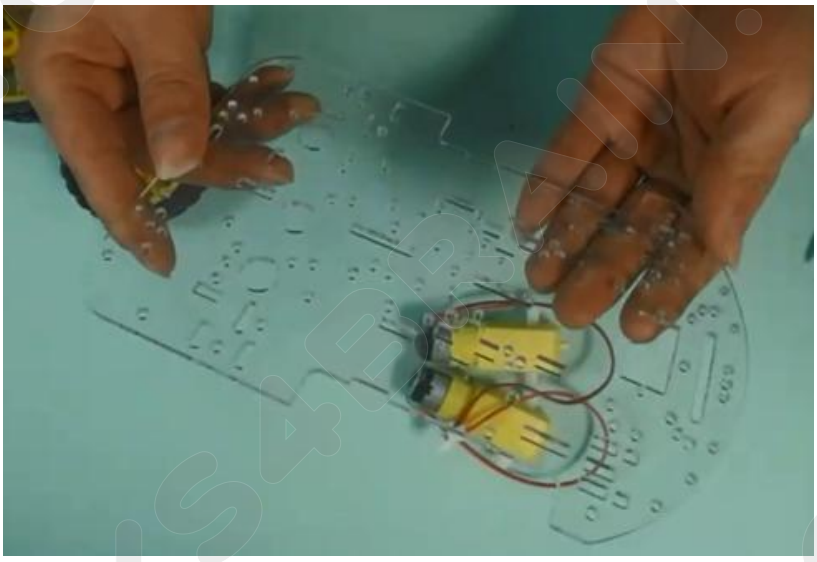
Lesson 1 Car Assembly Guide

In this lesson we are going to learn how to install our OKYSTAR DIY Car kit.

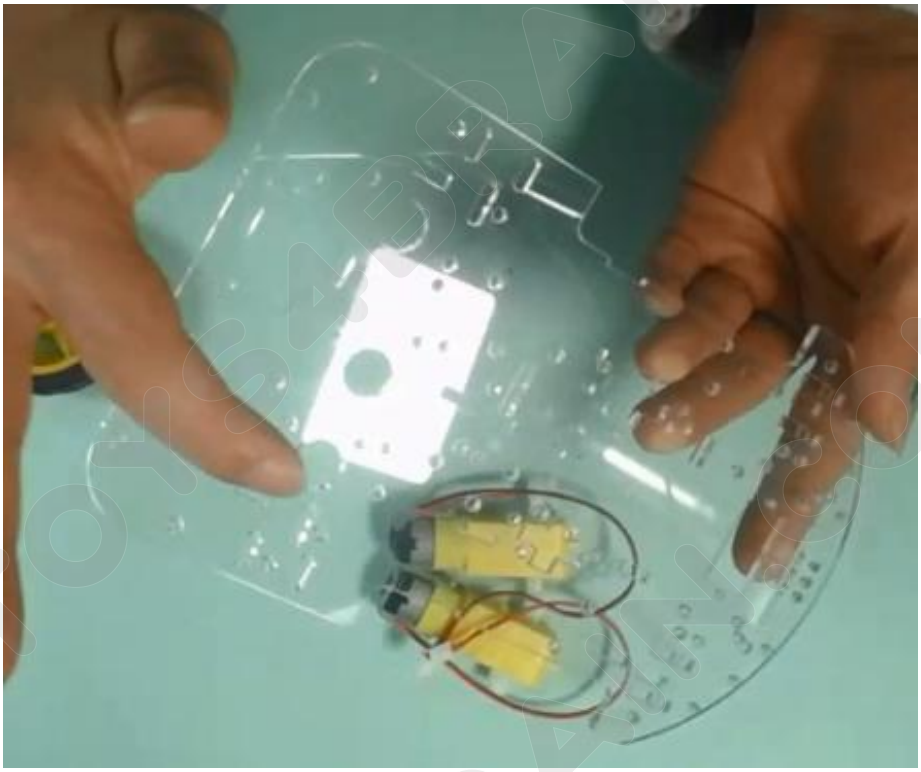
The first step: after getting the chassis of the car, first remove the protective film, as shown in the following figure:



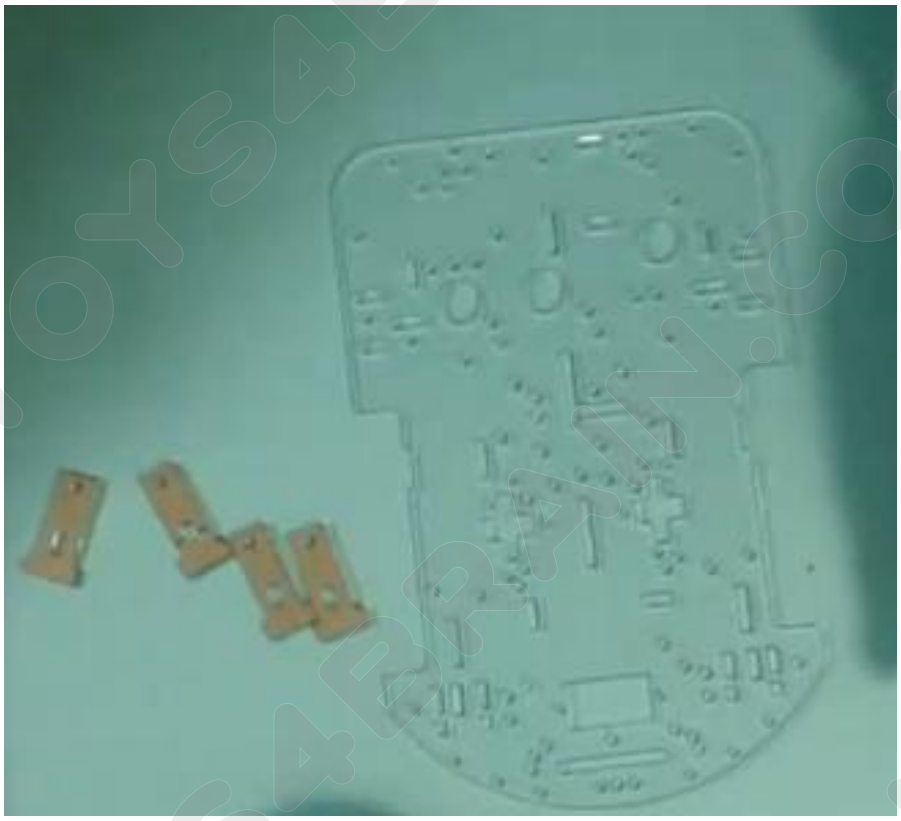
We removed the protective film from the chassis of the car as shown:



The front of our car chassis is as follows:

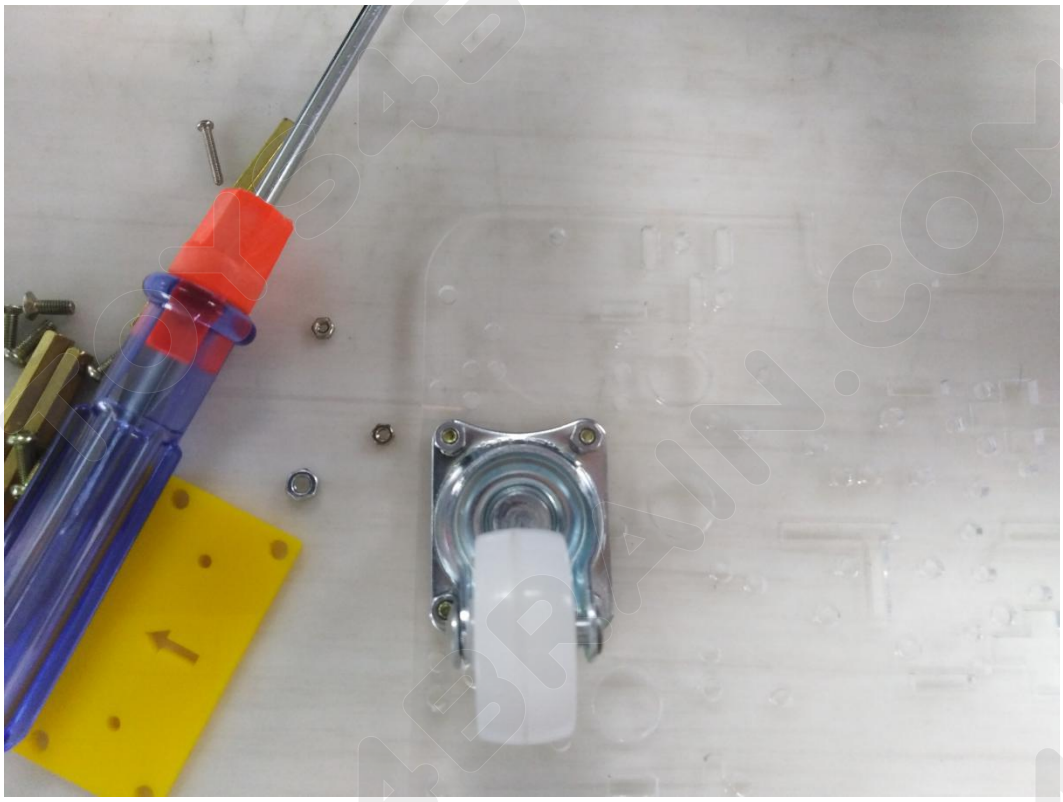


The second step: we remove the protective film from the motor fixing piece of the trolley, as shown in the following figure:

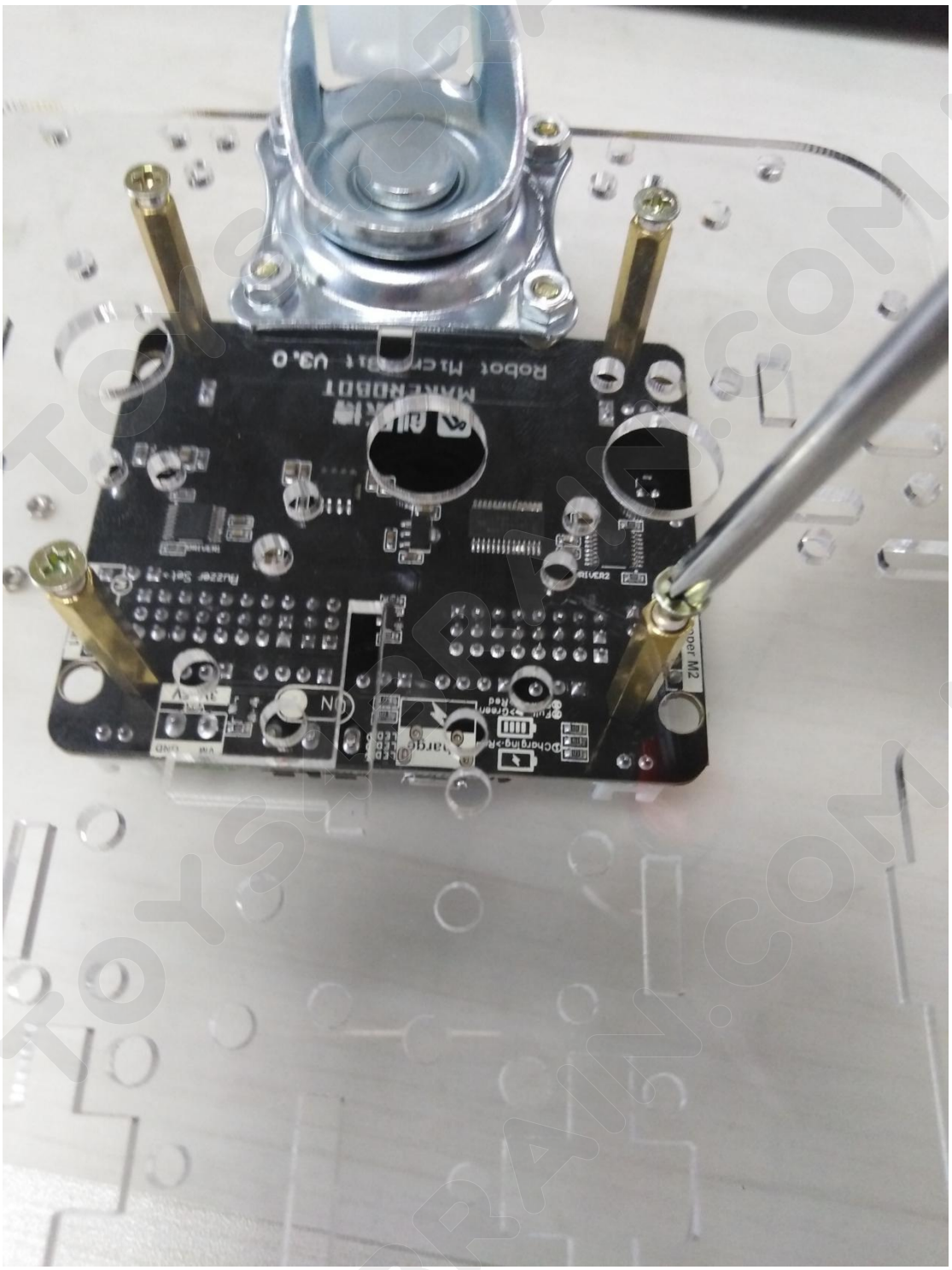


The third step: the small wheel will be mounted on the chassis of the cart using M3*30 screws and M3 nuts.

As shown below:



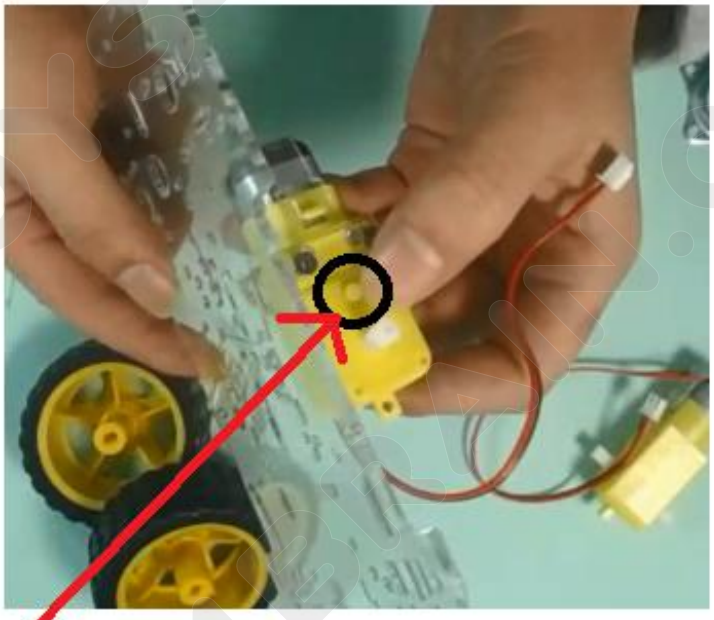
Step 4: Install Robot micro: bit V3.0 (extension board)



Five steps: Place the motor fixing piece of the trolley on the corresponding hole of the chassis of the car.

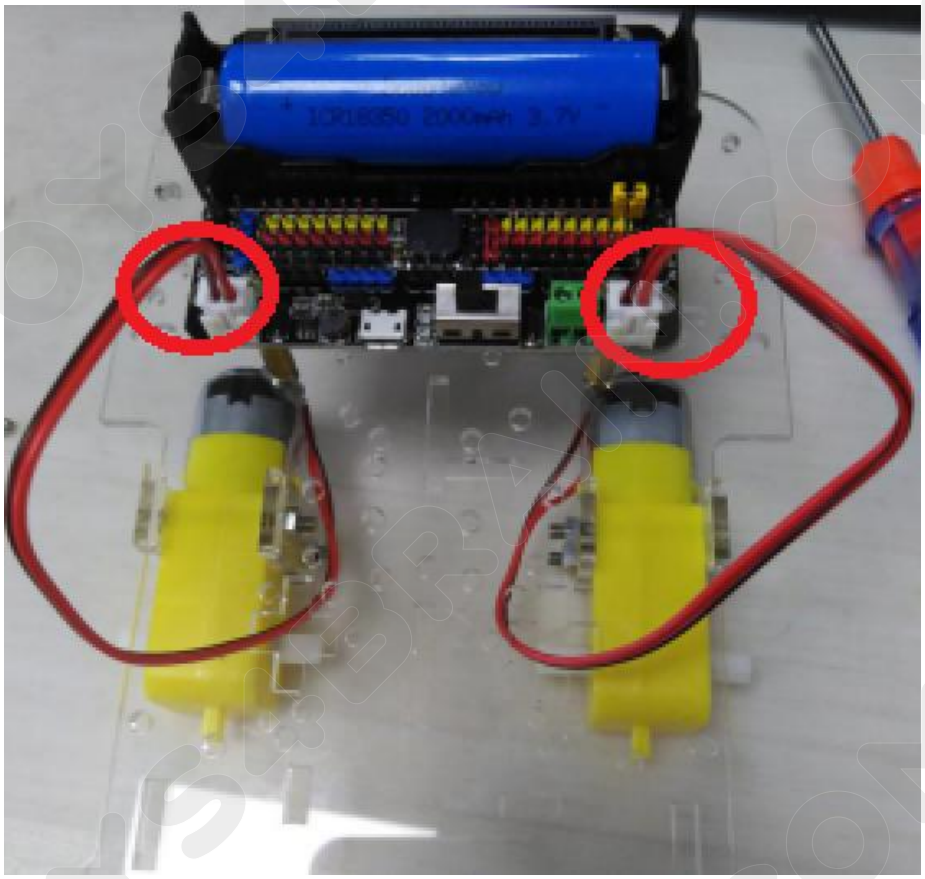
The specific operation is as follows:：

We are going to use the M3 screw and the M3 nut to fix the universal wheel to the corresponding position on the chassis of the car, as shown:

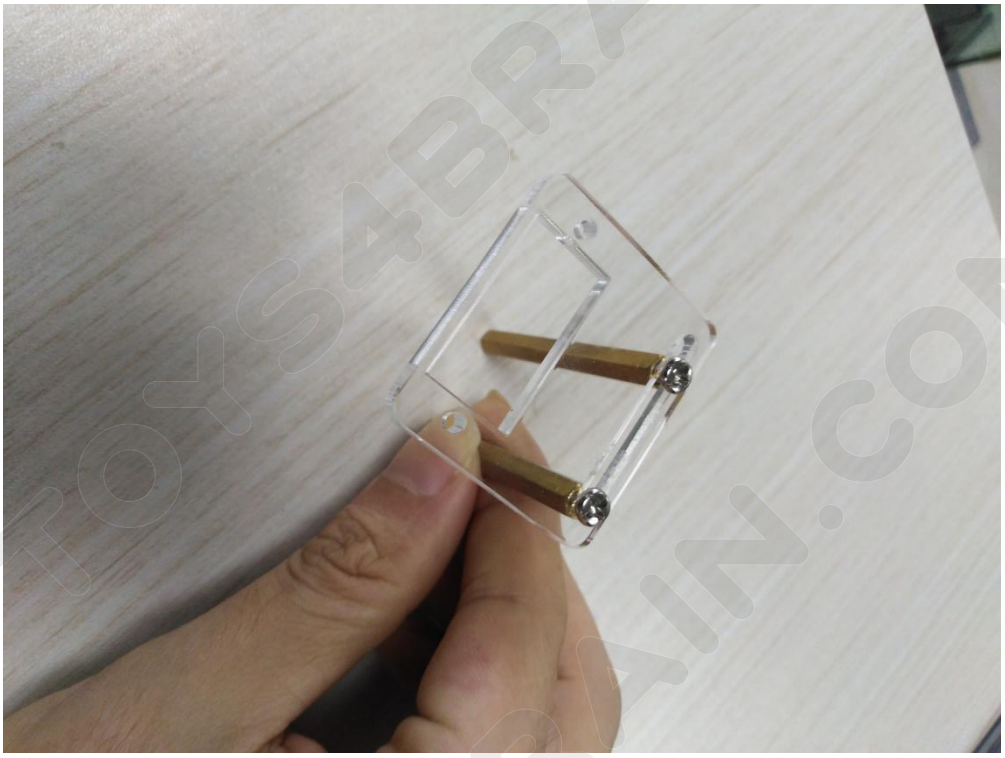


Small dots protruding from the black circle should be installed outwards

Connect the left and right motor cables to the motor ports on the left and right sides of the Robot micro:bit V3.0 (extension board), as shown in the figure:



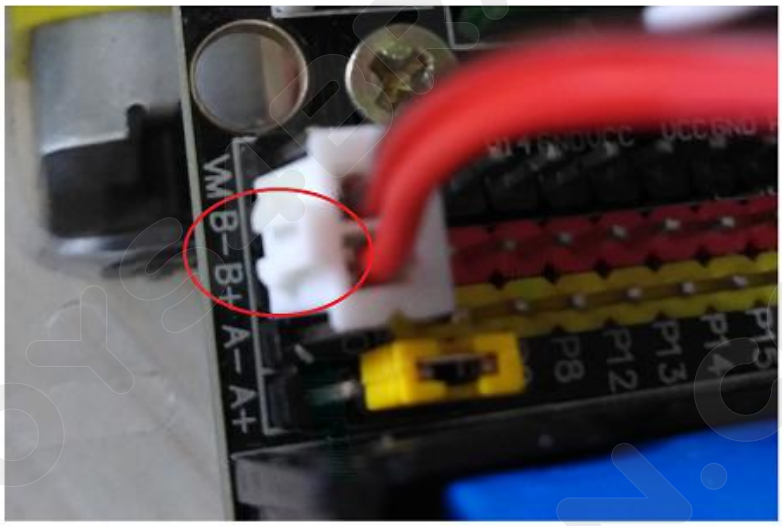
The sixth step: install the fire extinguisher fixture, the specific installation is as follows:

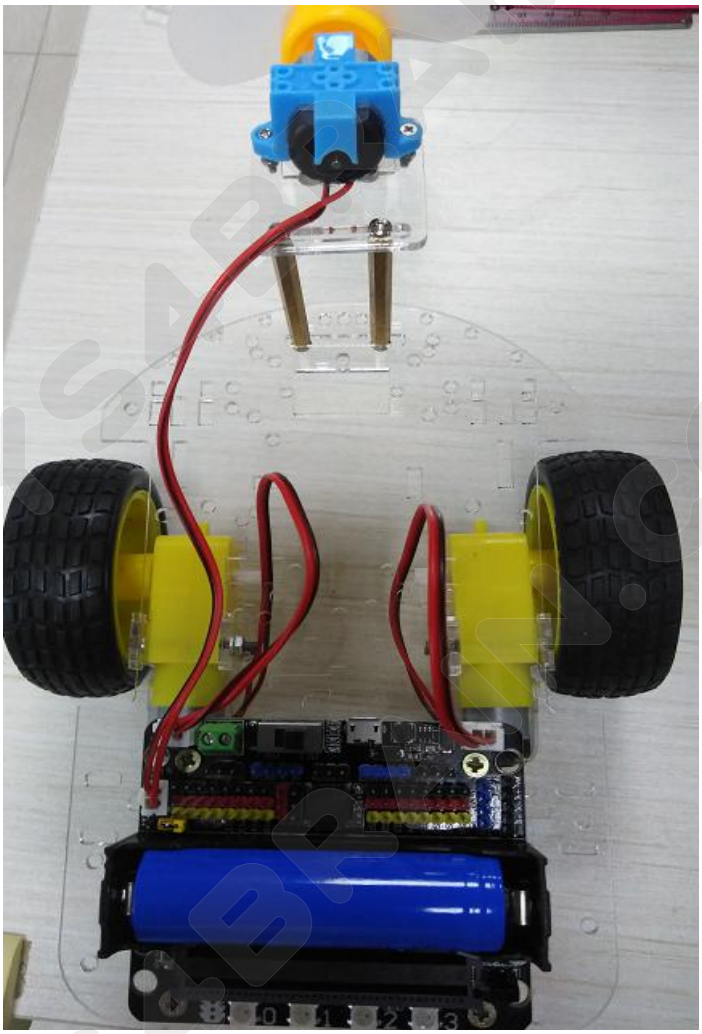


Installation of fire extinguishing device (small fan)

Install the fire extinguisher (small fan) on the chassis of the cart as shown:

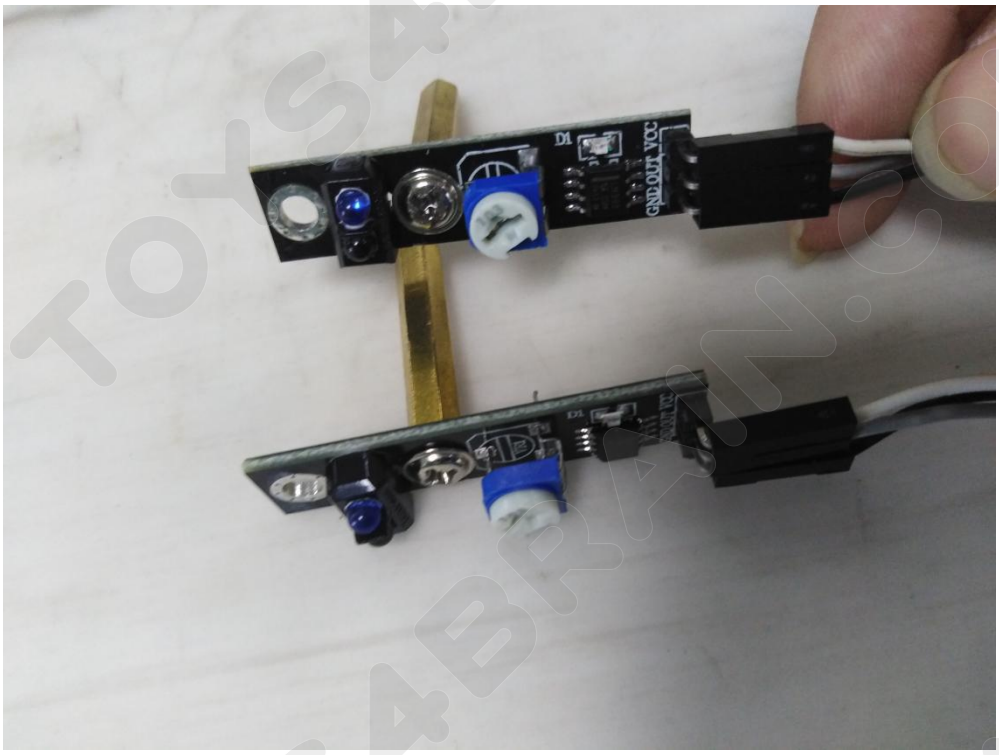
Connect the fire extinguisher (small fan) cable to the "B-" and "B+" ports of Robot micro: bit V3.0 (extension board)



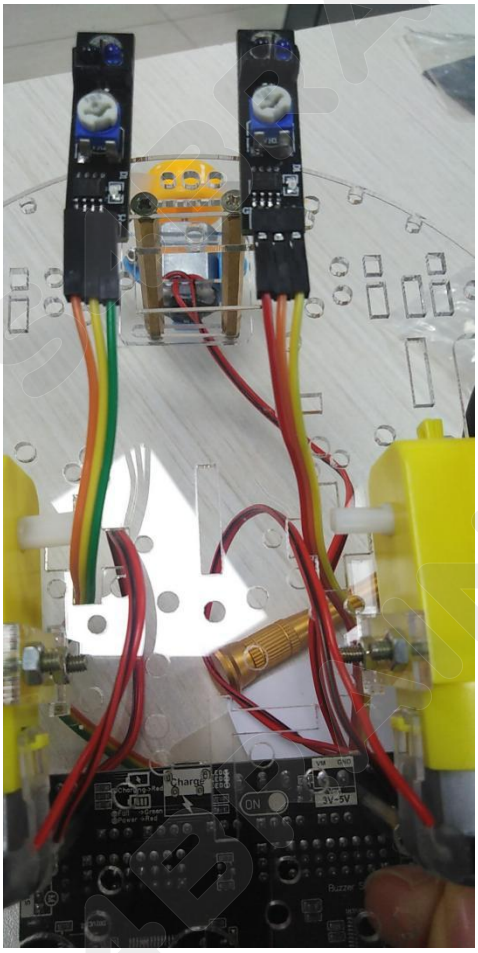


The seventh step: install two infrared tracking modules under the chassis of the car; as shown in the following figure:

First fix the M3*25 through-hole copper column on the module, as shown in the figure:



Install the fixed module under the chassis of the car, as shown in the figure:

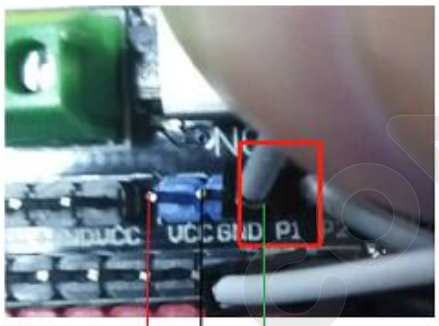


Next, connect the left and right modules to the Robot micro:bit V3.0 (extension board) port. The specific connections are as follows:

Connect the left infrared tracking sensor module "OUT" to the "P1" port of Robot micro: bit V3.0 (extension board)

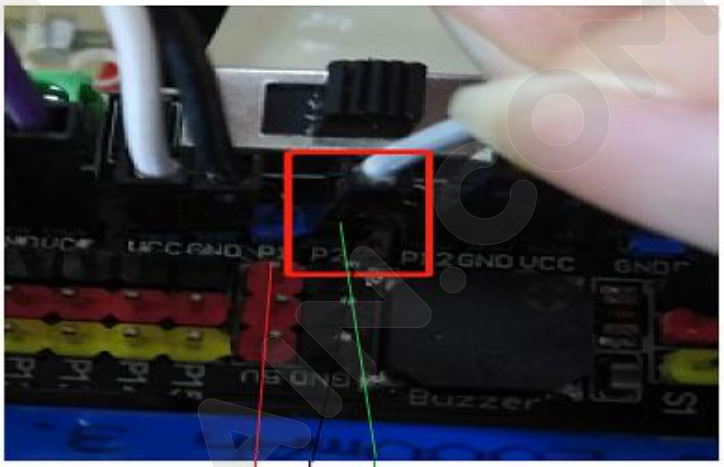
Left module

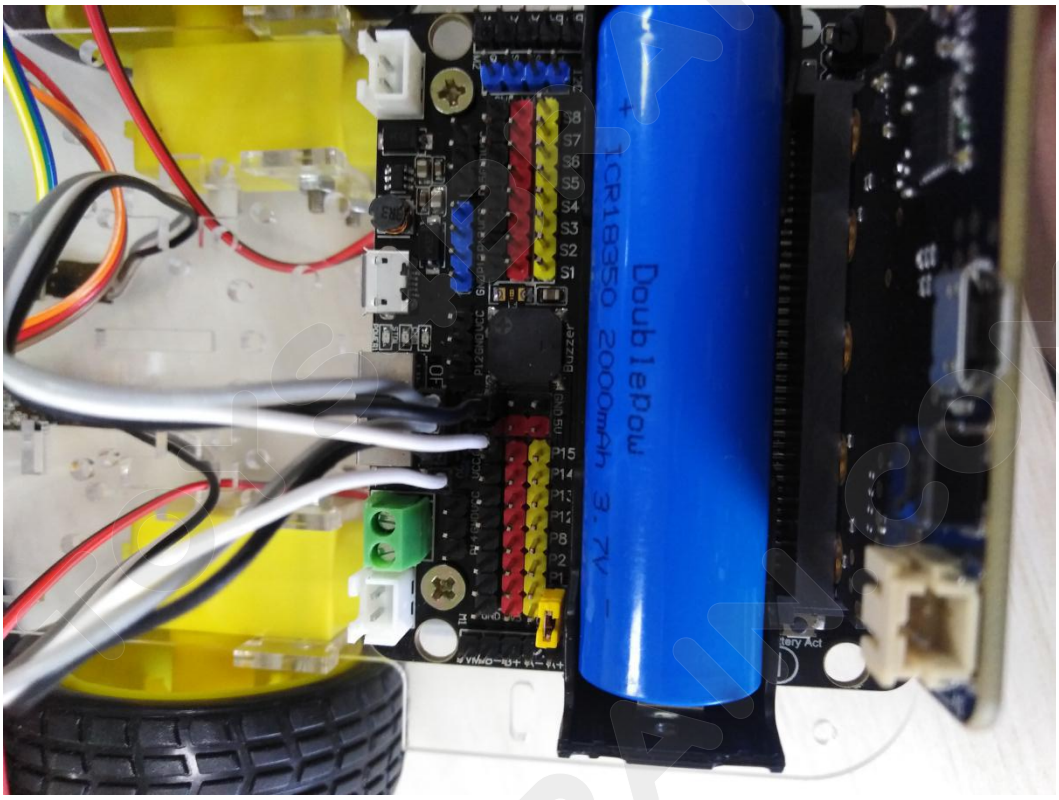
VCC-----VCC
GND----GND
OUT----P1



Right module

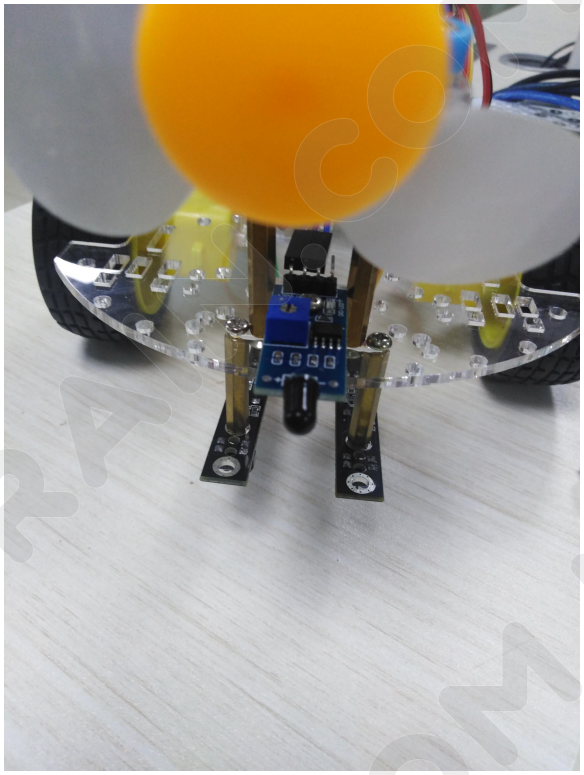
VCC---- 5V
GND----GND
OUT---- P2





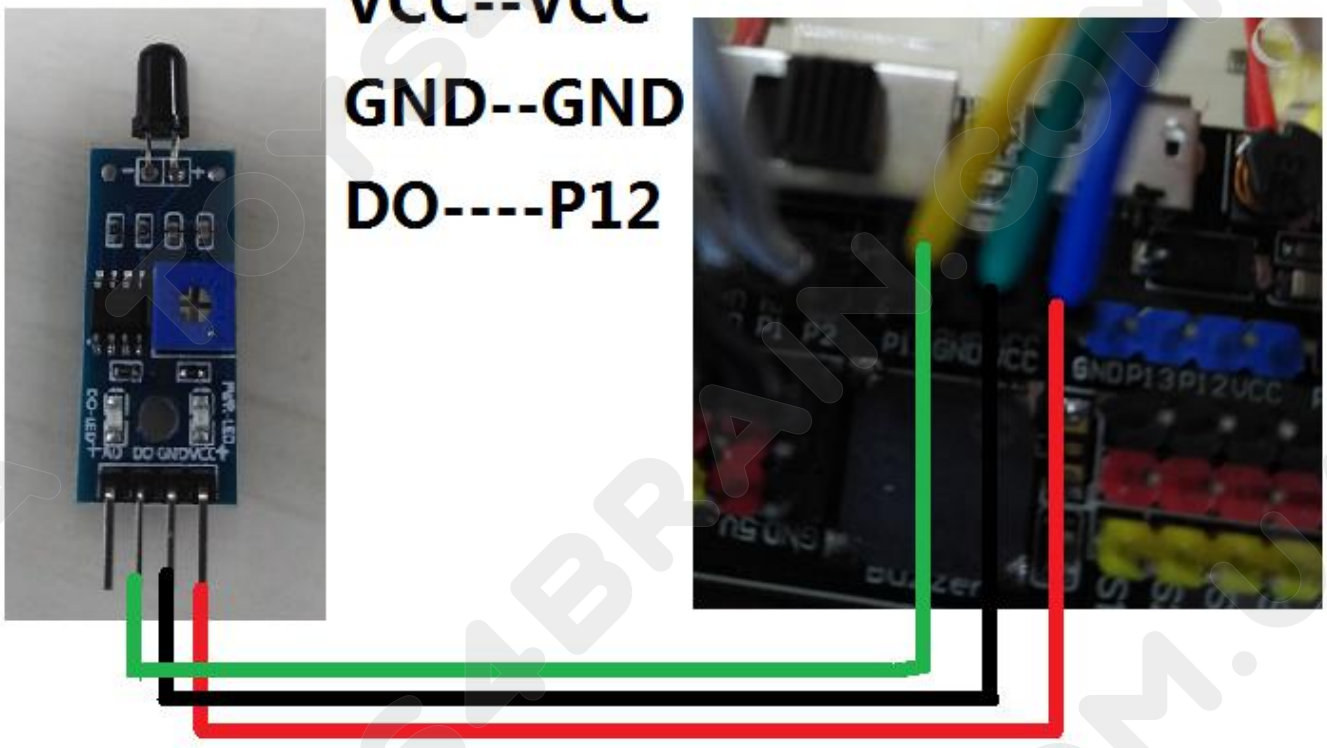
The eighth step: the flame sensor module is installed above the chassis of the car; as shown in the following figure:

(Firstly fixed on the chassis of the car with M3*10 through-hole copper column)



Next, we will connect the flame sensor module to the Robot micro: bit V3.0 (extension board) port, as shown in the following figure:

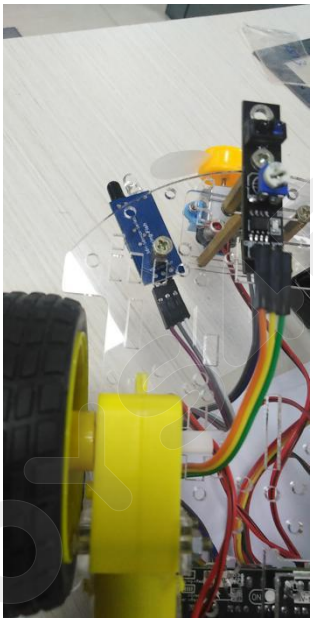
Connect the flame sensor module "DO" to the "P12" port of the Robot micro: bit V3.0 (extension board)

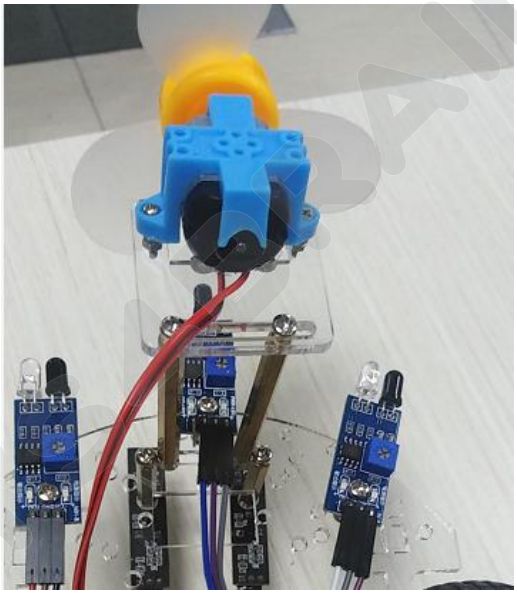


The ninth step: installing two obstacle avoidance sensor modules above the chassis of the car; as shown in the following figure:

First fix the M3*10 through-hole copper column on the module, as shown in the figure:

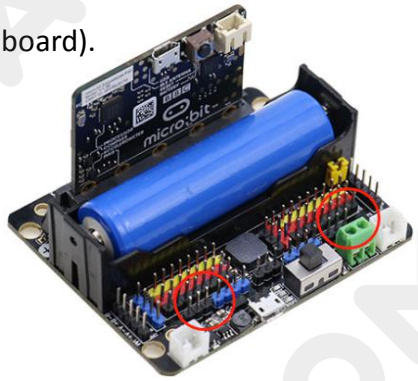
Install the fixed module above the chassis of the car, as shown in the figure:





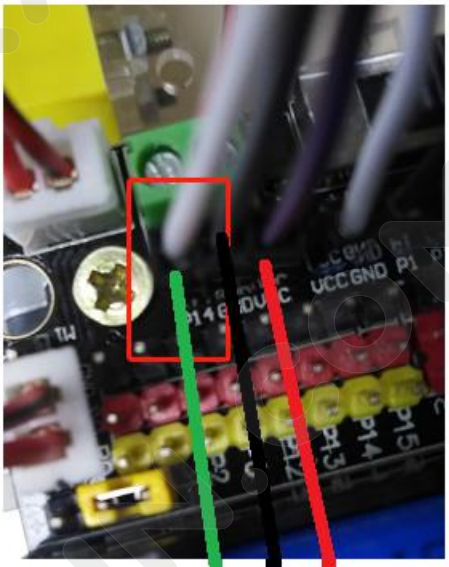
Next, connect the left and right infrared obstacle avoidance modules to the Robot micro:bit V3.0 (extension board) port. The specific connection is as follows:

Connect the left infrared obstacle avoidance sensor module "OUT" to the "P14" and "P15" ports of Robot micro: bit V3.0 (extension board).



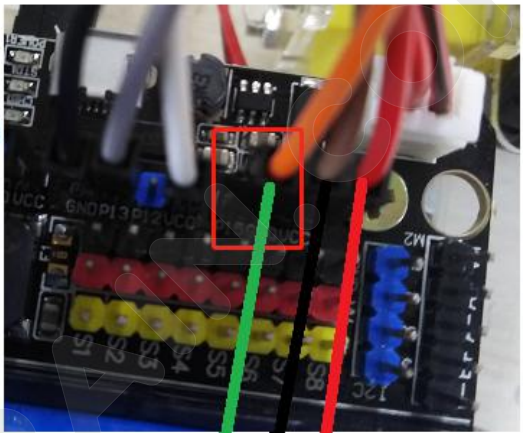
left module

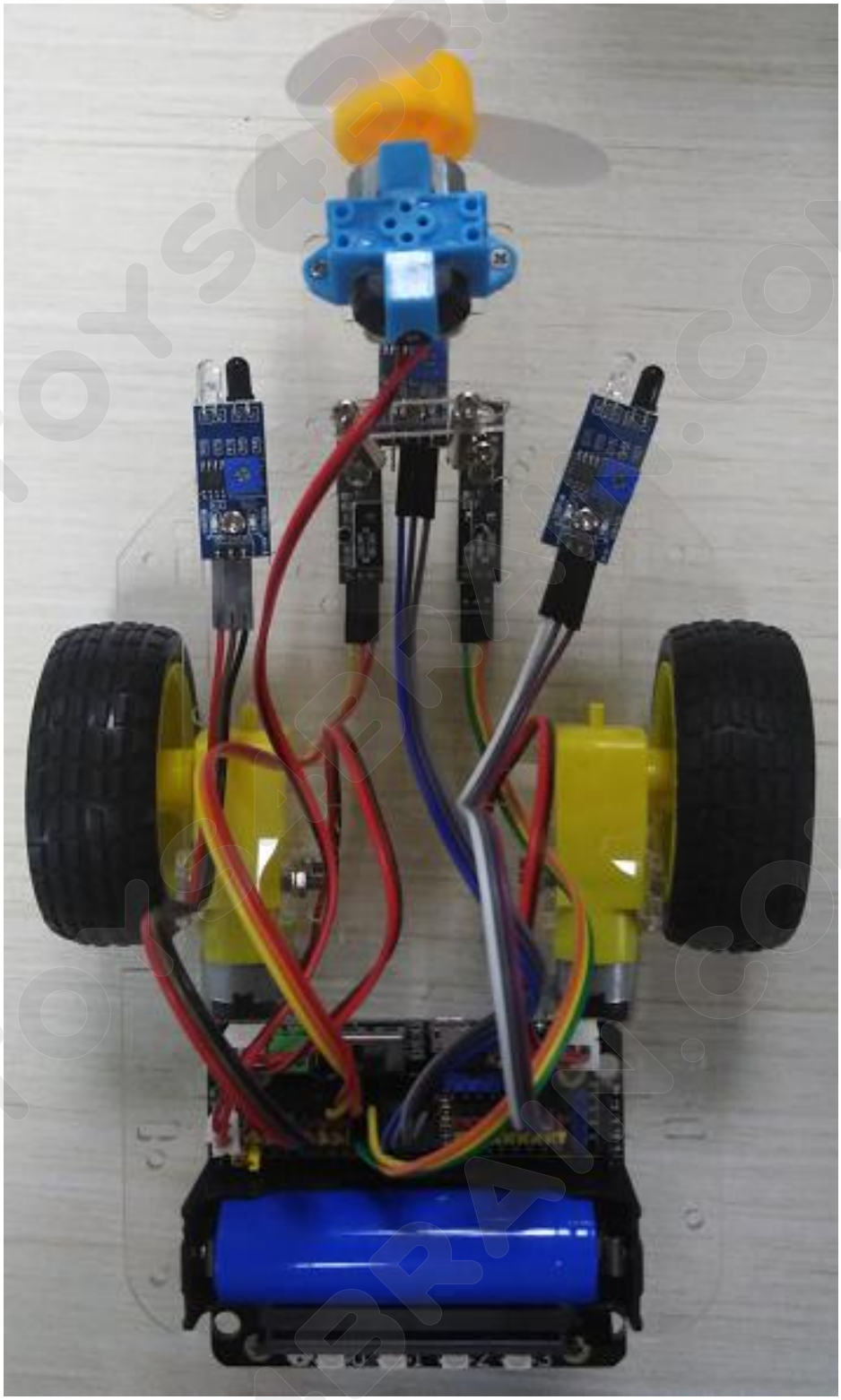
VCC--VCC
GND--GND
OUT--P14



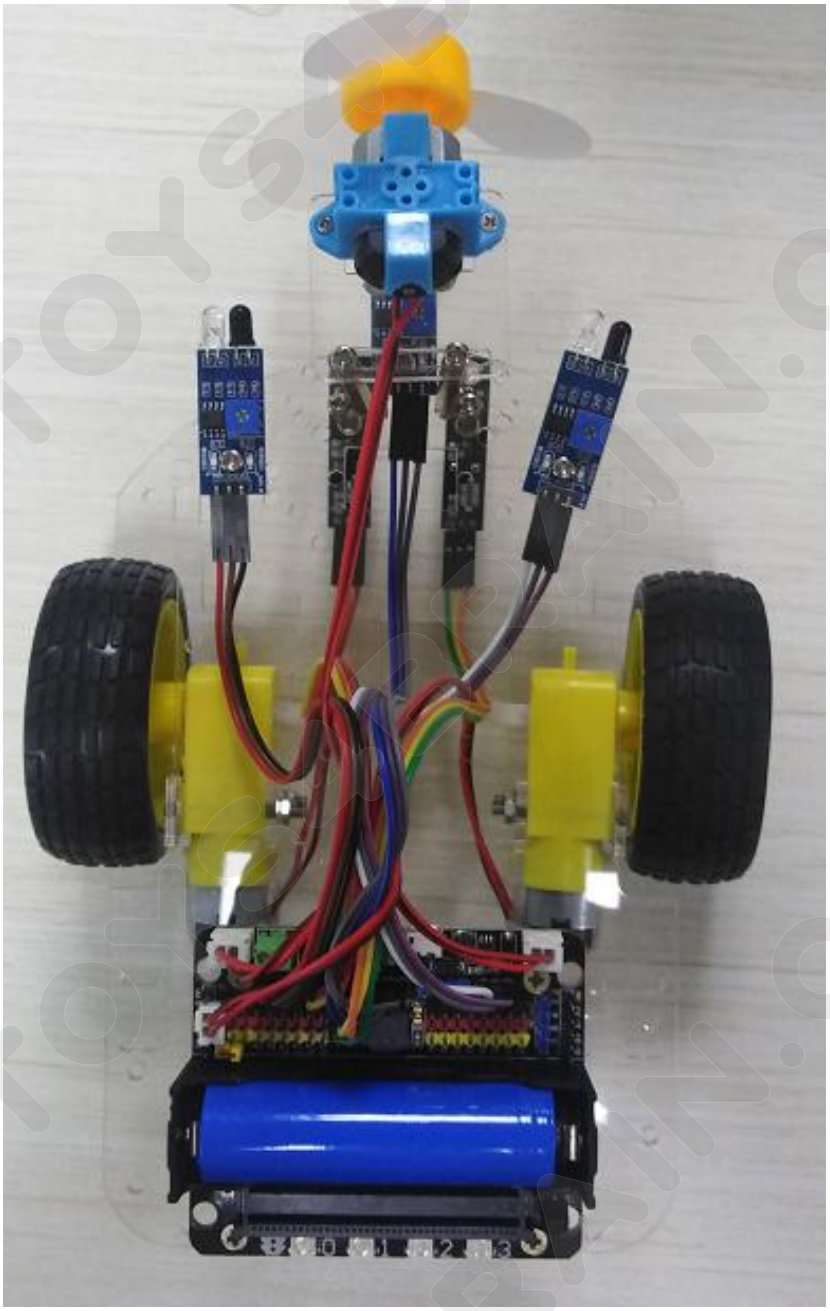
Right module

VCC--VCC
GND--GND
OUT-- P15





Step 10: Install the micro:bit main control board, now our OKYSTAR DIY Car has been installed.
as the picture shows:



Lesson 2 Programming Environment

1.Online programming mode

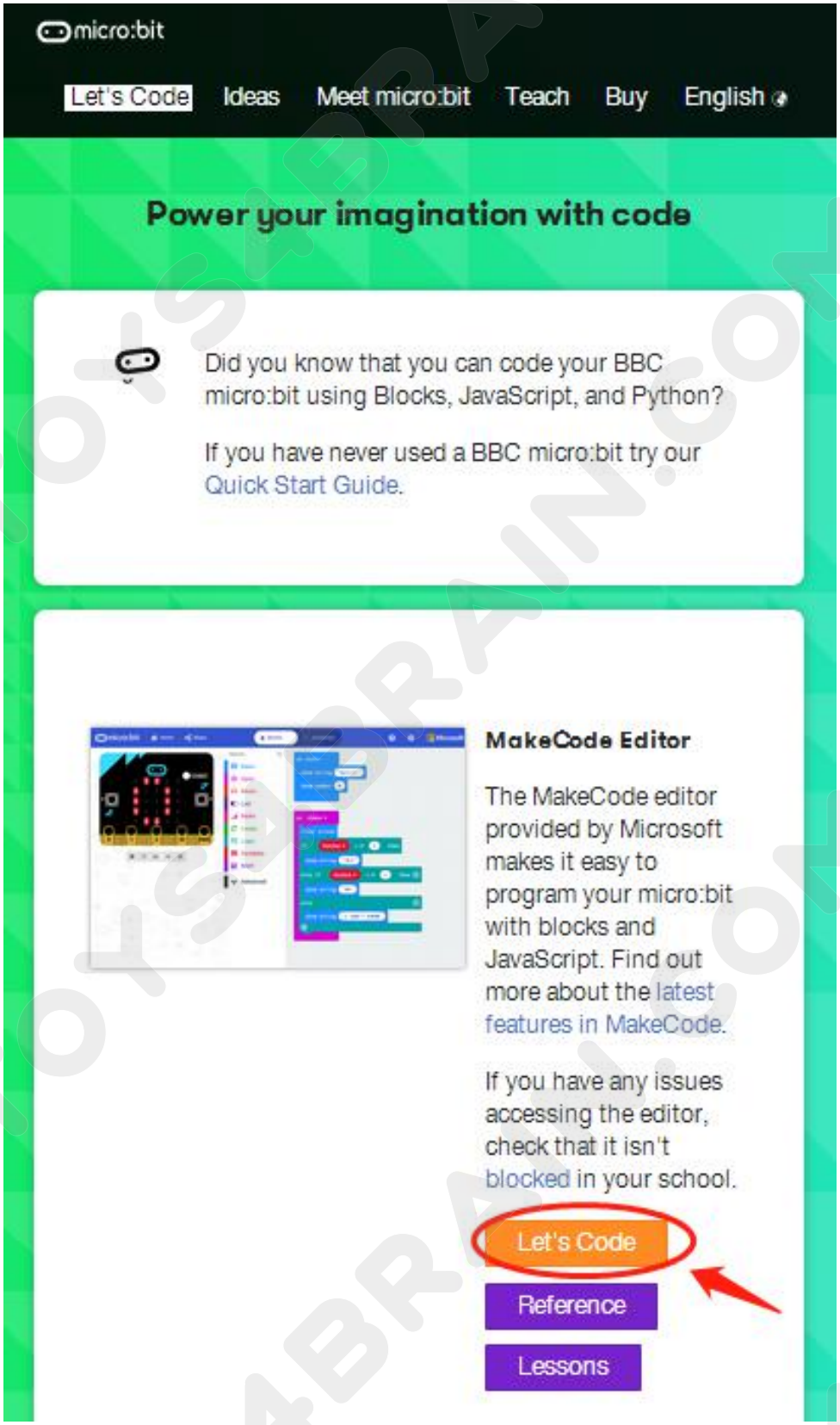
(1) Connect micro:bit to computer via micro USB cable. Mac, PC, Chrome book and Linux systems(including Raspberry Pi) are all supported. At this point, the computer will have an extra disk letter called micro:bit on your computer, and micro:bit will appear as a "MICROBIT" driver. Please note that this is not an ordinary U disk!

Open the disk letter and input this web address directly in the browser: http://microbit.org/

(2) Successfully access to the web address, as shown in Figure 1-1, we can click English on the upper right to switch the language.

Figure 1-1

Click Let's Code



Click My Project

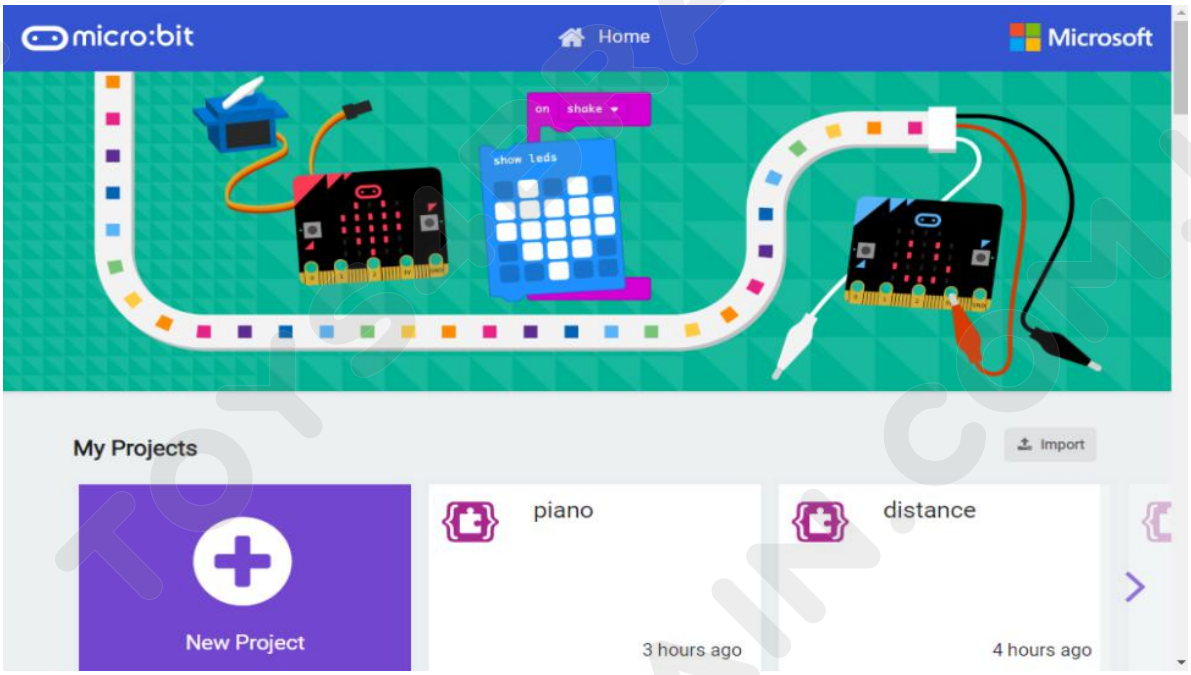


Figure 1-3

After successfully entered, You can program it in the 1-4 interface below.

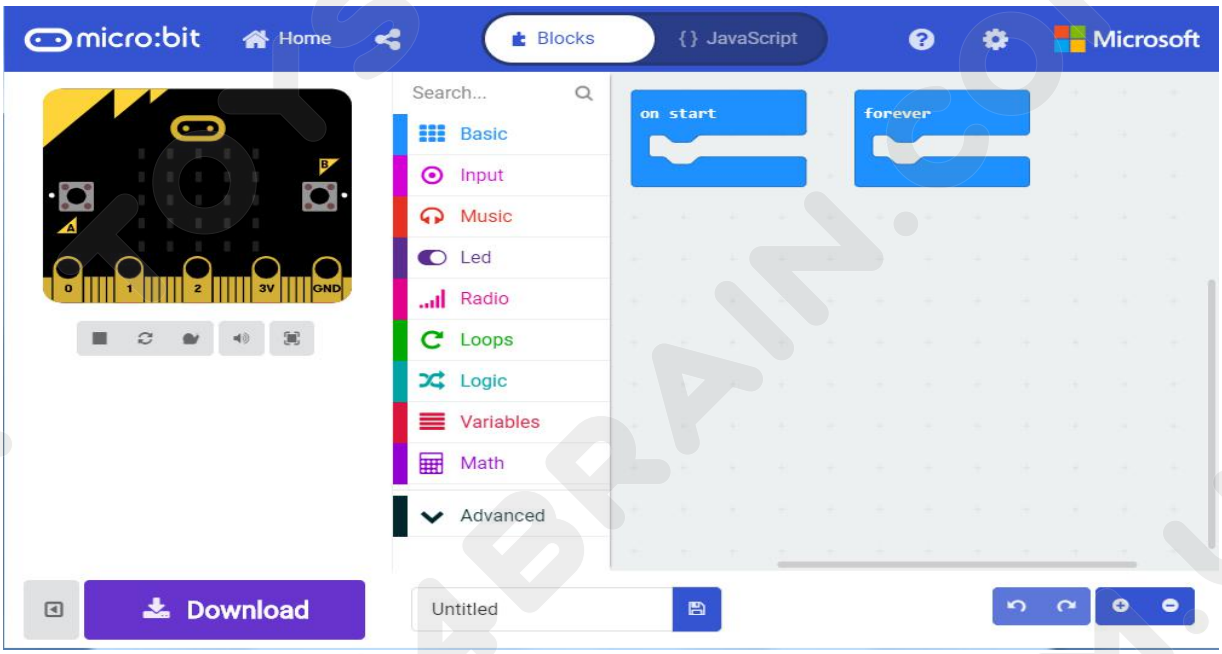


Figure 1-4

Download apps: Click the "Download" key in the editor. This will download a 'hex' file, which is a compact program format that your micro:bit can be read. After you download the hex file, copy it to micro: bit like copying the file to a USB driver. On Windows, you can right-click and select the "Send to "MICROBIT". When you see the lights flickering on the microbit motherboard, you're downloading the program. After flickering, it means that the program was downloaded successfully.

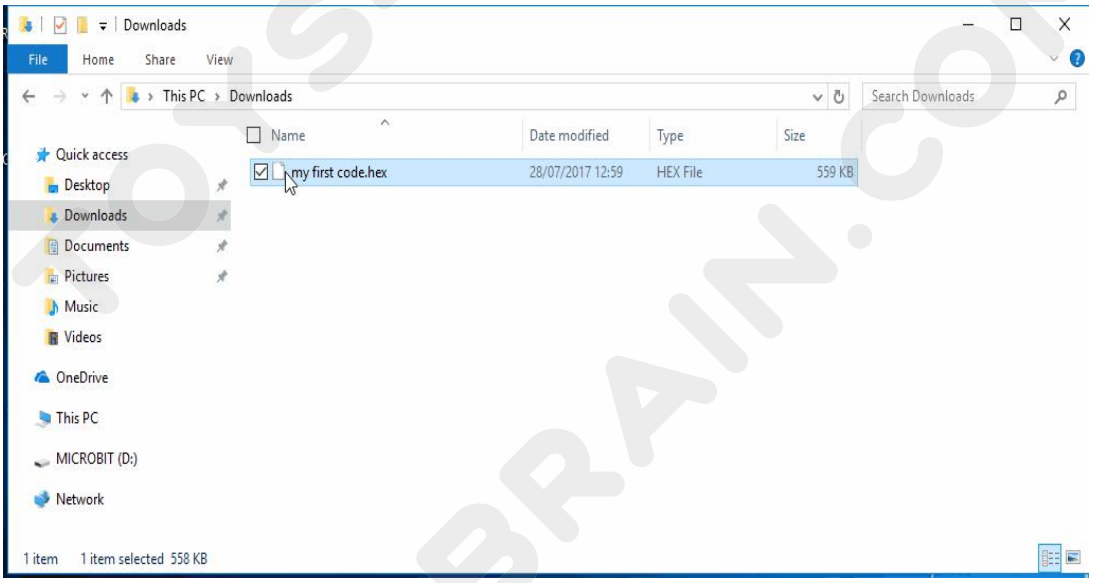


Figure 1-5

The Mac system drags' hex' into MICROBIT

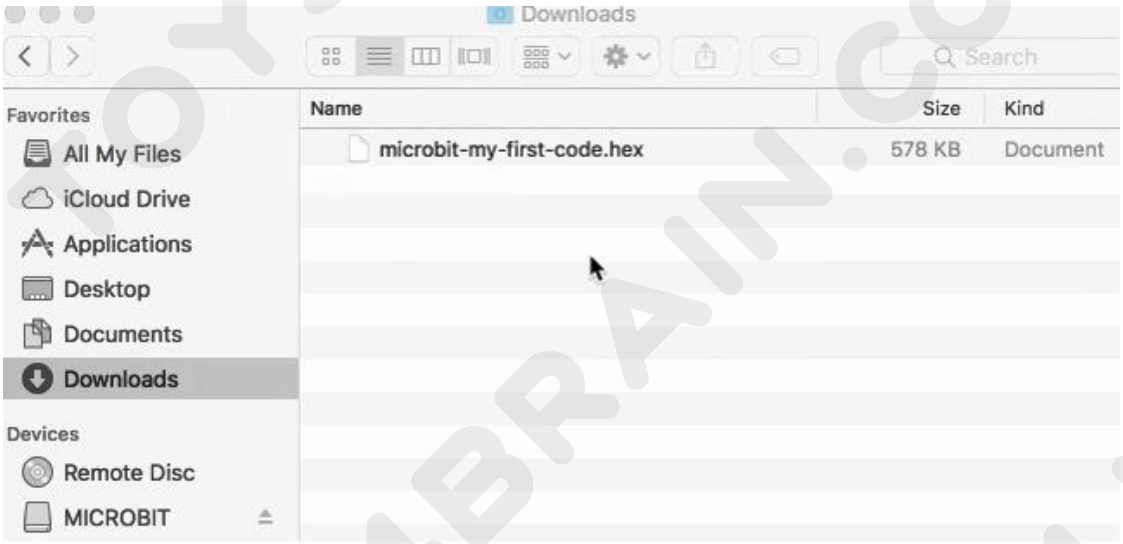
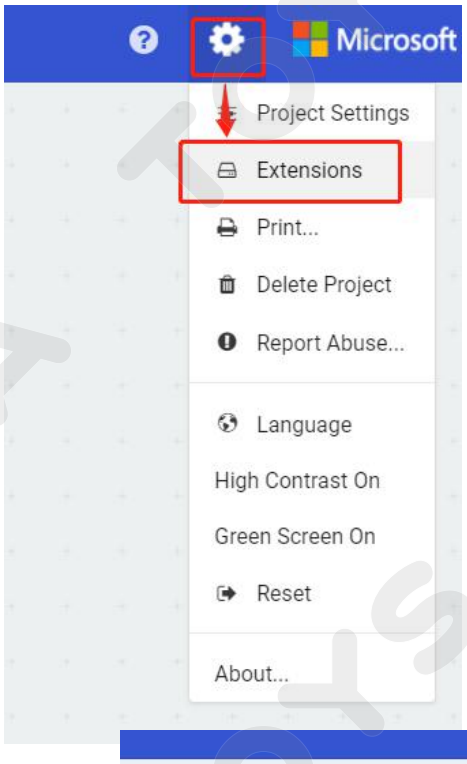


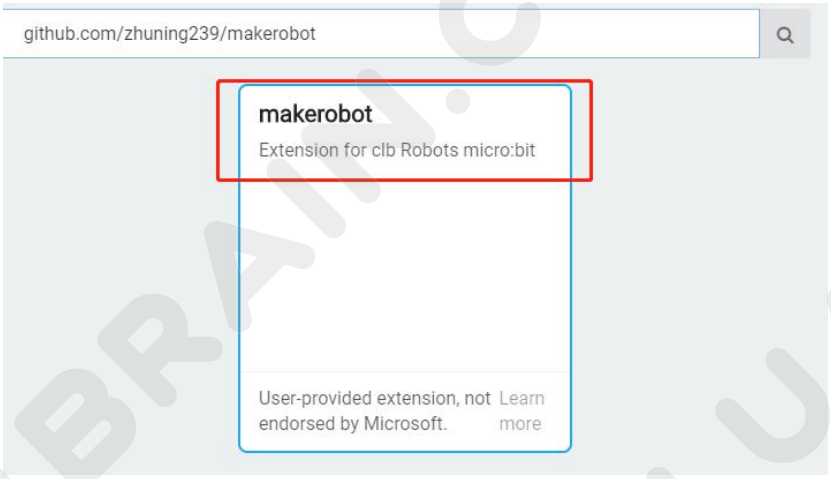
Figure 1-6

This page shows you how to start using micro:bit, but in addition to Make Code, you can also use Python and text-based JavaScript to write micro:bit

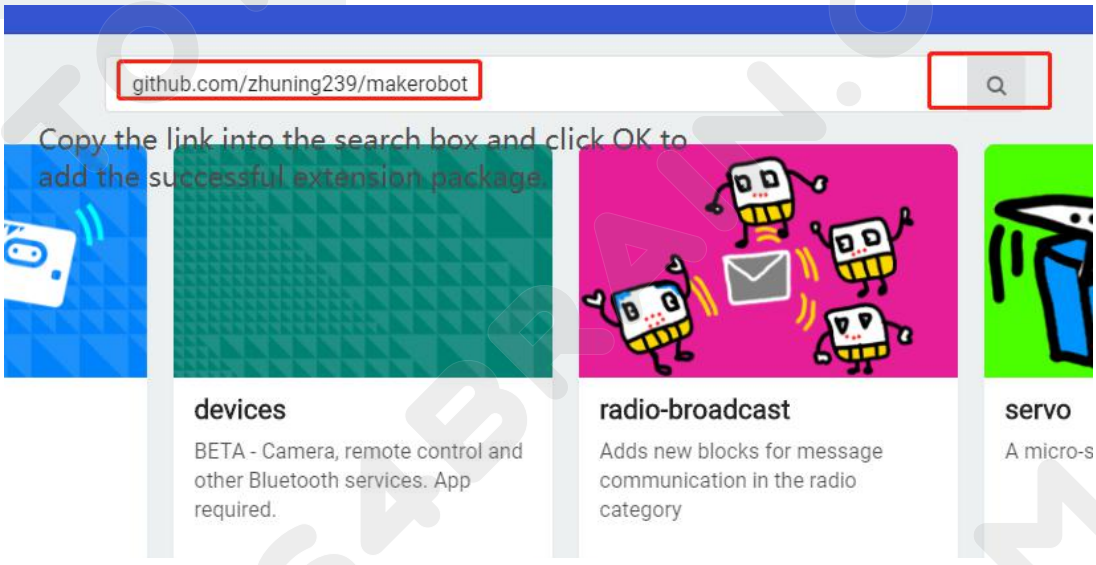
Note:

Some of the expansion packages we need to add during online programming, for For example: when we use OKYSTAR Car for experiments, we have to add their extension package github.com/zhuning239/makerobot





Click on "makerobot"



Lesson 3 Robot Trolley Exercise

Overview：

In this lesson, we will learn how to drive OKYSTAR DIY Car to work properly.

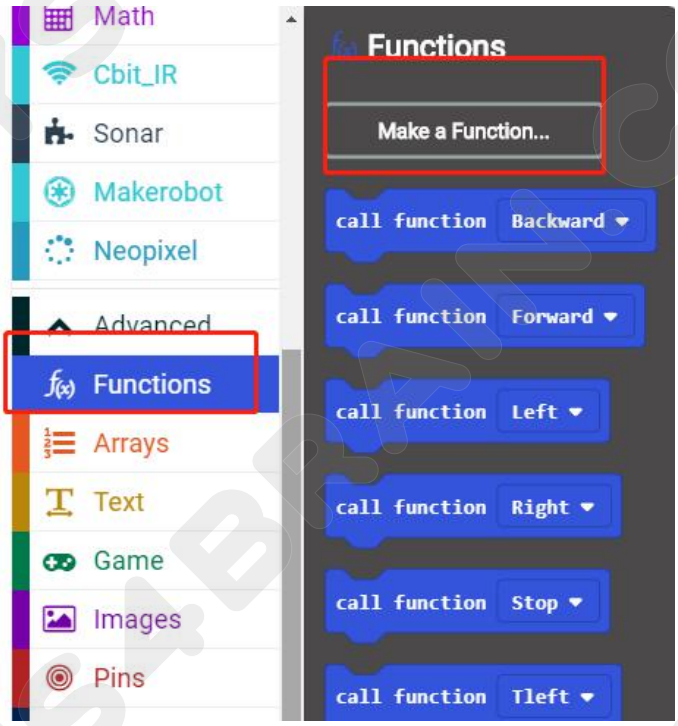
Component Required:

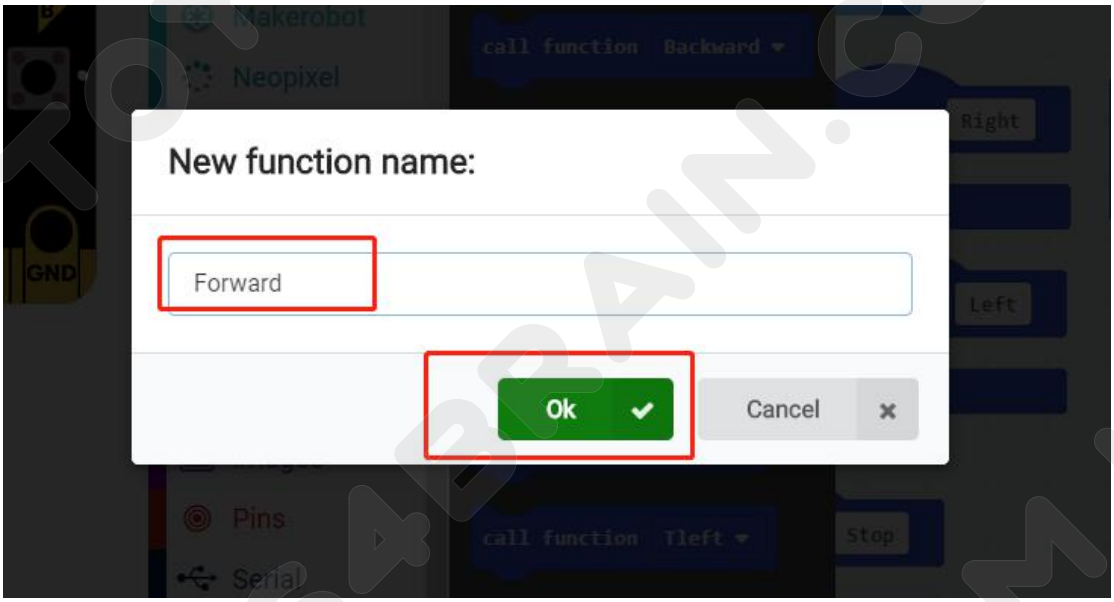
- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

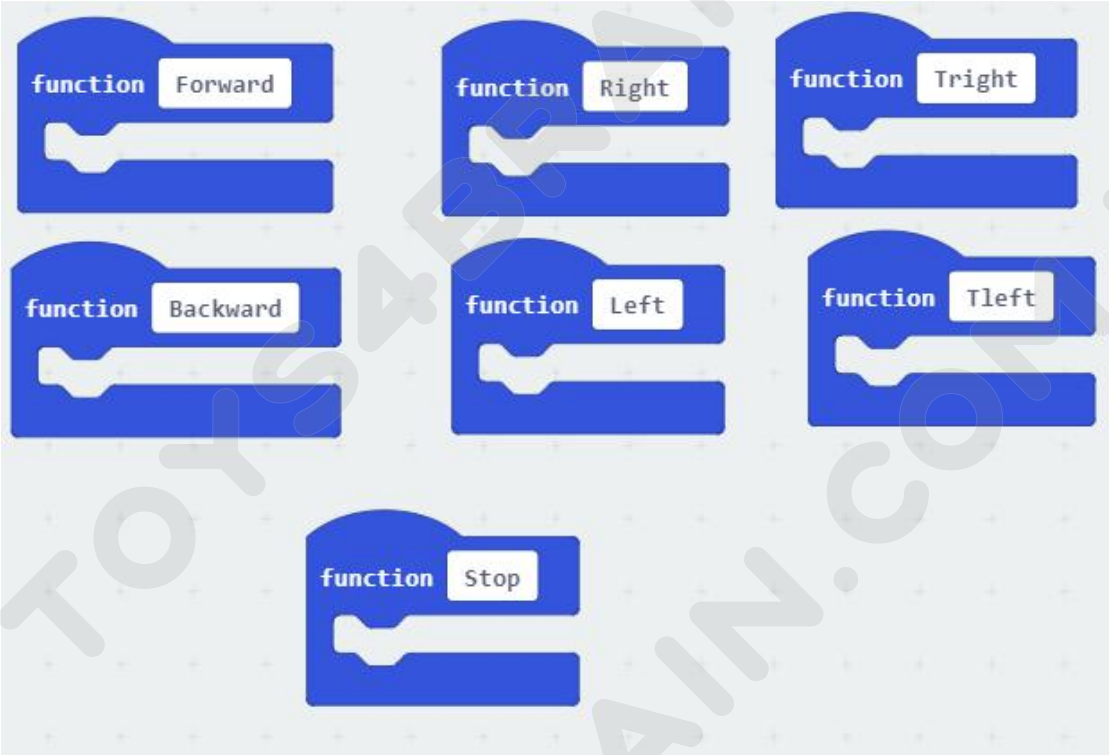
DC 3V-6V DC 1:120 Gear Motor TT Motor :
Voltage range: 3-6
Speed: 20-200RPM
Dimensions: 22.5 * 64.5mm, only 64.5mm long mini motor
Suitable for small diameter, low noise and high torque applications
Motor default direction: CCW

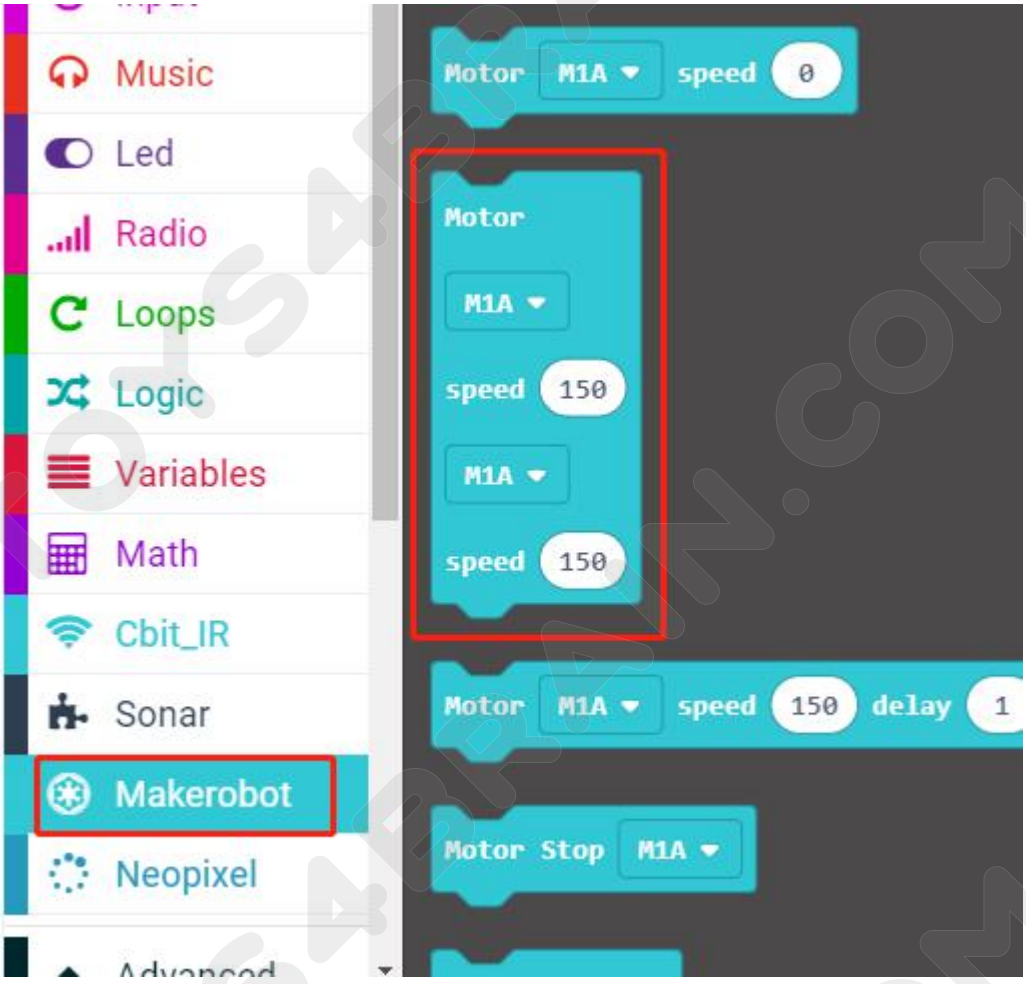
Code:

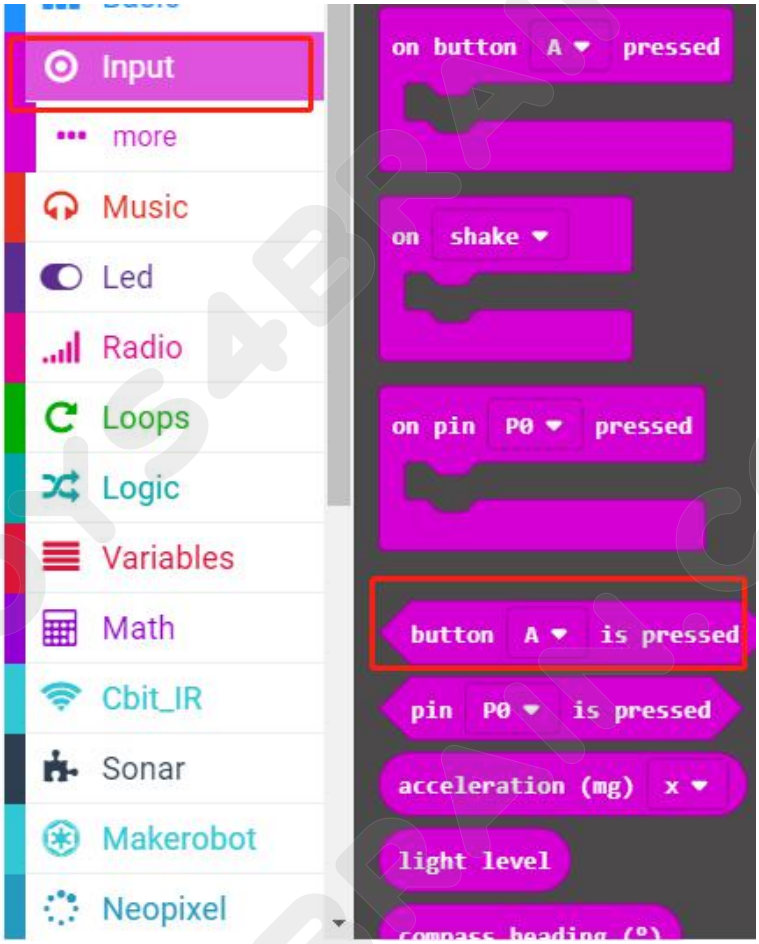
Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

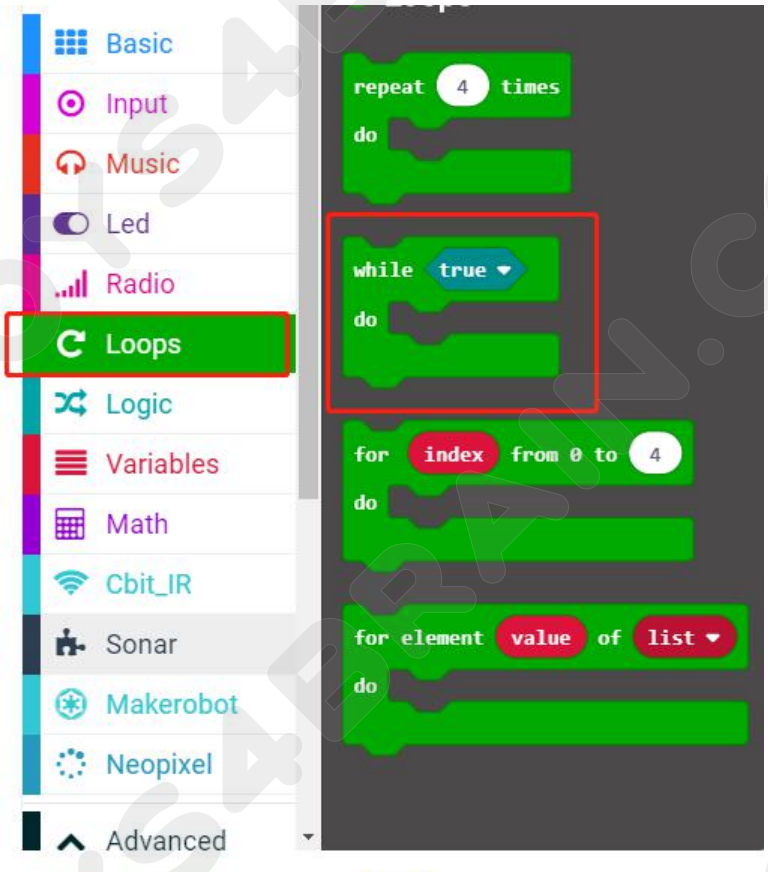


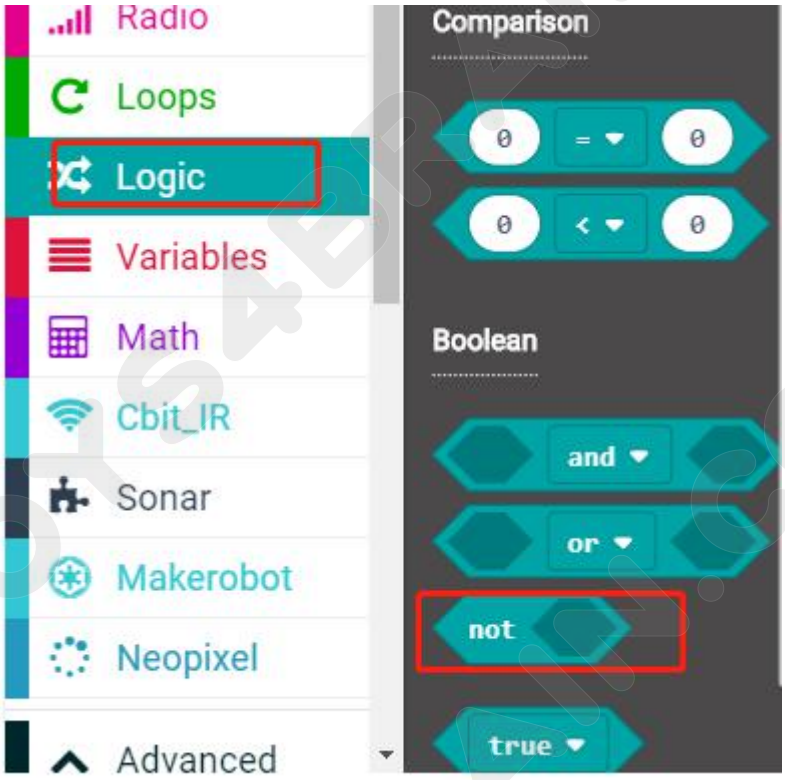


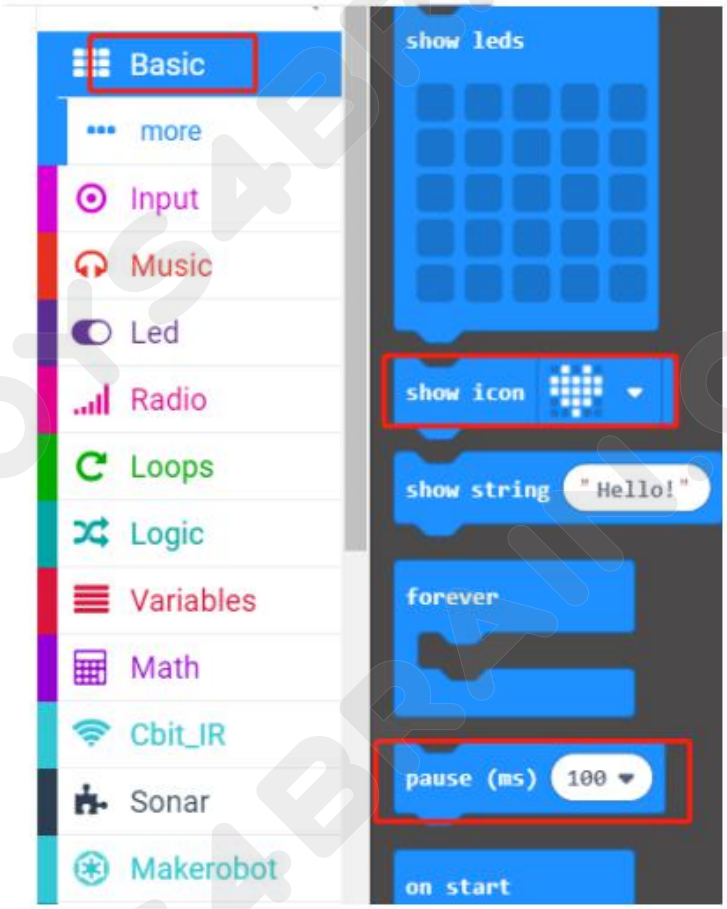

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop


Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A

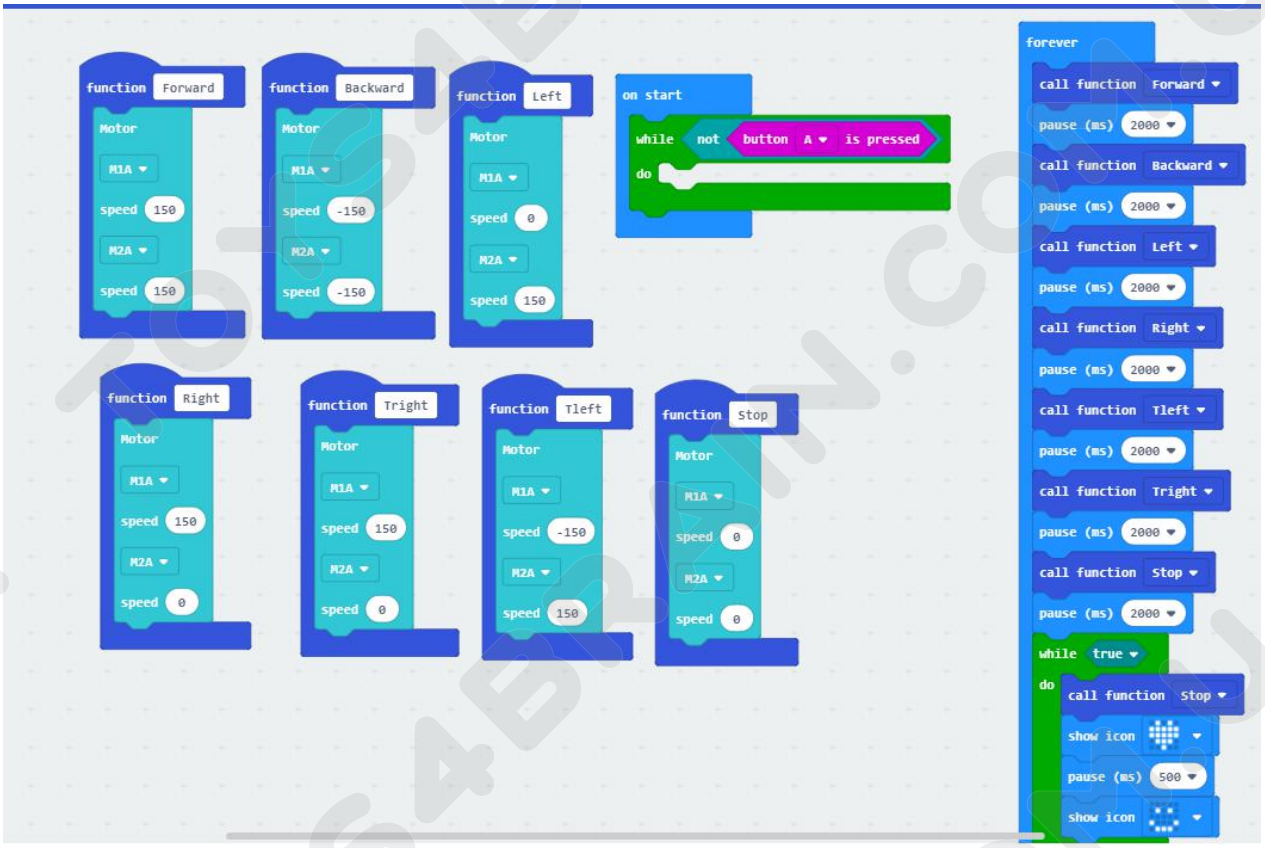

Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
on button A pressed
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
repeat 4 times
do
while true
do
for index from 0 to 4
do
for element value of list
do


Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Comparison
0 = 0
0 < 0
Boolean
and
or
not
true


Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
show leds
show icon
show string "Hello!"
forever
pause (ms) 100
on start

Complete code：



Lesson 4 Car infrared inspection line

Overview:

In this lesson, we will learn about the OKYSTAR DIY Car infrared inspection line function.

Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared tracking sensor module:

Use infrared reflective sensor TCRT5000

- Operating voltage 2.5V - 12V (Note: Using low supply voltage, high supply voltage, shorter sensor life, 5 volt power supply is the preferred power supply)

- Operating current 18-30mA, best performance

- Known objects, the final output signal level is low; no object is detected, the final output signal is higher

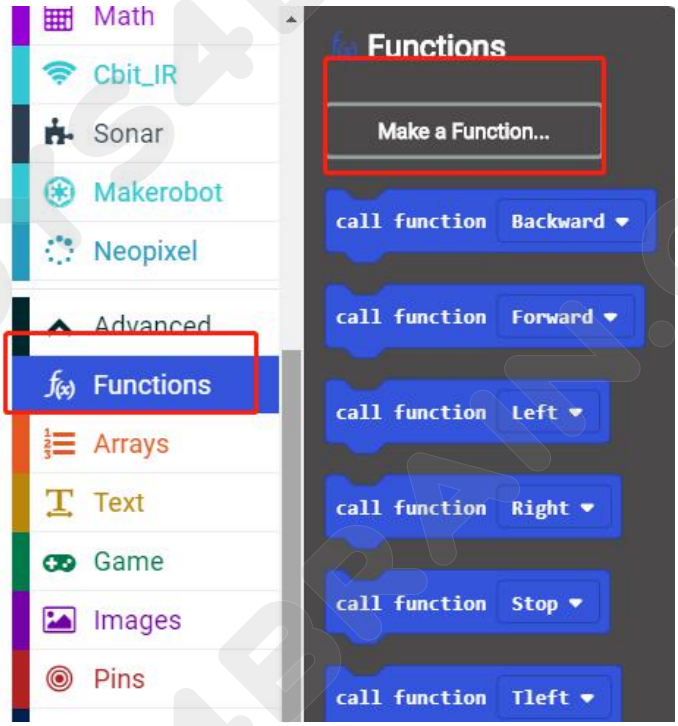
- TTL level sensor output can be directly connected to the microcontroller IO port 3.3 volts or 5 volts

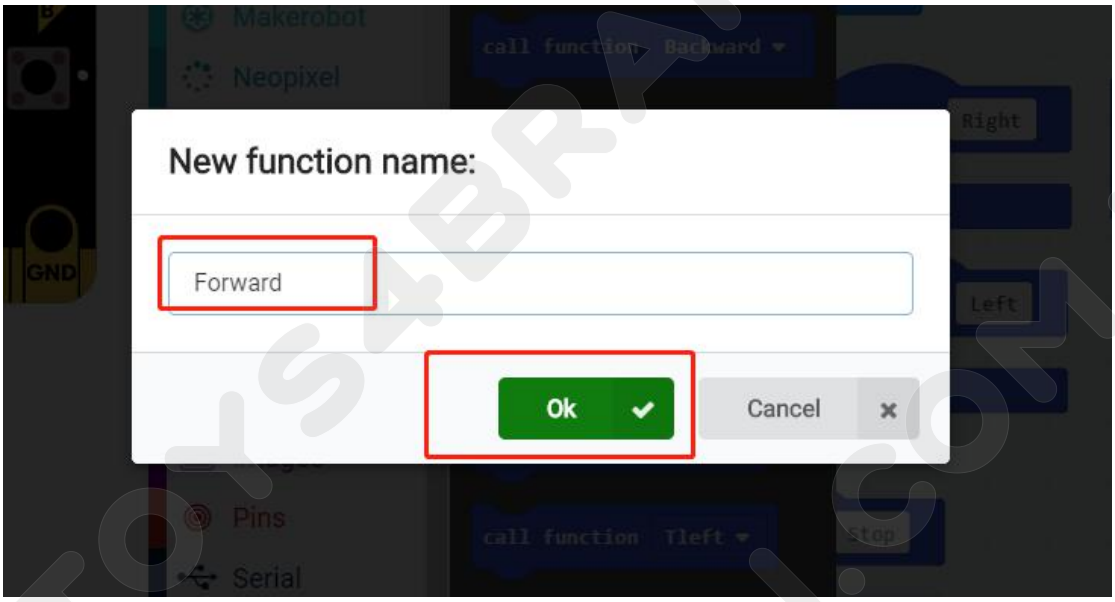
Note: When using the infrared tracking sensor module, you need to use a screwdriver to rotate the potentiometer in the module to operate normally.

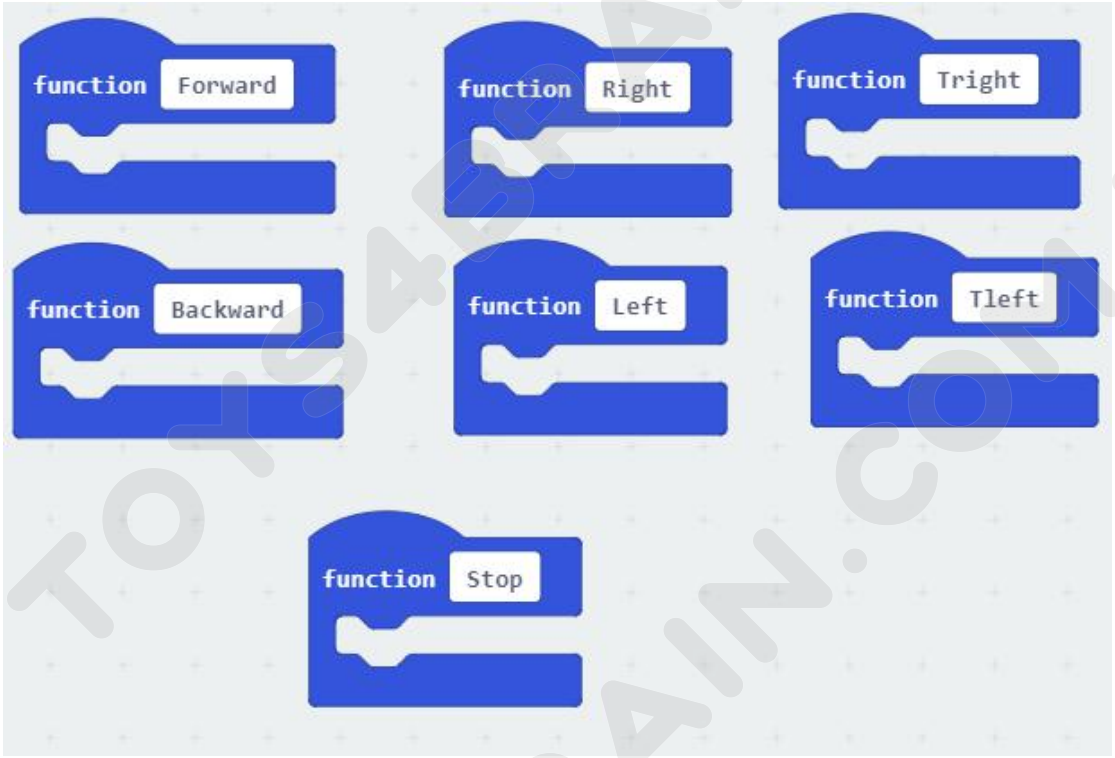
.

Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

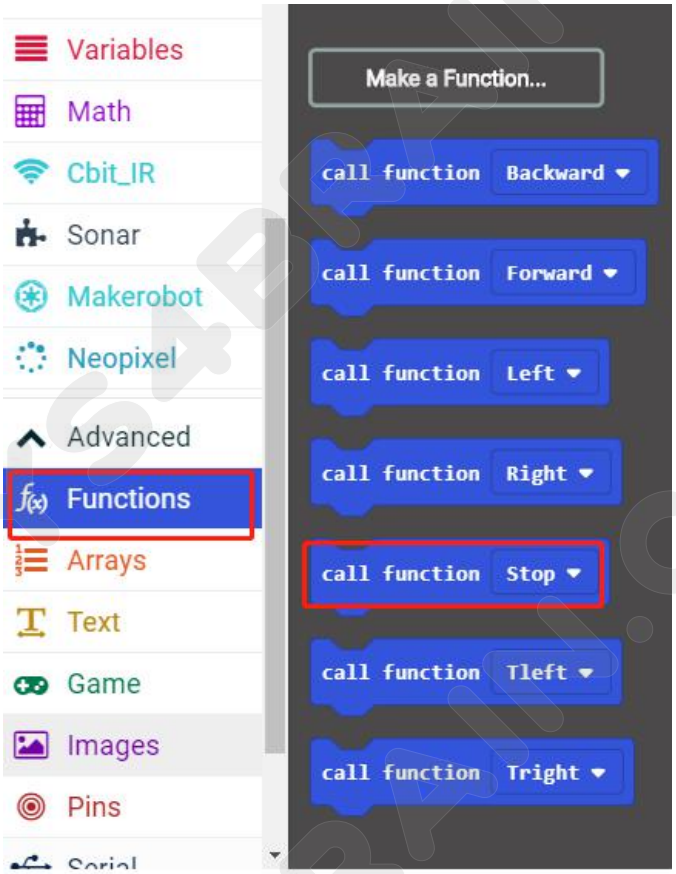


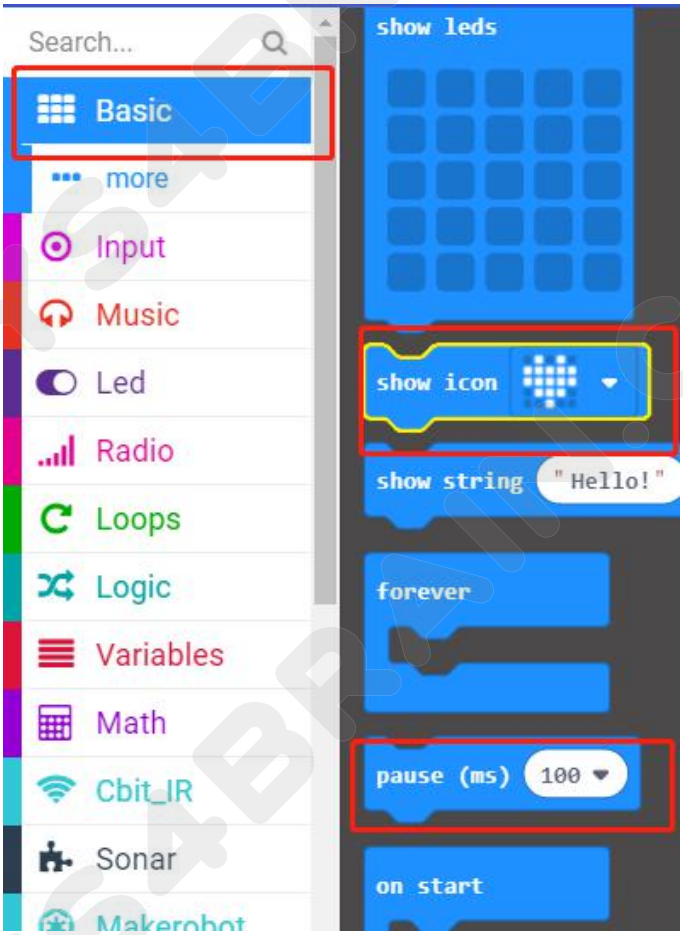

Makerobot
Neopixel
Pins
Serial
call function Backward
Right
Left
call function Tleft
Stop
GND
New function name:
Forward
Ok
Cancel

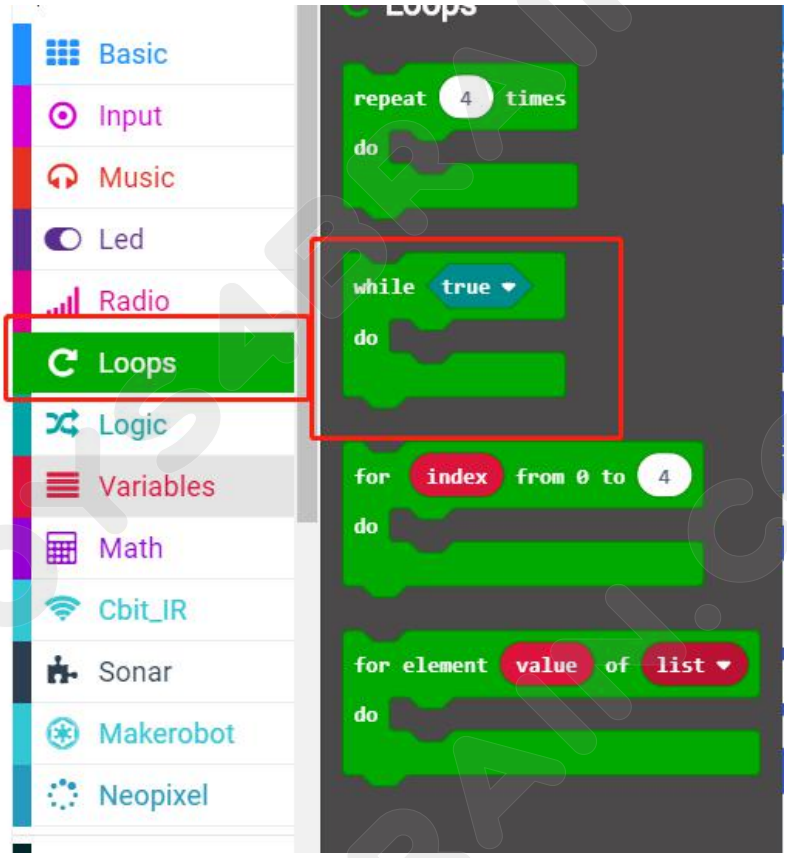

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

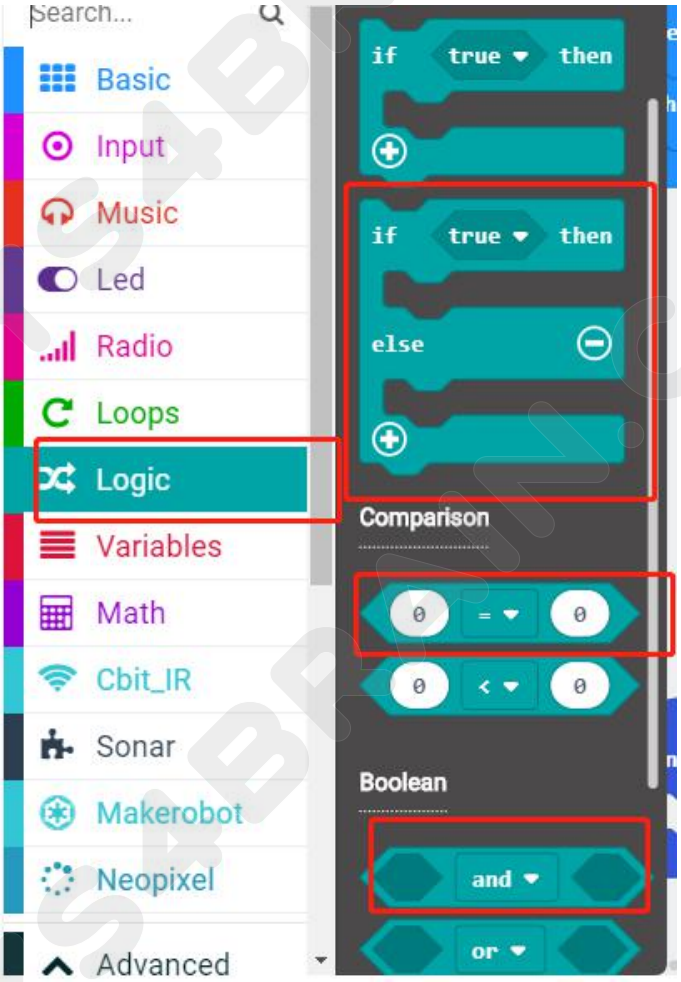

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A

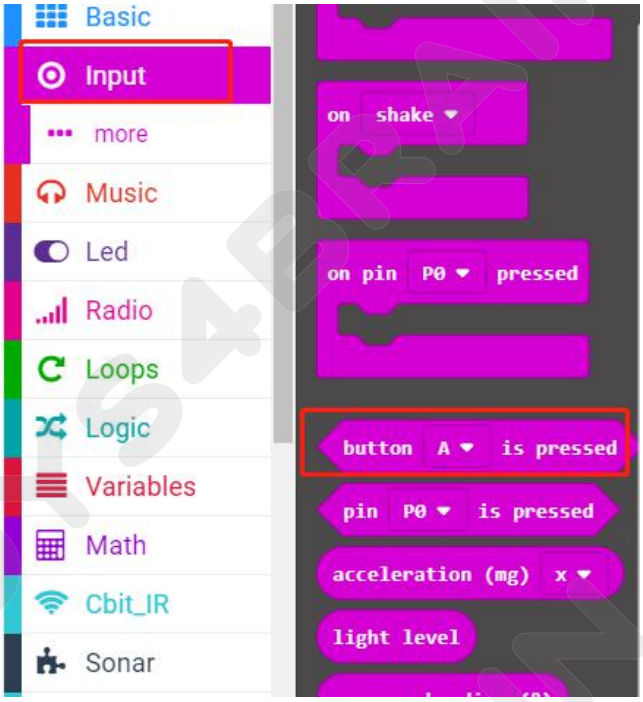

function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

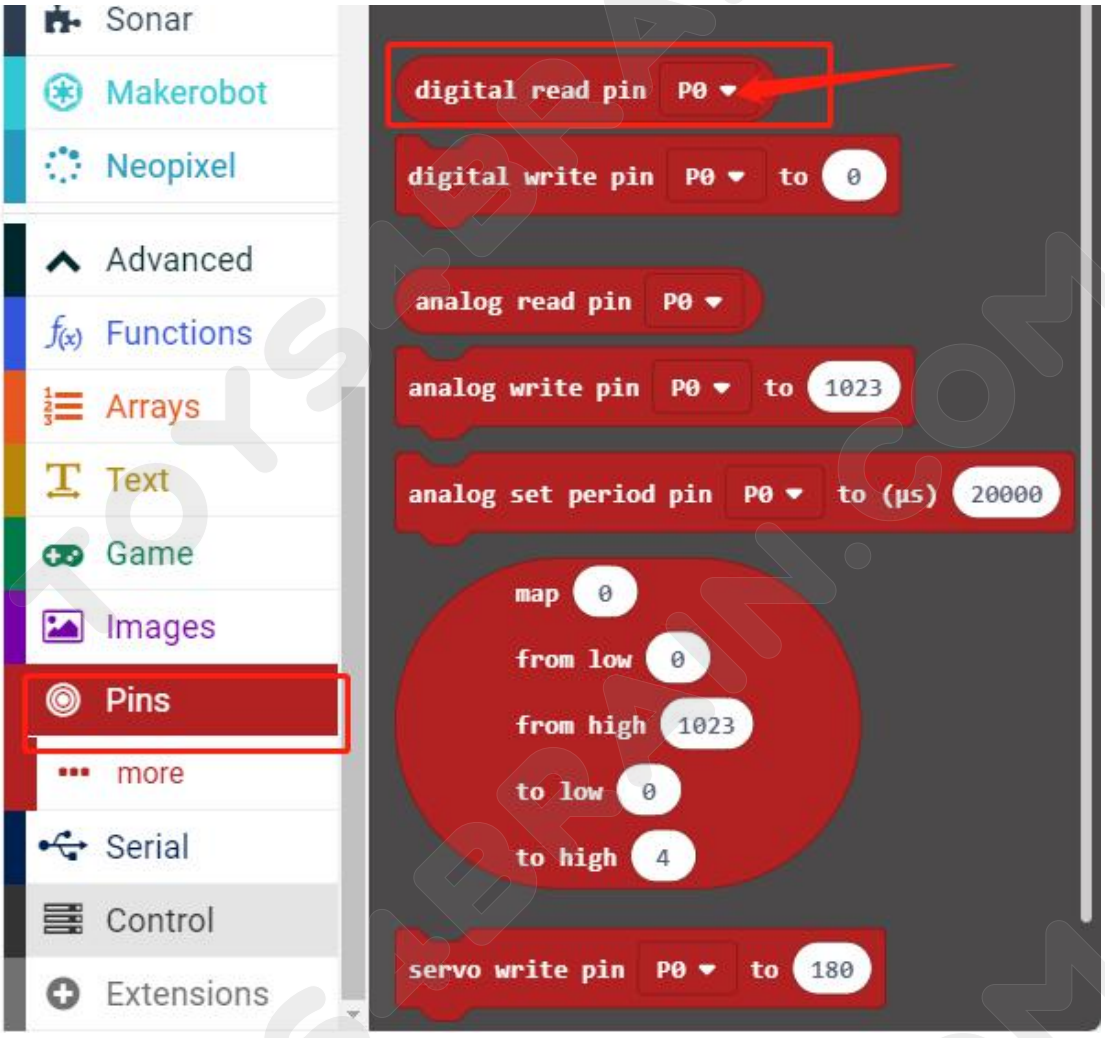

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright

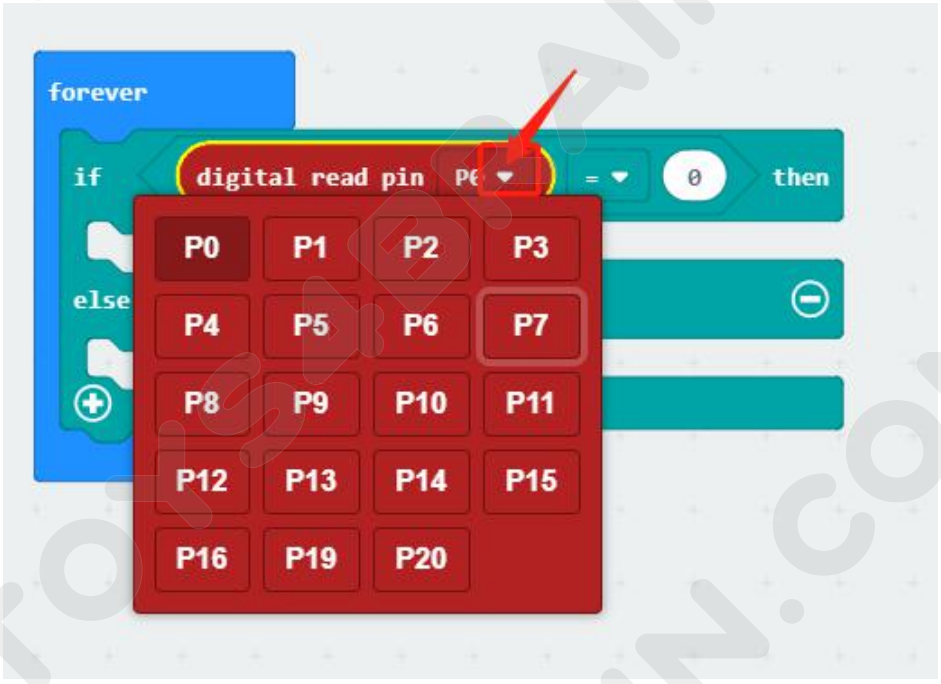

Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
show leds
show icon
show string "Hello!"
forever
pause (ms) 100
on start


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
repeat 4 times
do
while true
do
for index from 0 to 4
do
for element value of list
do

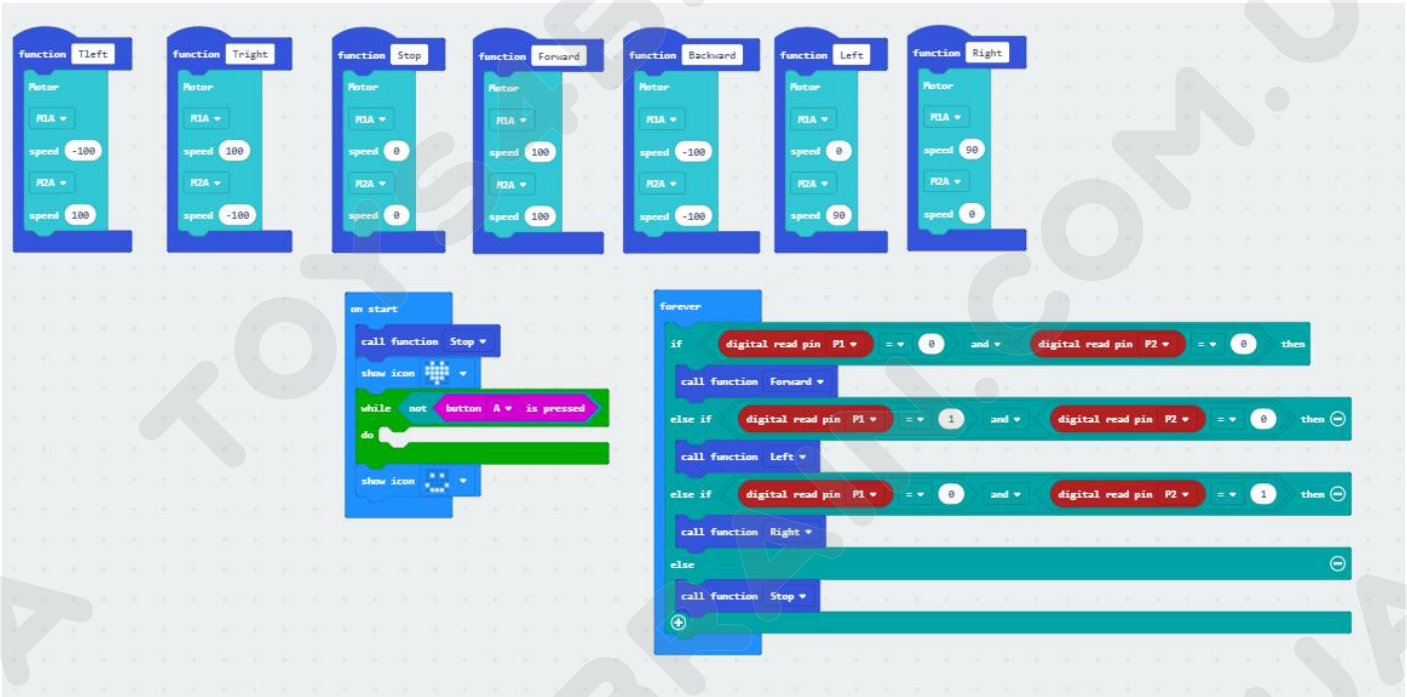

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
if true then
if true then
else
Comparison
0 = 0
0 < 0
Boolean
and
or


Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
more
Serial
Control
Extensions
digital read pin P0
digital write pin P0 to 0
analog read pin P0
analog write pin P0 to 1023
analog set period pin P0 to (µs) 20000
map 0
from low 0
from high 1023
to low 0
to high 4
servo write pin P0 to 180



Complete code：



Lesson 5 Robot car line patrol fire extinguishing

Overview:

In this lesson, let's learn robot car line patrol fire extinguishing.

Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared tracking sensor module:

Use infrared reflective sensor TCRT5000

- Operating voltage 2.5V - 12V (Note: Using low supply voltage, high supply voltage, shorter sensor life, 5 volt power supply is the preferred power supply)

- Operating current 18-30mA, best performance

- Known objects, the final output signal level is low; no object is detected, the final output signal is higher

- TTL level sensor output can be directly connected to the microcontroller IO port 3.3 volts or 5 volts

Note: When using the infrared tracking sensor module, you need to use a screwdriver to rotate the potentiometer in the module to operate normally.

.

Flame sensor module：

Usage:

These types of sensors are used for short range fire detection and can be used to monitor projects or as a safety precaution to cut devices off / on.

Range:

I have found this unit is mostly accurate up to about 3 feet.

How it works:

The flame sensor is very sensitive to IR wavelength at 760 nm ~ 1100 nm light.

Analog output (A0): Real-time output voltage signal on the thermal resistance.

Digital output (D0): When the temperature reaches a certain threshold, the output high and low signal threshold adjustable via potentiometer.

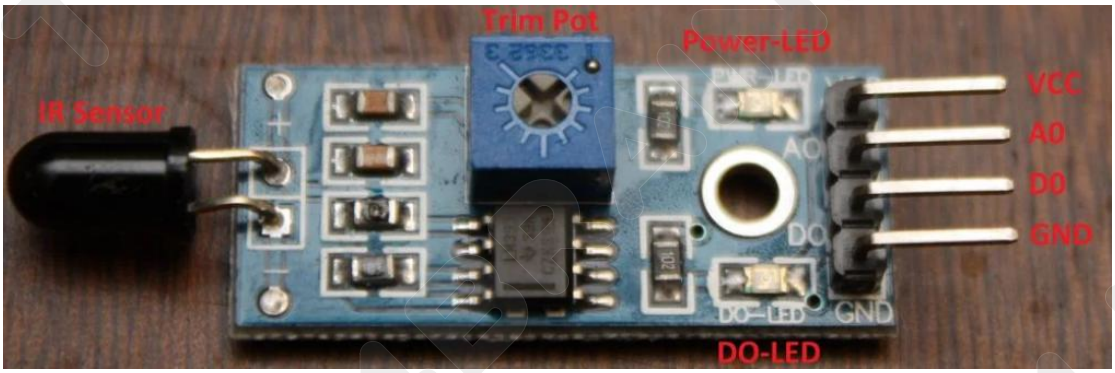
Pins:

VCC..... Positive voltage input: 5v for analog 3.3v for Digital.

A0..... Analog output

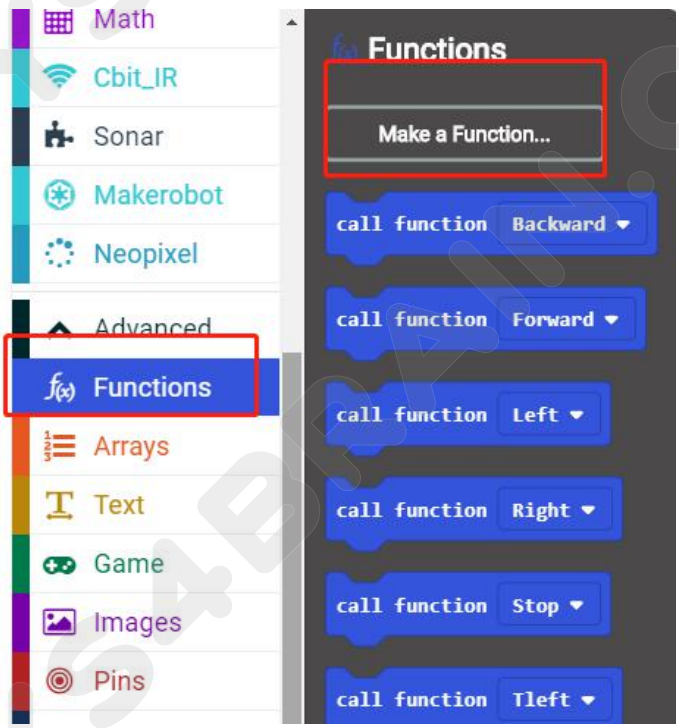
D0..... Digital output

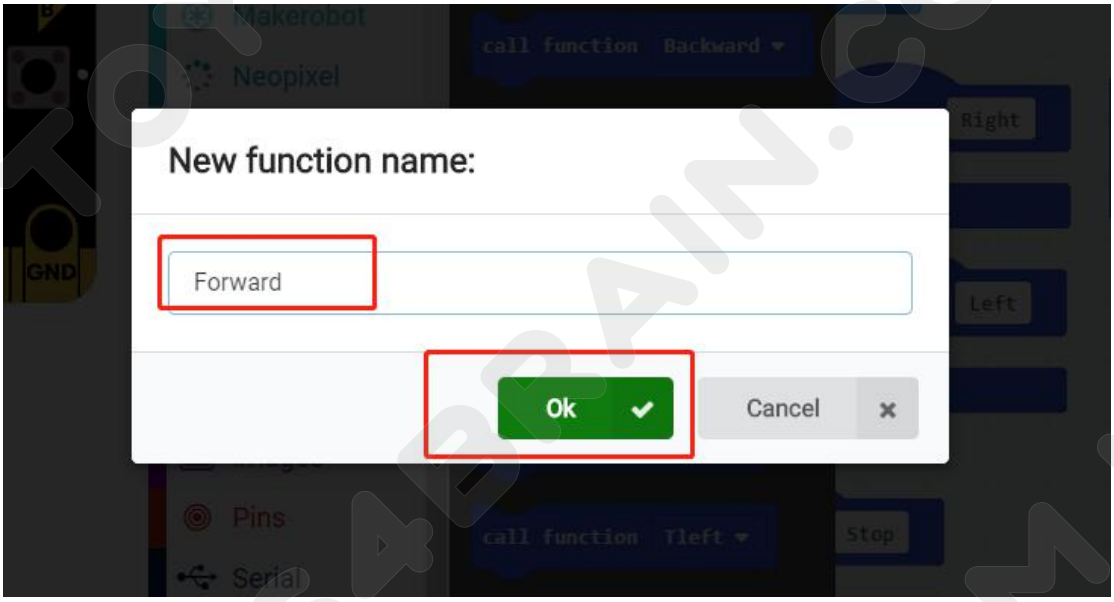
GND..... Ground

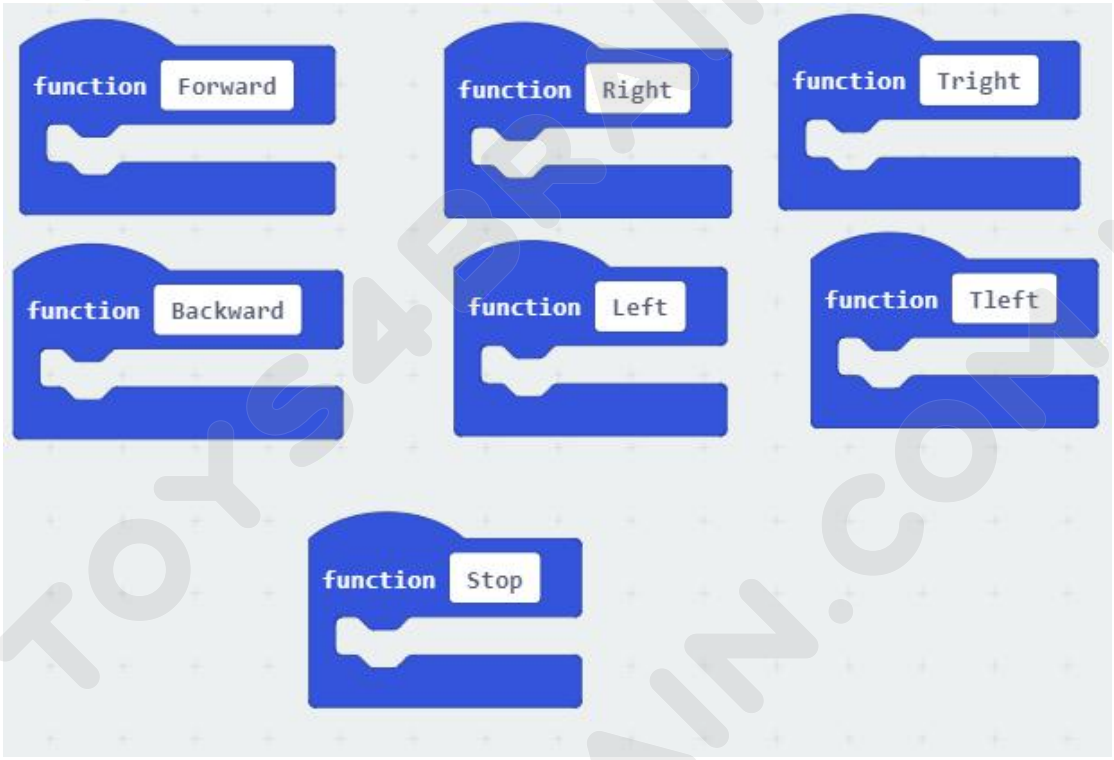


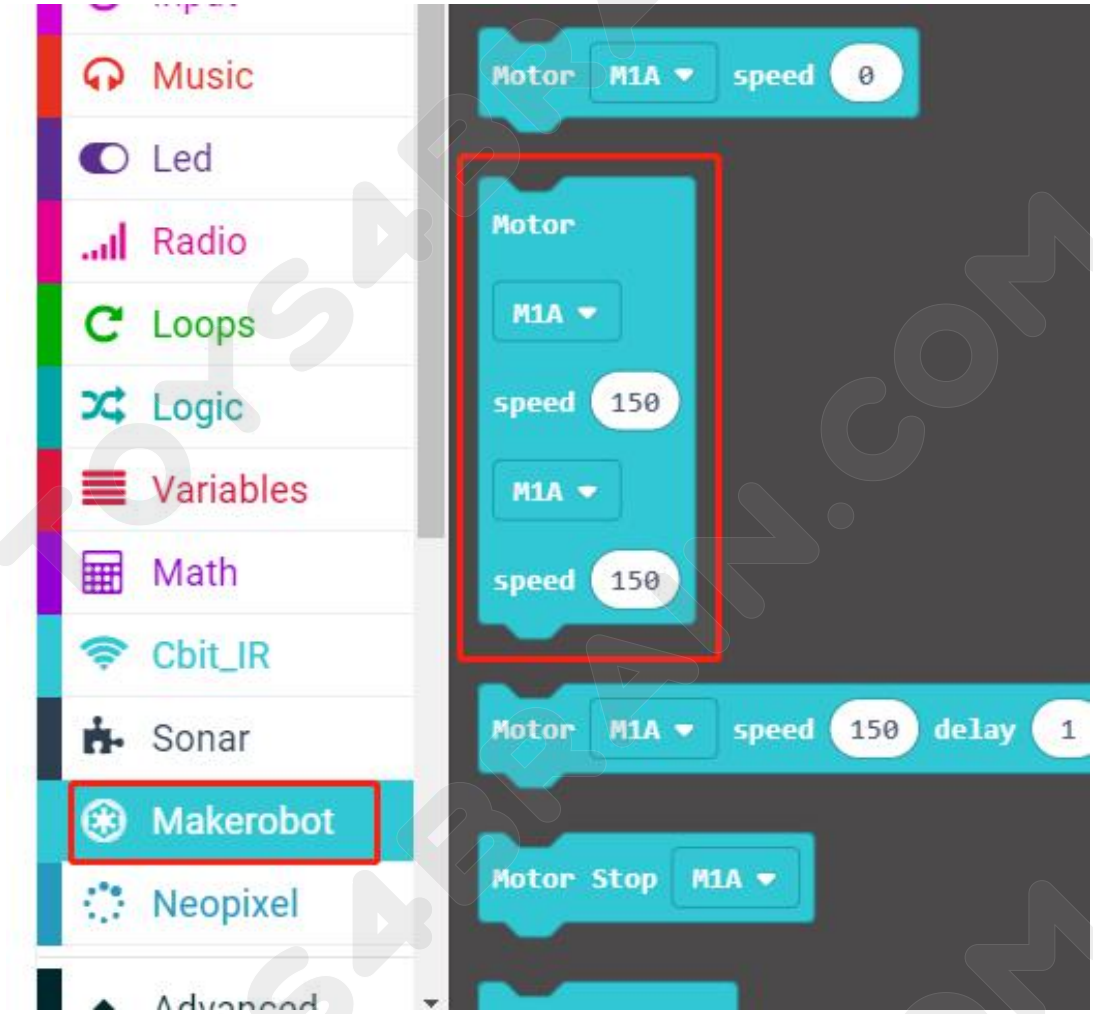
Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

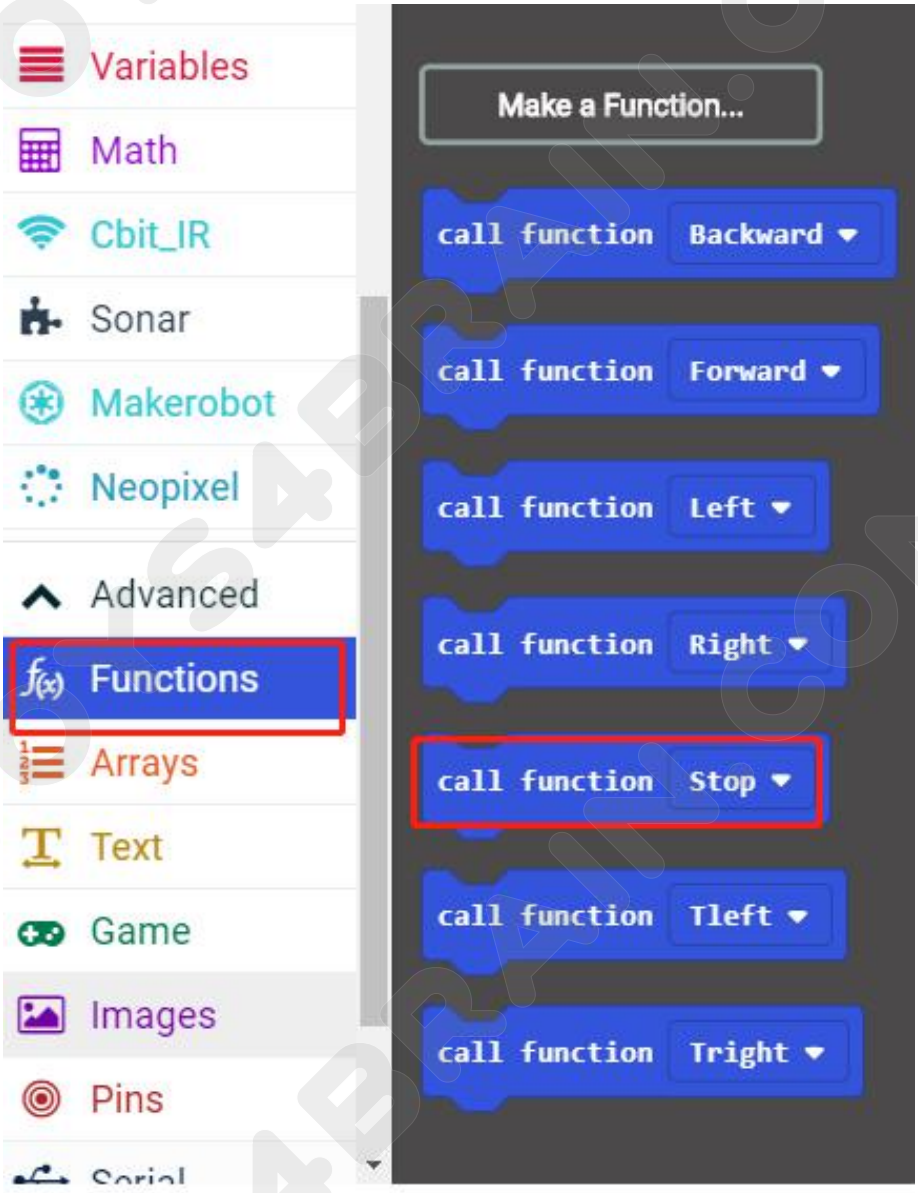


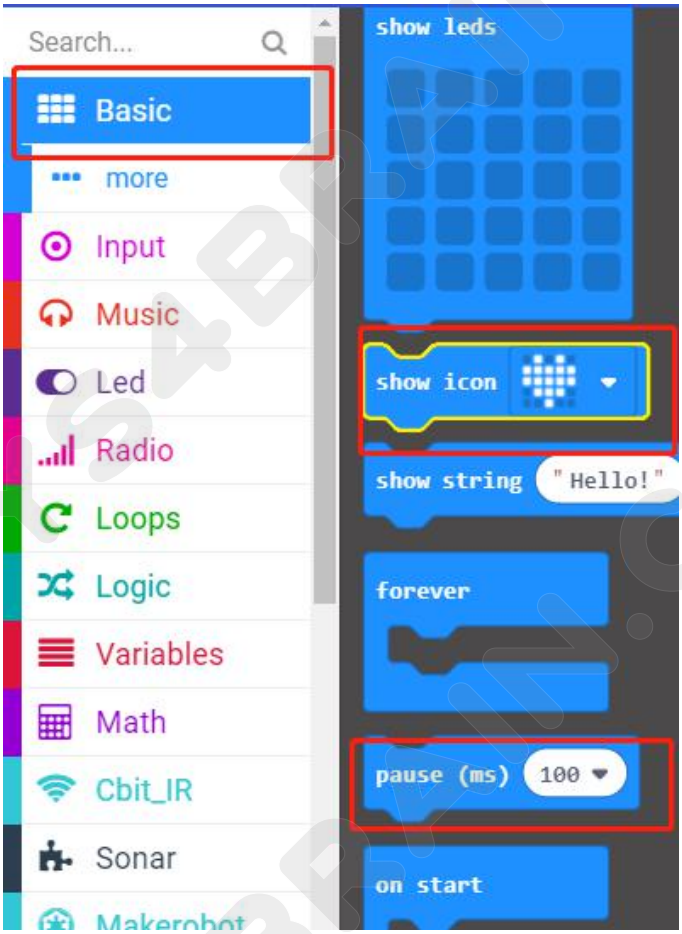


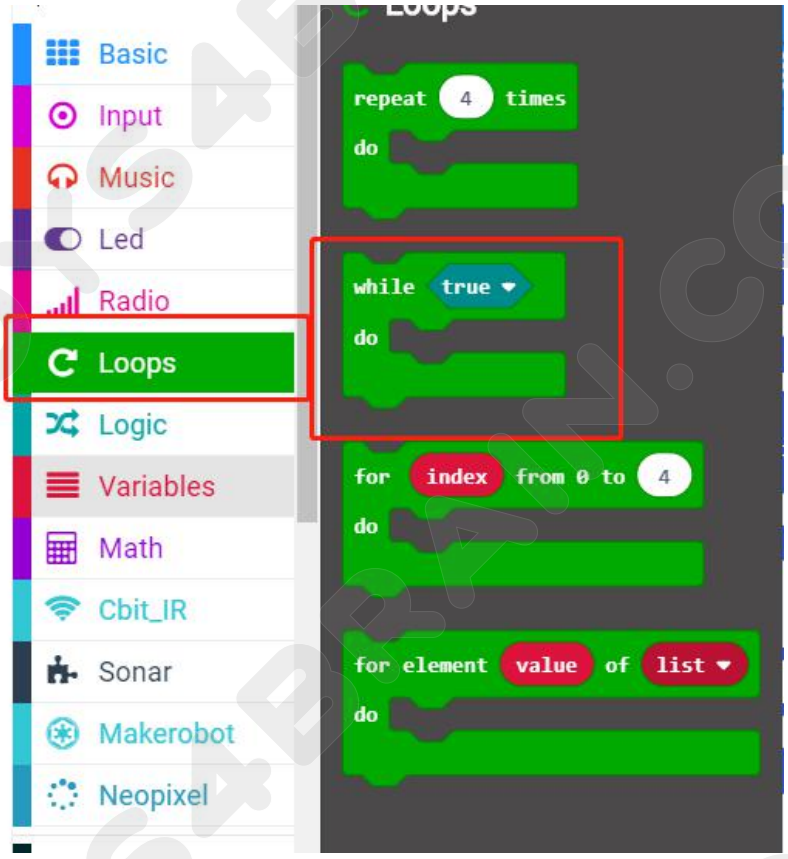

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

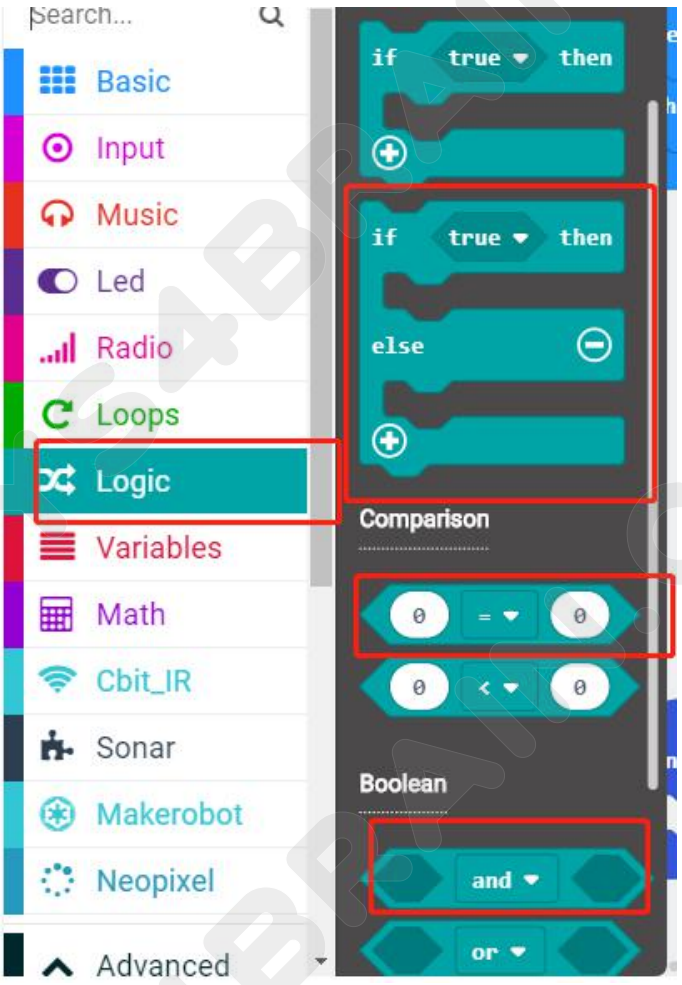

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A

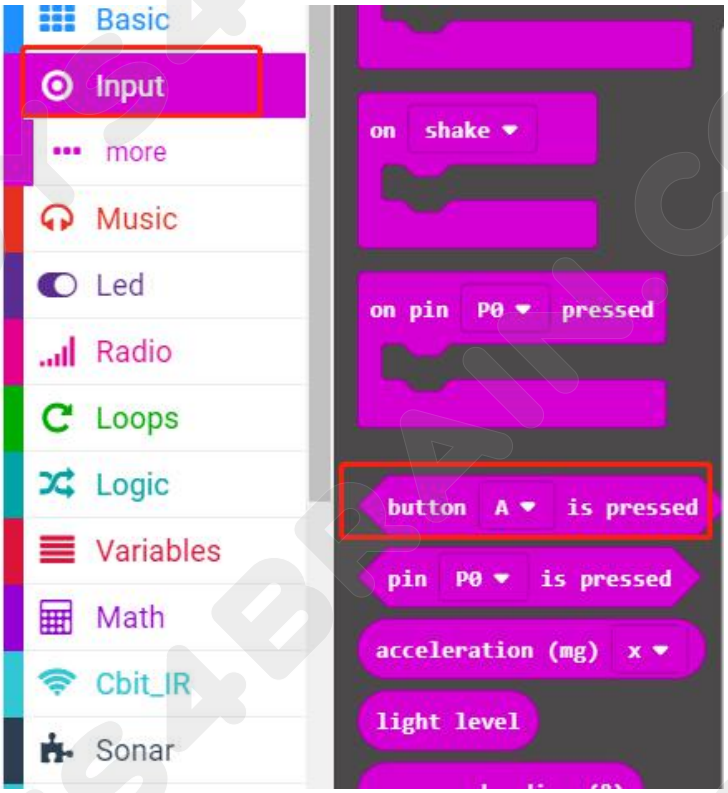

function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

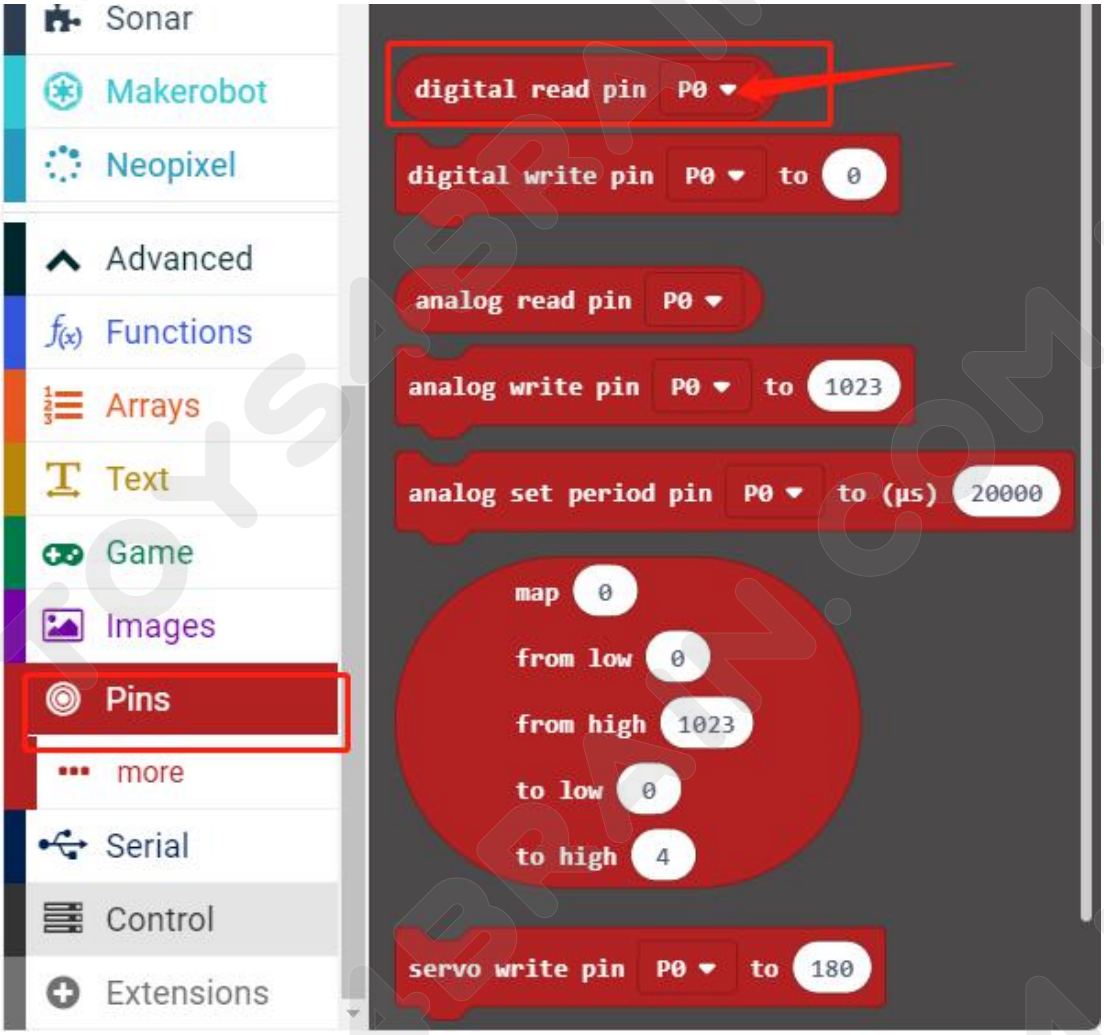

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright


Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
show leds
show icon
show string
" Hello! "
forever
pause (ms)
100
on start


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
repeat
4
times
do
while
true
do
for
index
from 0 to
4
do
for element
value
of
list
do


Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
if true then
if true then
else
Comparison
0 = 0
0 < 0
Boolean
and
or


Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
more
Serial
Control
Extensions
digital read pin P0
digital write pin P0 to 0
analog read pin P0
analog write pin P0 to 1023
analog set period pin P0 to (µs) 20000
map 0
from low 0
from high 1023
to low 0
to high 4
servo write pin P0 to 180


forever
if
digital read pin P6
= 0 then
else
P0 P1 P2 P3
P4 P5 P6 P7
P8 P9 P10 P11
P12 P13 P14 P15
P16 P19 P20

Complete code：

Lesson 6 Robot trolley line patrol alarm and fire extinguishing

Overview:

In this lesson we will learn robot trolley line patrol alarm and fire extinguishing.

Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared tracking sensor module:

Use infrared reflective sensor TCRT5000

- Operating voltage 2.5V - 12V (Note: Using low supply voltage, high supply voltage, shorter sensor life, 5 volt power supply is the preferred power supply)

- Operating current 18-30mA, best performance

- Known objects, the final output signal level is low; no object is detected, the final output signal is higher

- TTL level sensor output can be directly connected to the microcontroller IO port 3.3 volts or 5 volts

Note: When using the infrared tracking sensor module, you need to use a screwdriver to rotate the potentiometer in the module to operate normally.

.

Flame sensor module：

Usage:

These types of sensors are used for short range fire detection and can be used to monitor projects or as a safety precaution to cut devices off / on.

Range:

I have found this unit is mostly accurate up to about 3 feet.

How it works:

The flame sensor is very sensitive to IR wavelength at 760 nm ~ 1100 nm light.

Analog output (A0): Real-time output voltage signal on the thermal resistance.

Digital output (D0): When the temperature reaches a certain threshold, the output high and low signal threshold adjustable via potentiometer.

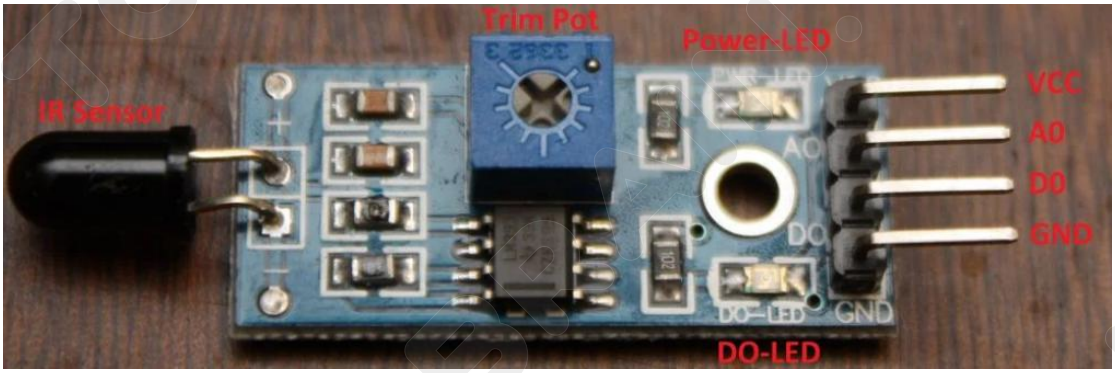
Pins:

VCC..... Positive voltage input: 5v for analog 3.3v for Digital.

A0..... Analog output

D0..... Digital output

GND..... Ground

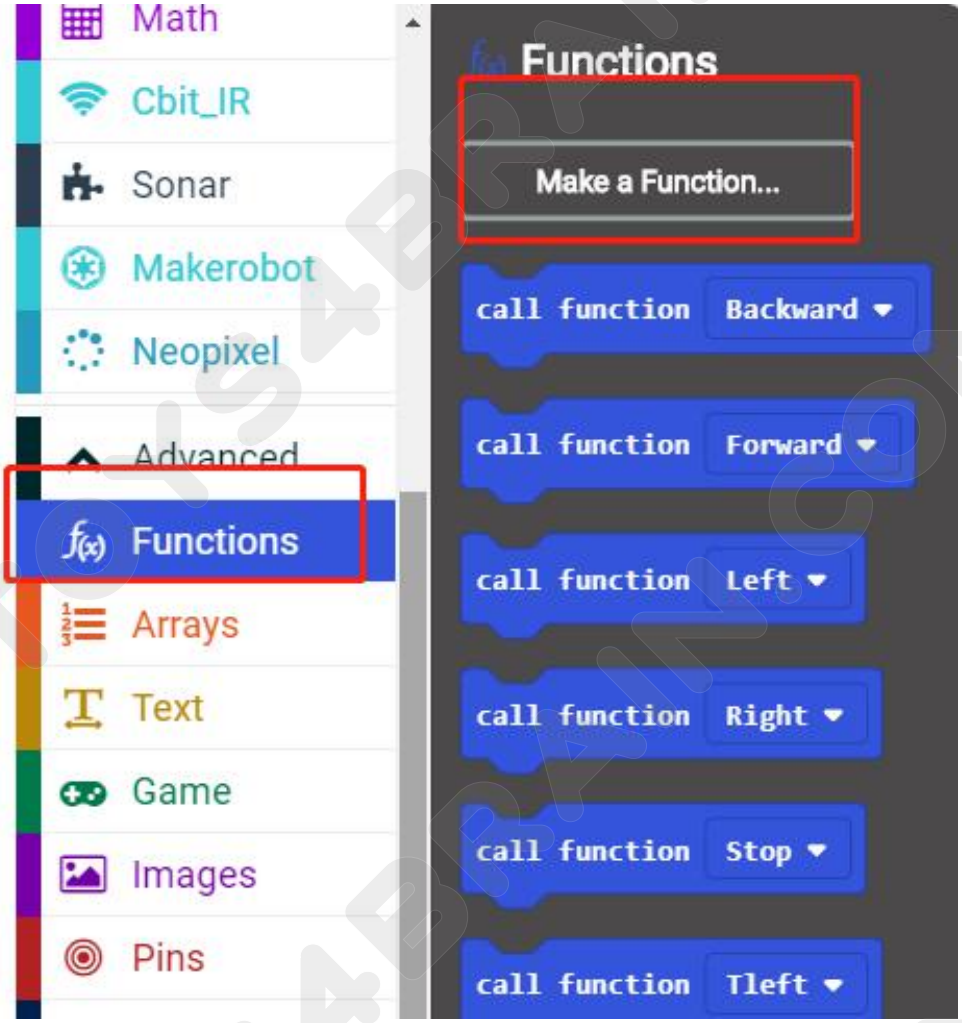


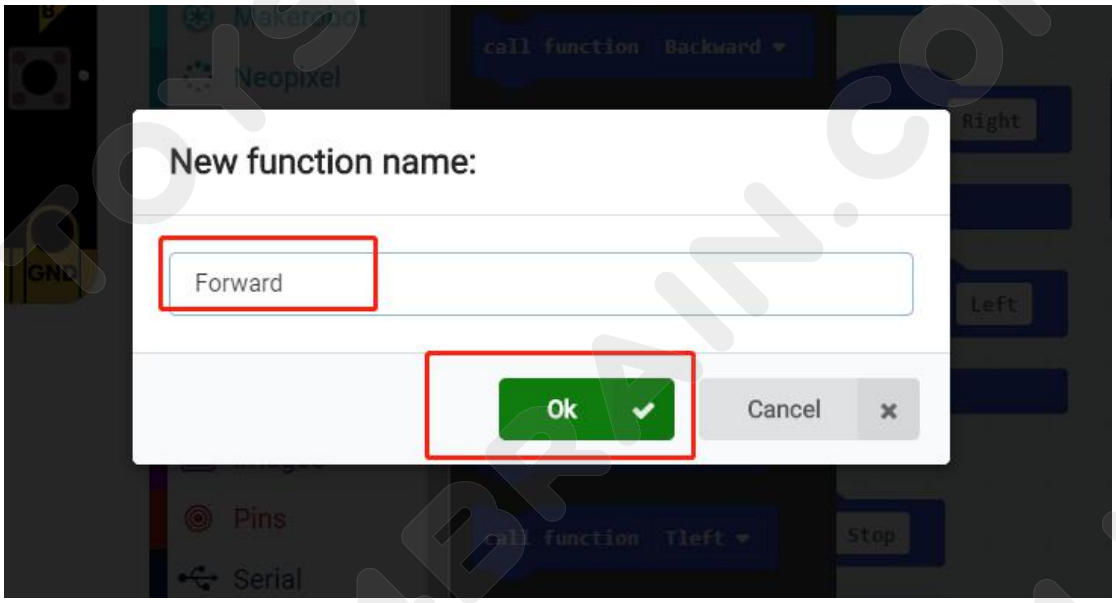
Buzzer:

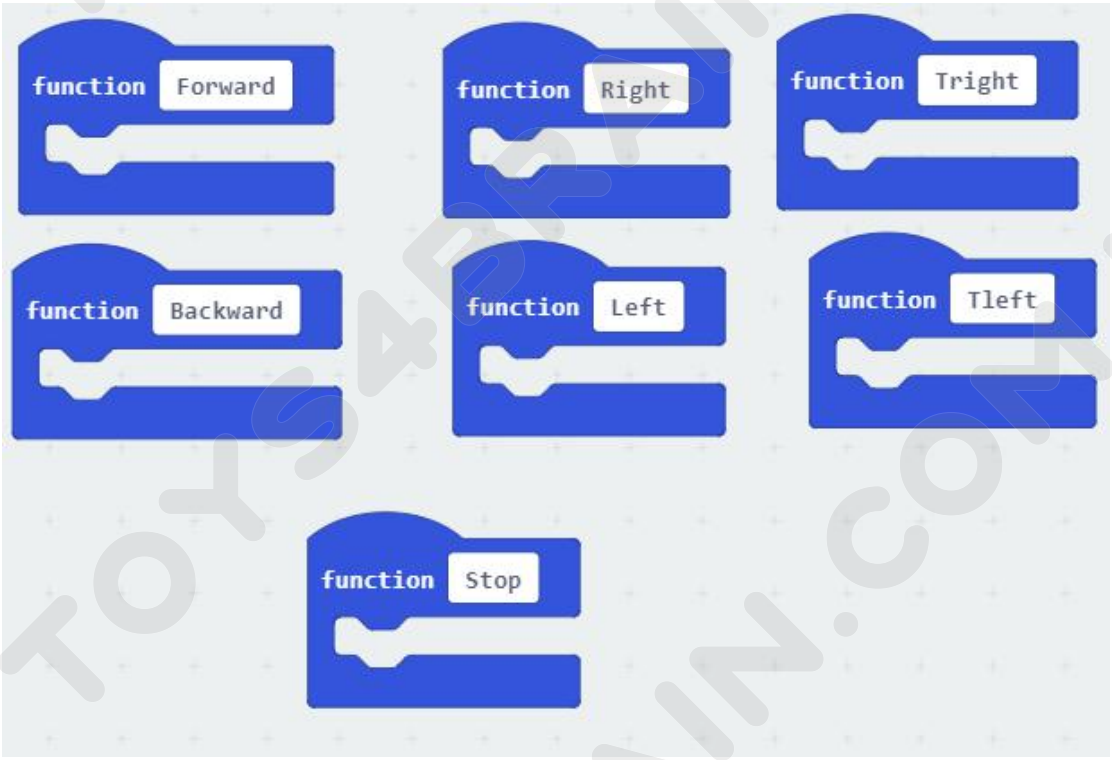
Buzzers are typically used for identification and alarm purposes across many major industries. The major application categories that utilize buzzers for indication or alert purposes include: home appliances, automotive electronics, medical, safety and security, industrial, and office automation.

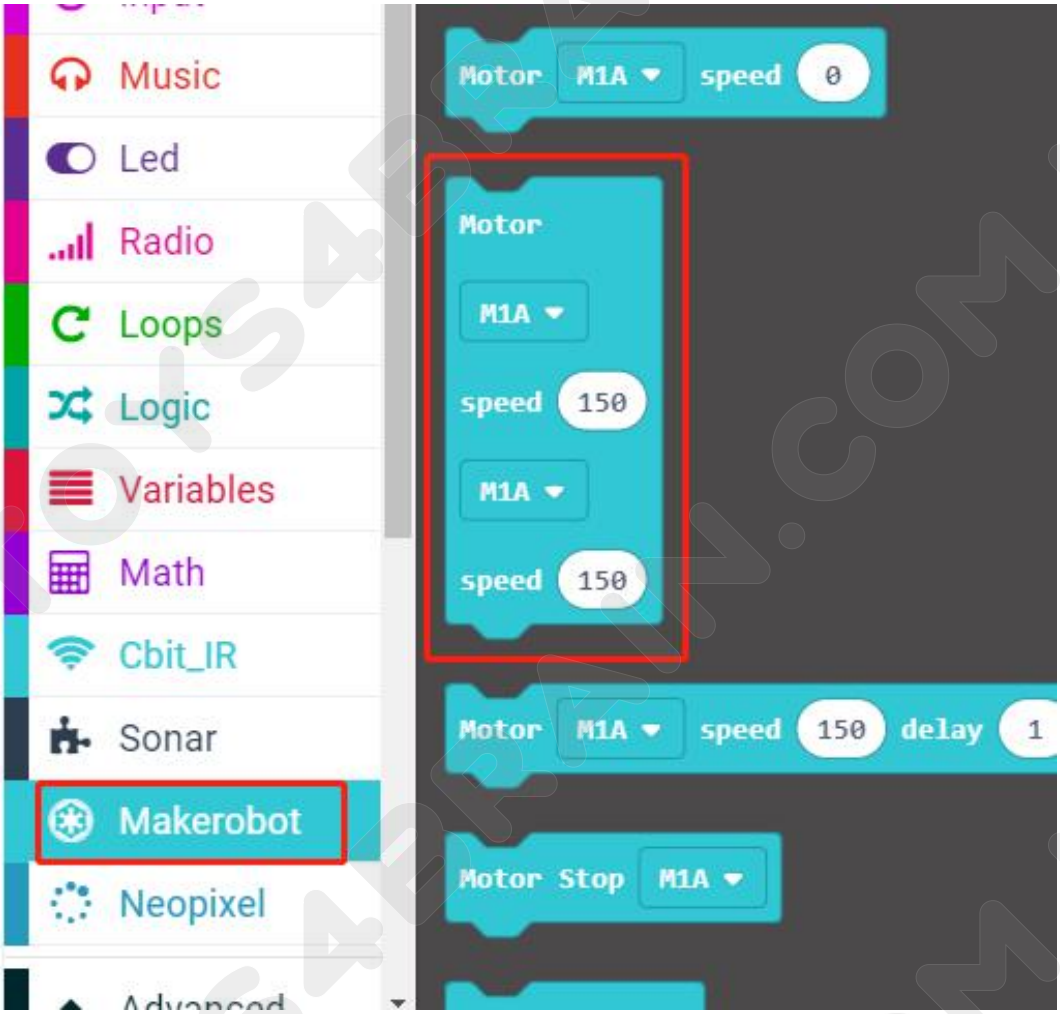
Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

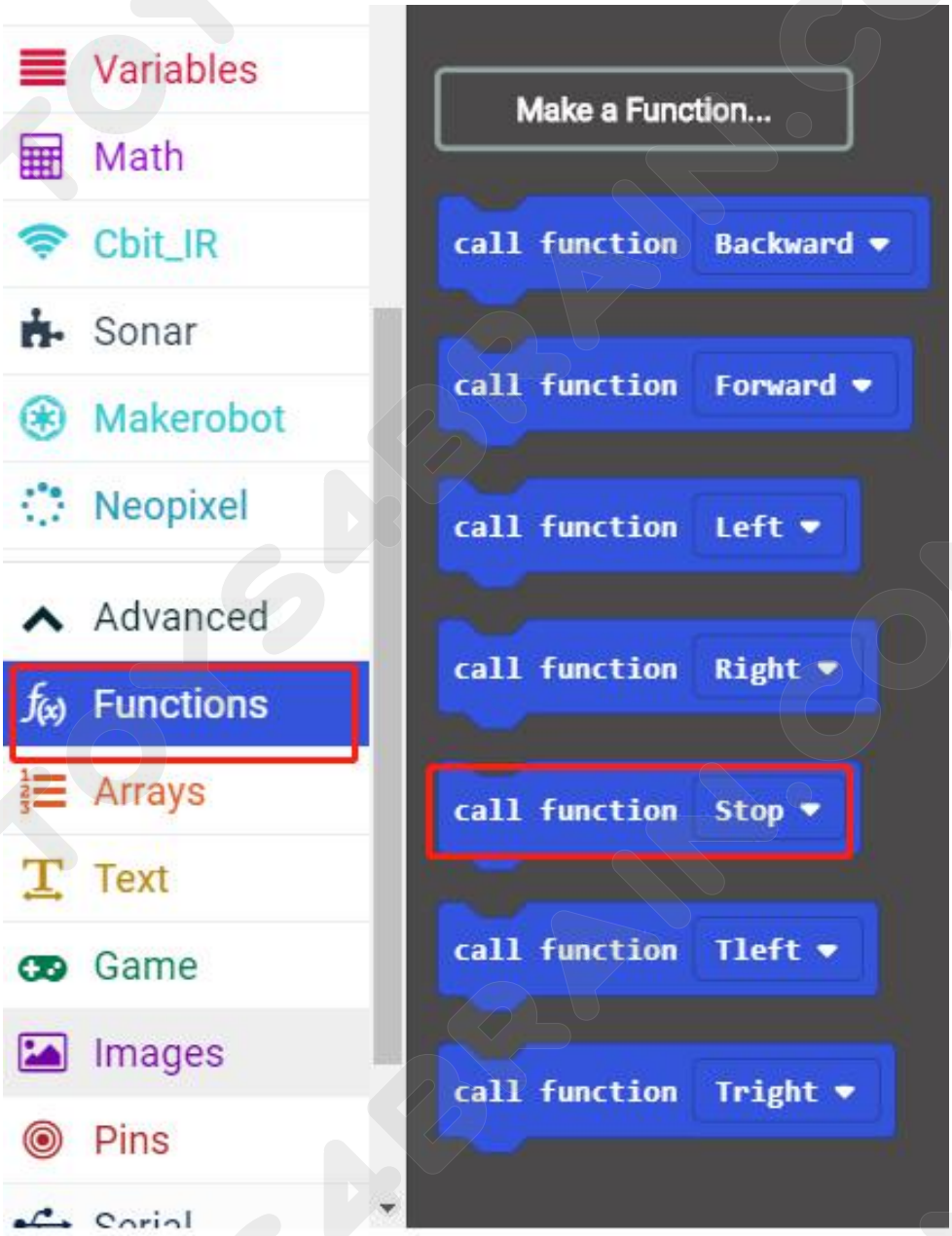

Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Functions
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft

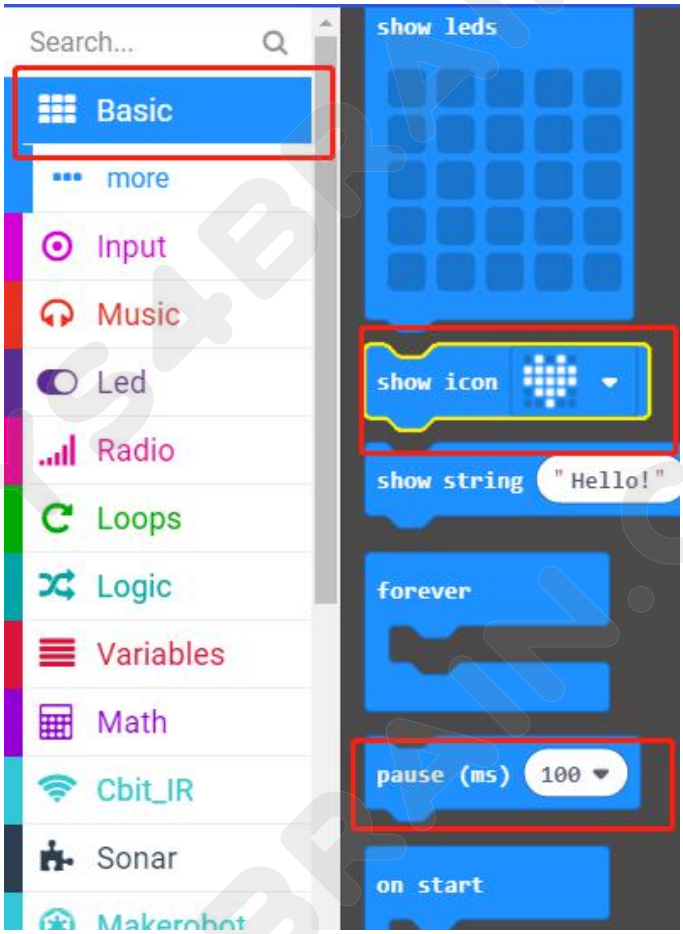

New function name:
Forward
Ok
Cancel

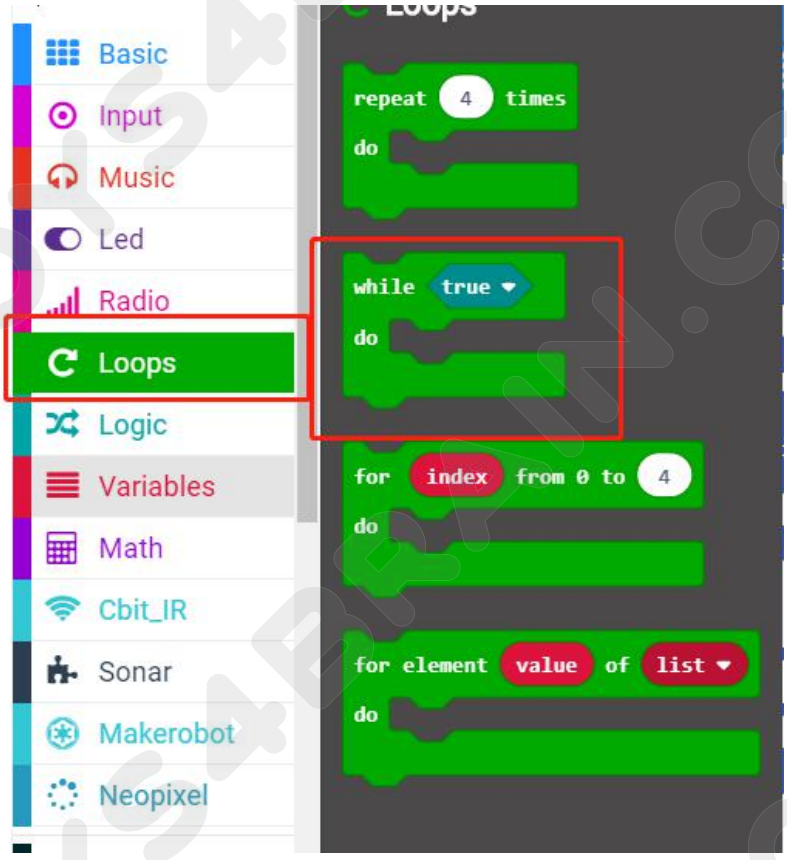

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

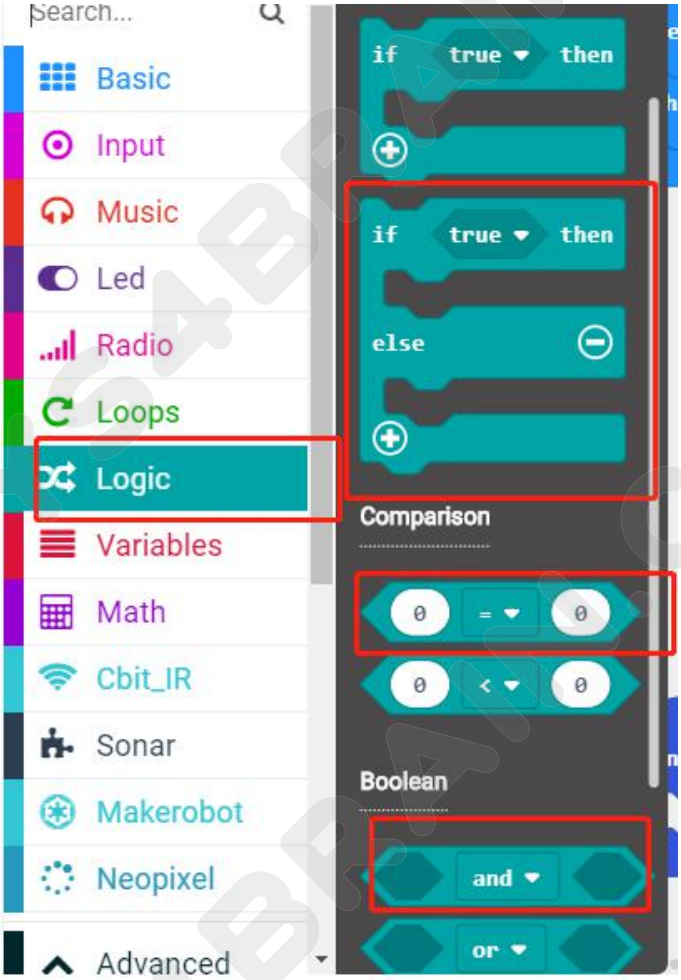

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A


function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

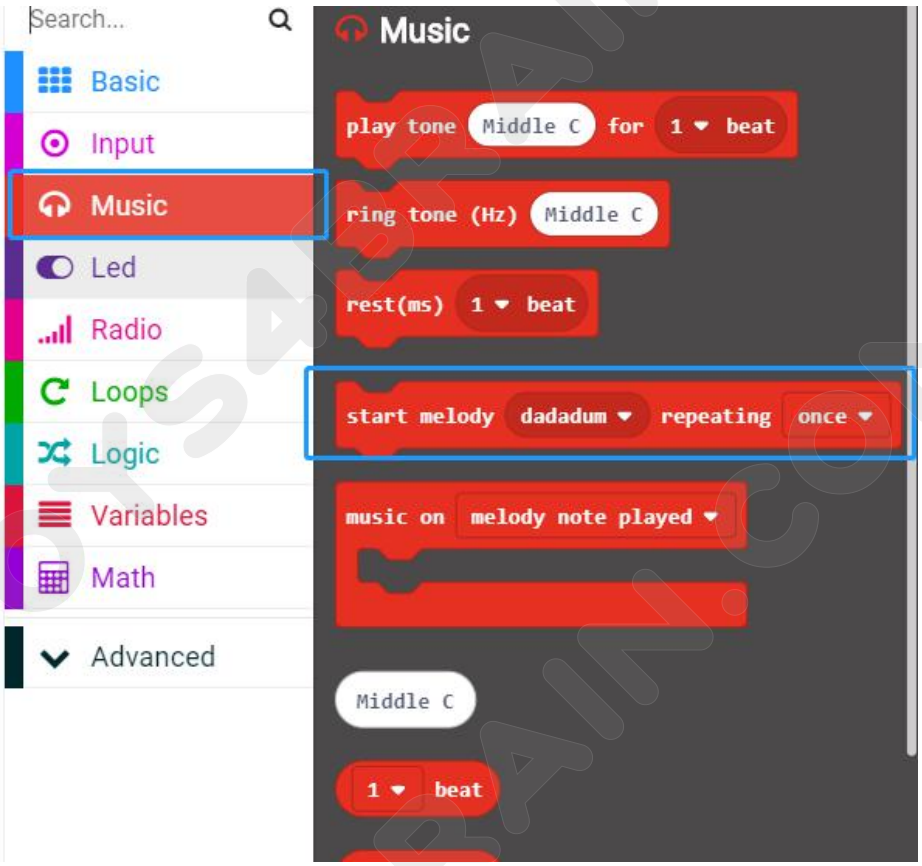

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright

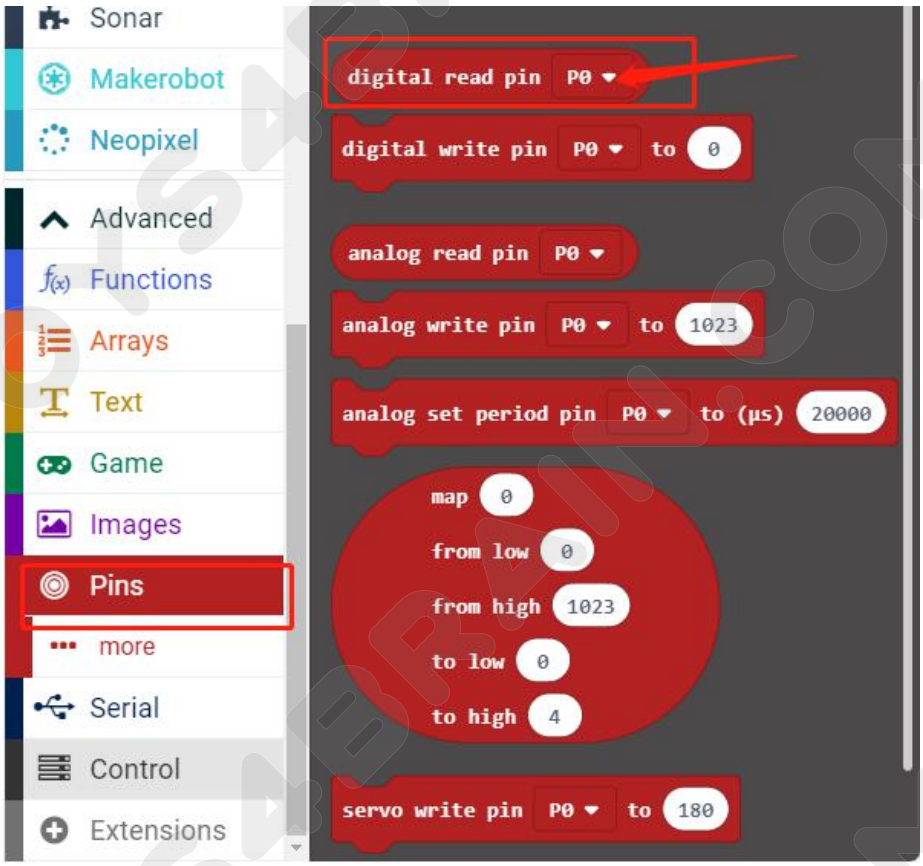

Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
show leds
show icon
show string
" Hello! "
forever
pause (ms)
100
on start


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
repeat
4
times
do
while
true
do
for
index
from 0 to
4
do
for element
value
of
list
do

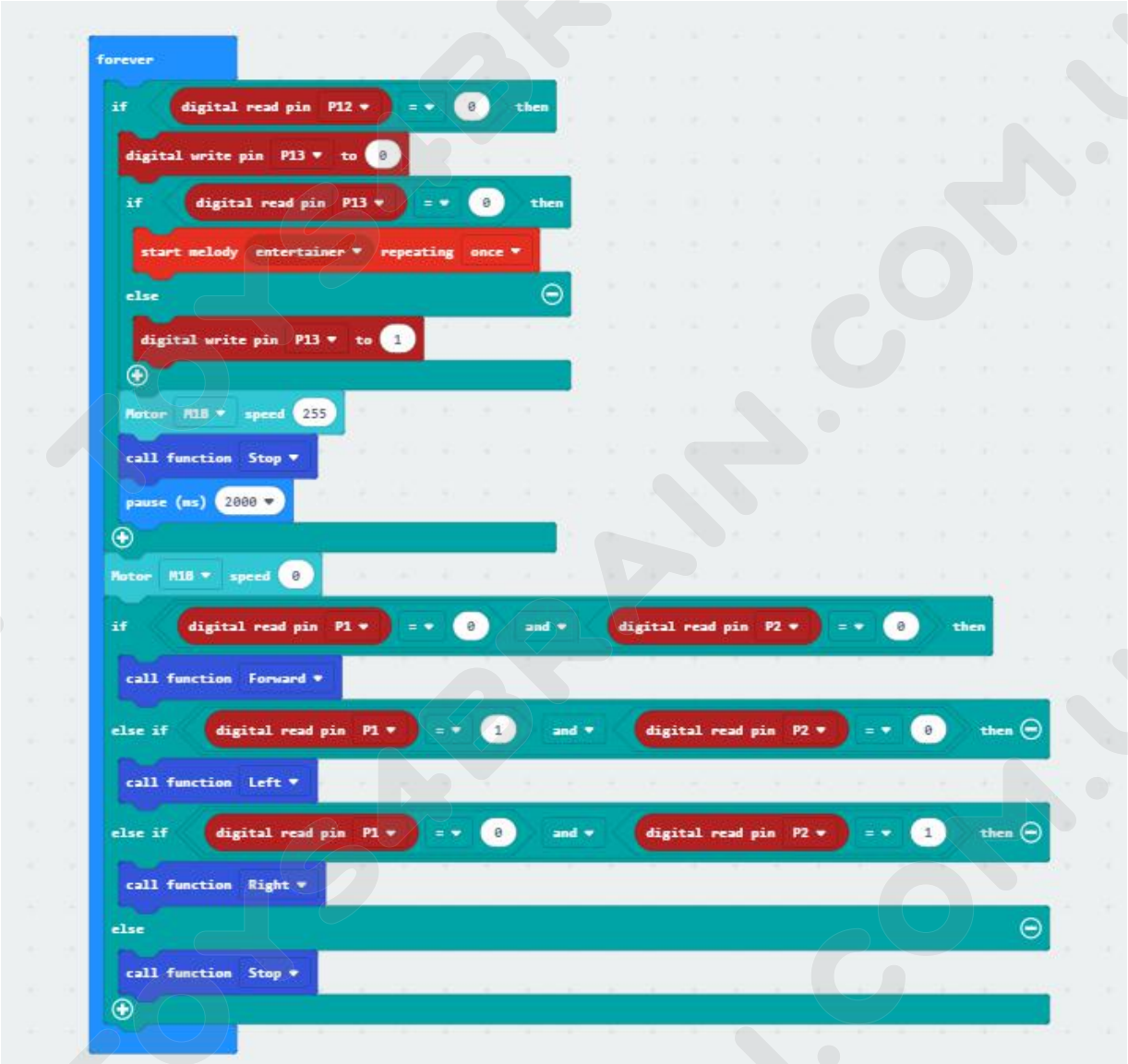

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
if true then
if true then
else
Comparison
0 = 0
0 < 0
Boolean
and
or


Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Advanced
Music
play tone Middle C for 1 beat
ring tone (Hz) Middle C
rest(ms) 1 beat
start melody dadadum repeating once
music on melody note played
Middle C
1 beat


Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
more
Serial
Control
Extensions
digital read pin P0
digital write pin P0 to 0
analog read pin P0
analog write pin P0 to 1023
analog set period pin P0 to (µs) 20000
map 0
from low 0
from high 1023
to low 0
to high 4
servo write pin P0 to 180

Complete code：


forever
if digital read pin P12 = 0 then
digital write pin P13 to 0
if digital read pin P13 = 0 then
start melody entertainer repeating once
else
digital write pin P13 to 1
Motor M1B speed 255
call function Stop
pause (ms) 2000
Motor M1B speed 0
if digital read pin P1 = 0 and digital read pin P2 = 0 then
call function Forward
else if digital read pin P1 = 1 and digital read pin P2 = 0 then
call function Left
else if digital read pin P1 = 0 and digital read pin P2 = 1 then
call function Right
else
call function Stop

Lesson 7 Robot car avoids obstacles

Overview:

In this lesson we will learn about robot car avoids obstacles.

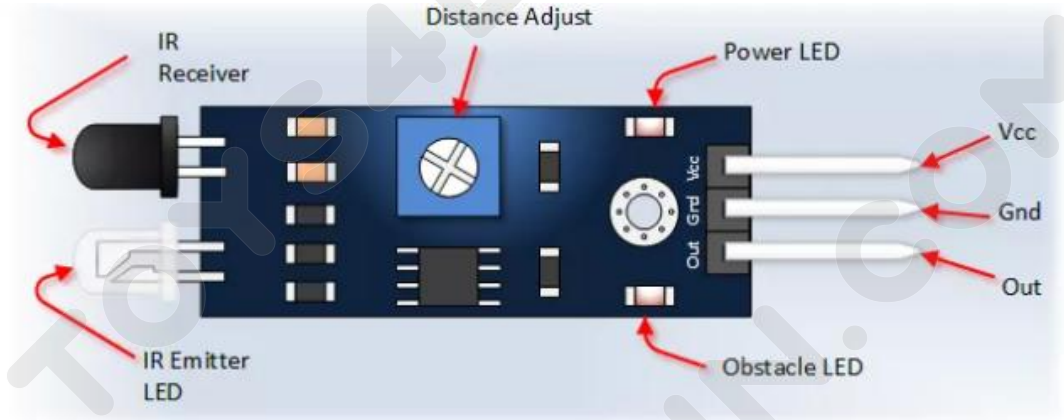
Component Required:

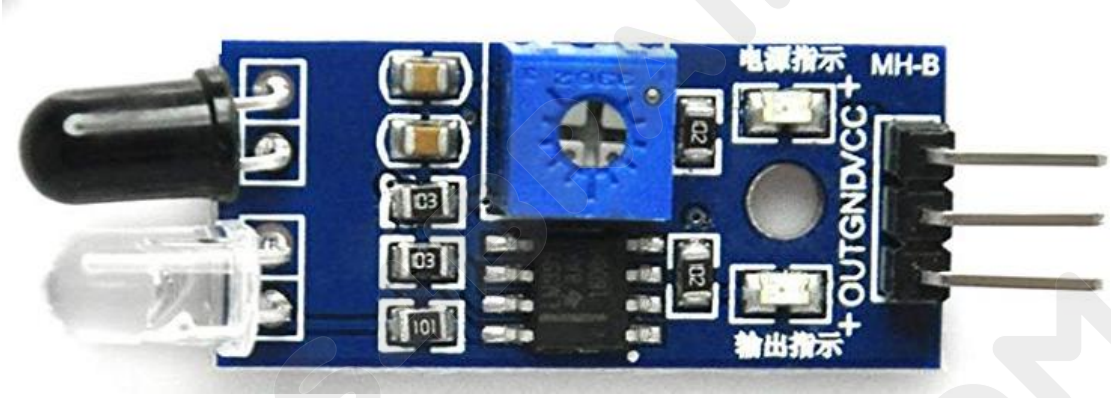
- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared obstacle avoidance sensor module:

This is yet another one of those modules with cool possibilities. You could for example, sound an alarm when something got too close or you could change the direction of a robot or vehicle.

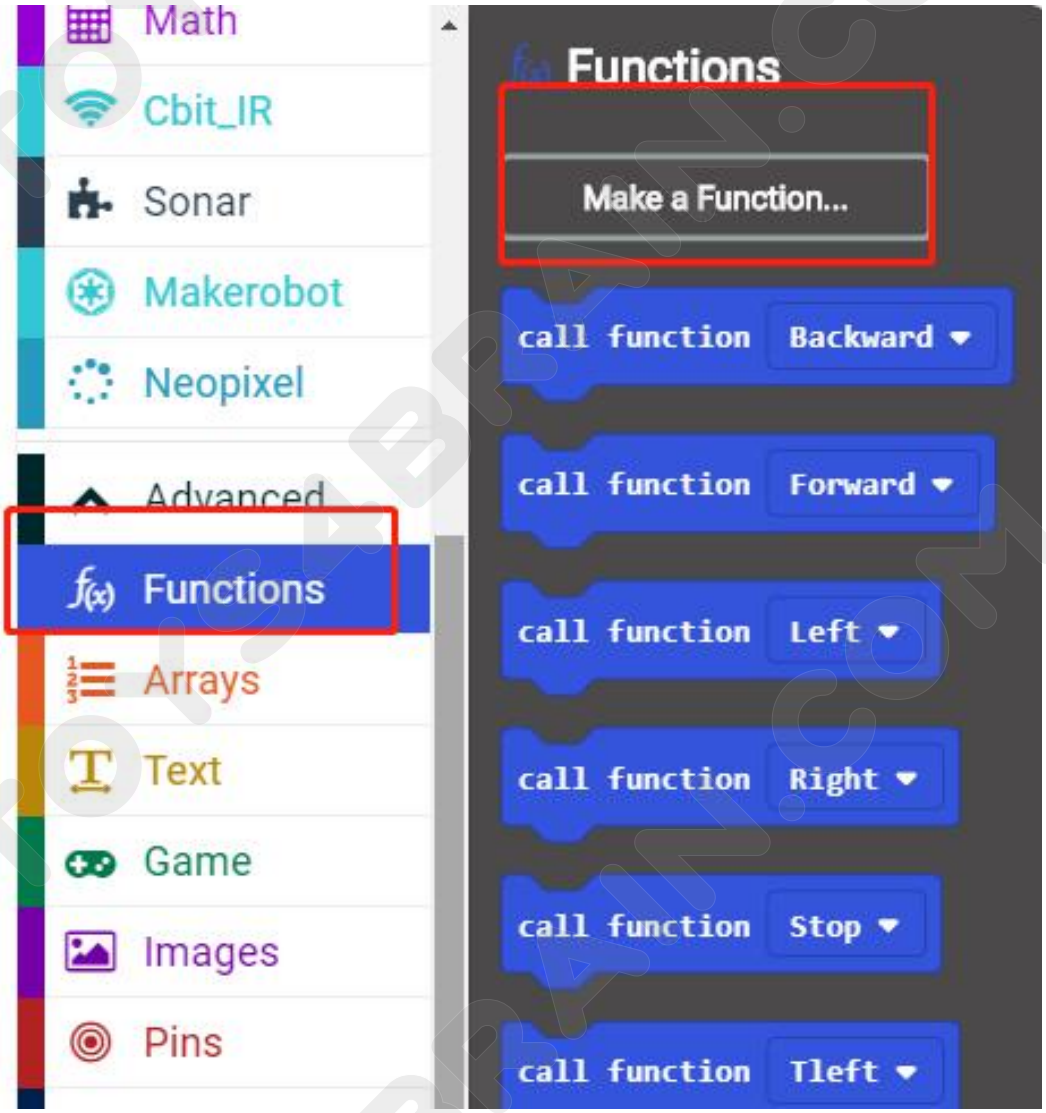
The device consists of an Infrared Transmitter, an Infrared Detector, and support circuitry. It only requires three connections. When it detects an obstacle within range it will send an output low.

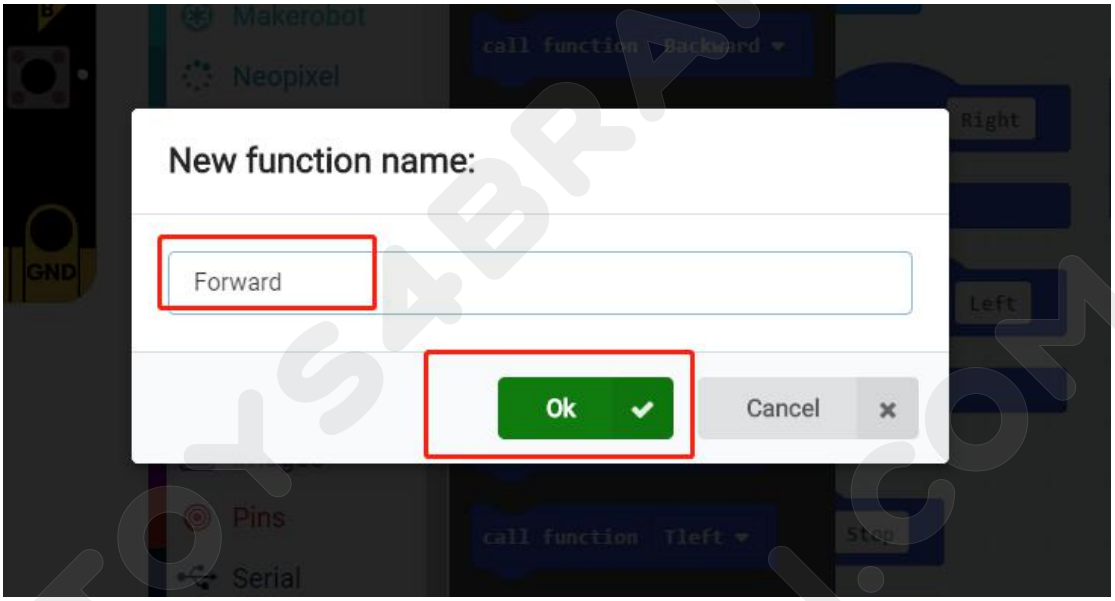


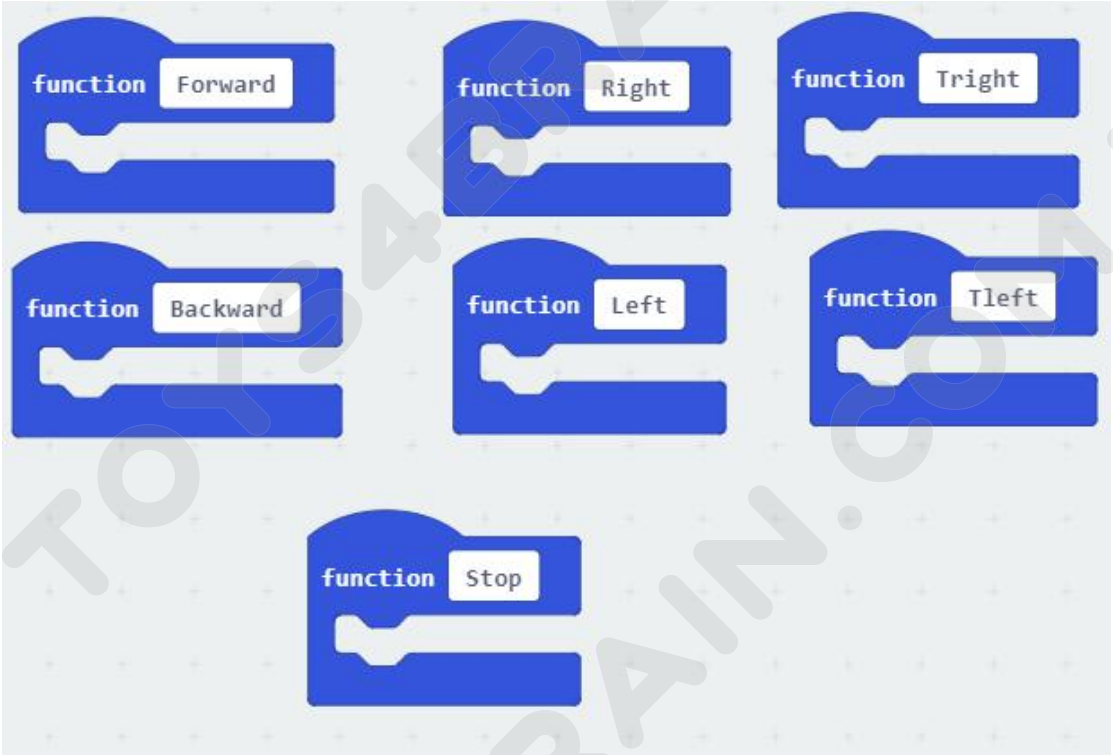


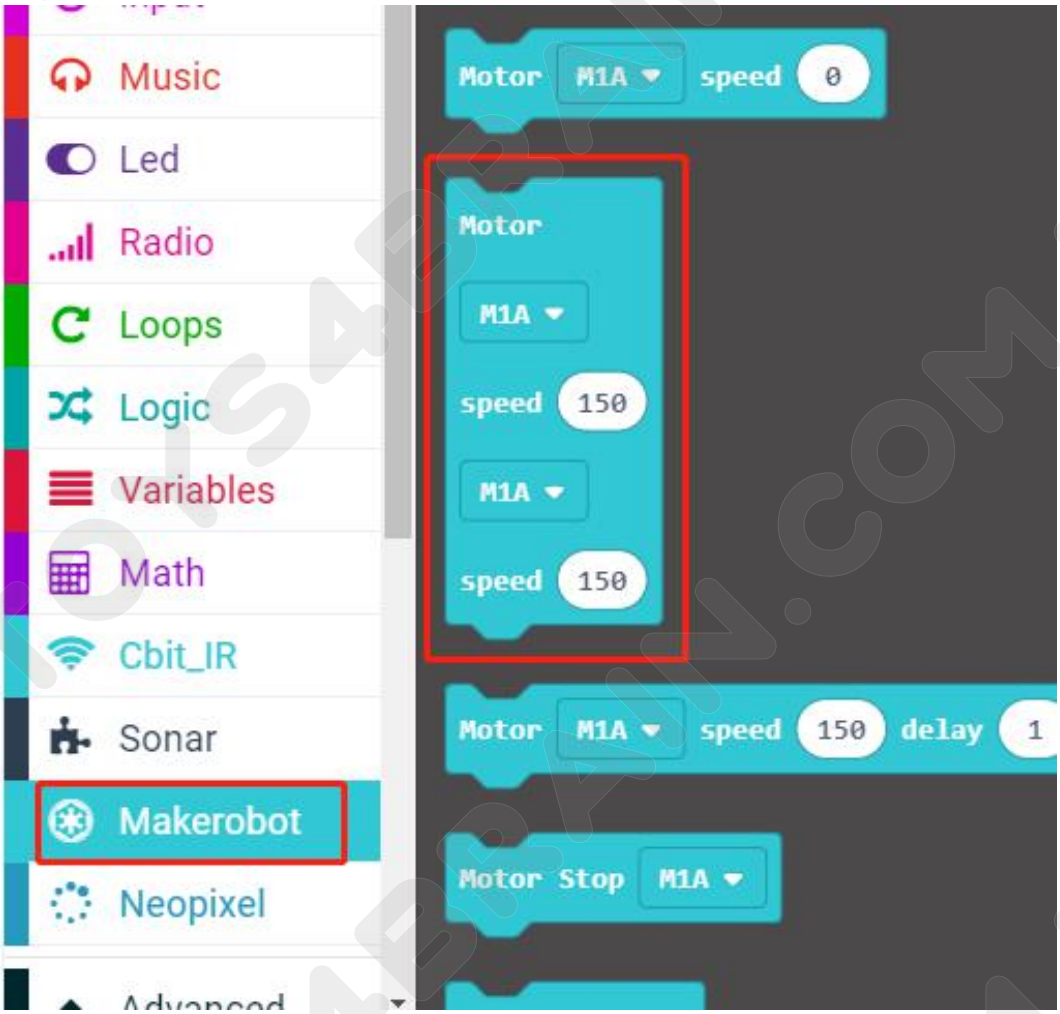
Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

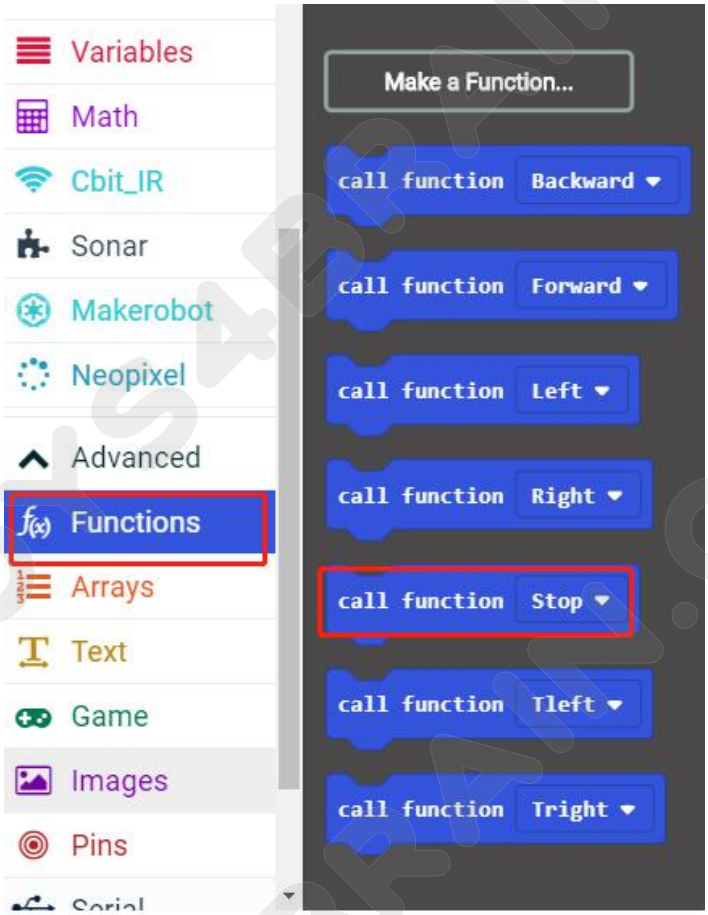


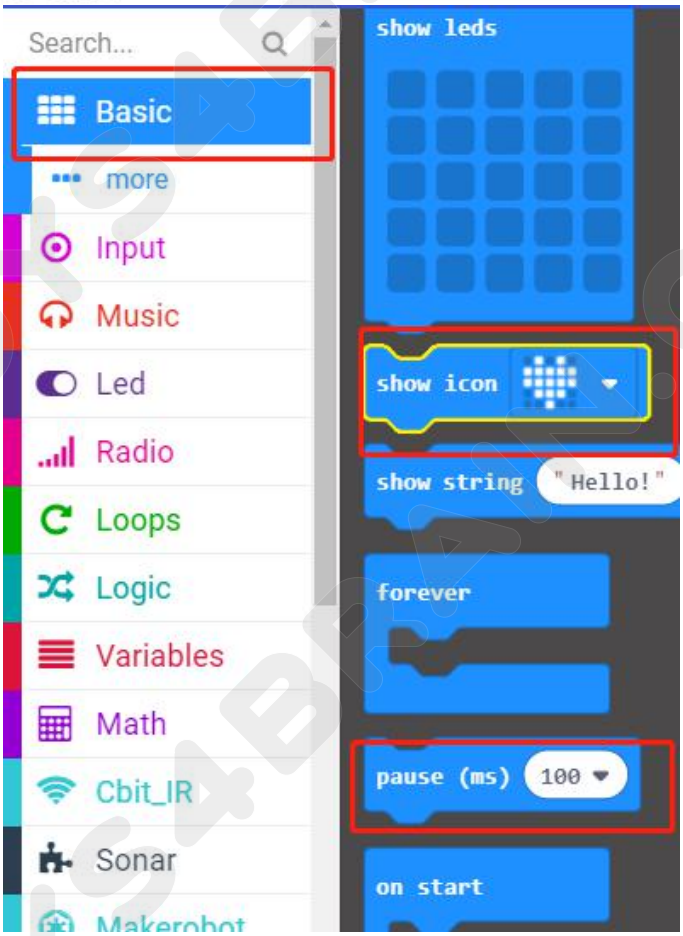

Makerobot
Neopixel
call function Backward
Right
New function name:
Forward
Left
Ok
Cancel
GND
Pins
Serial
call function Tleft
Stop

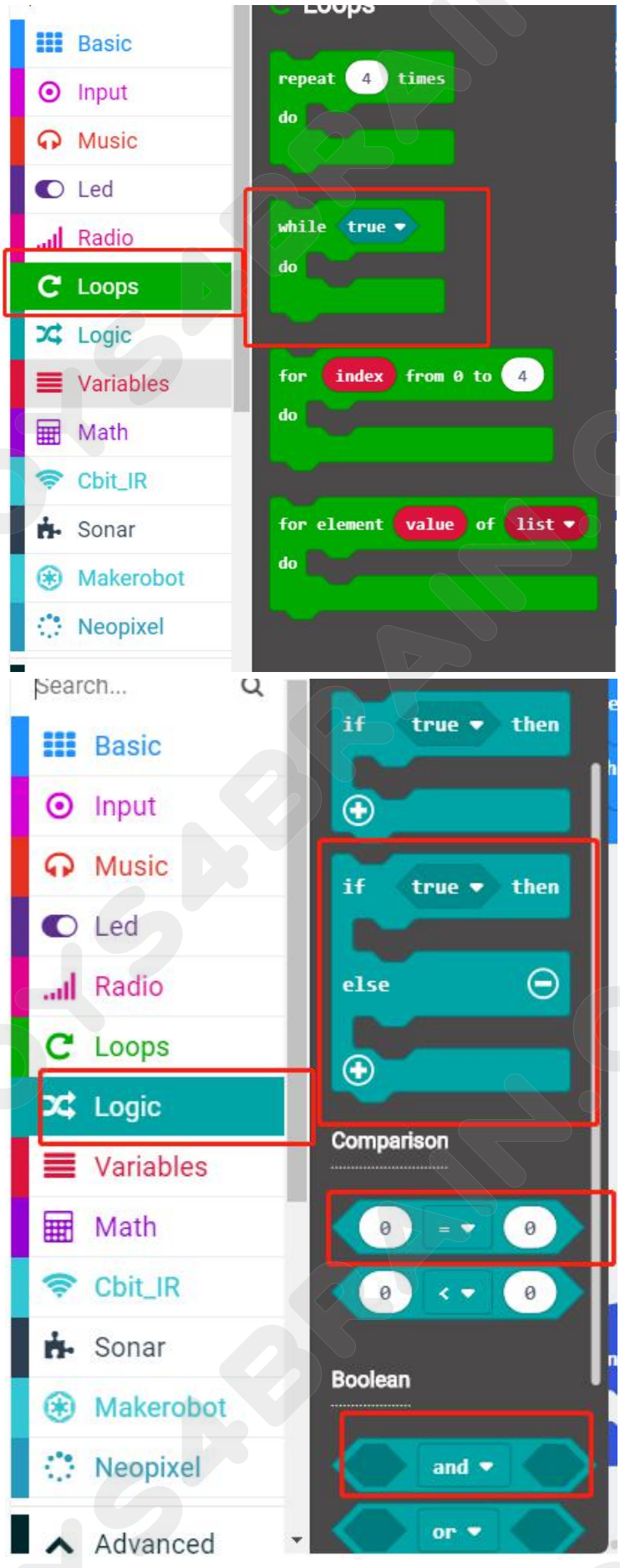

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

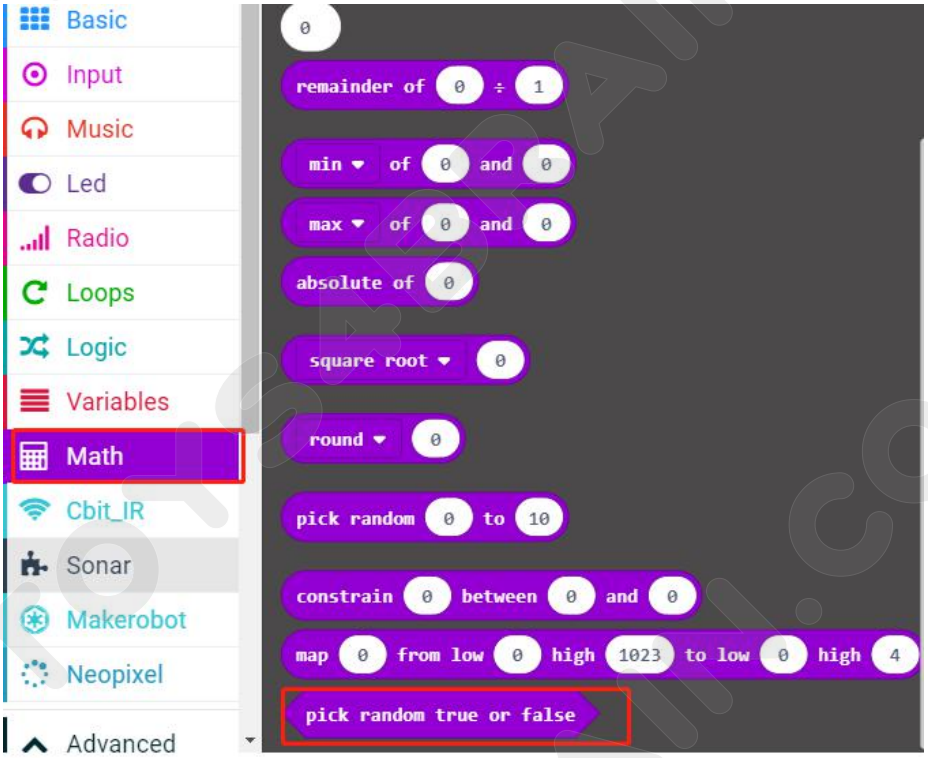

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A

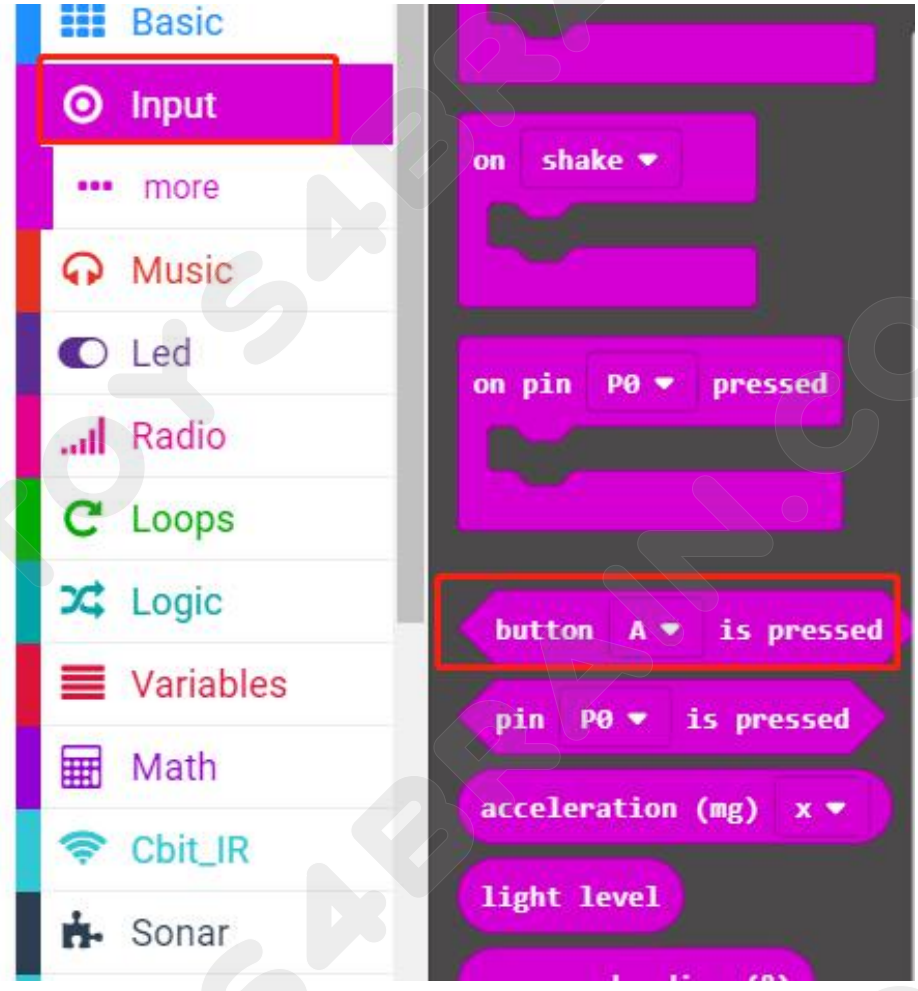

function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

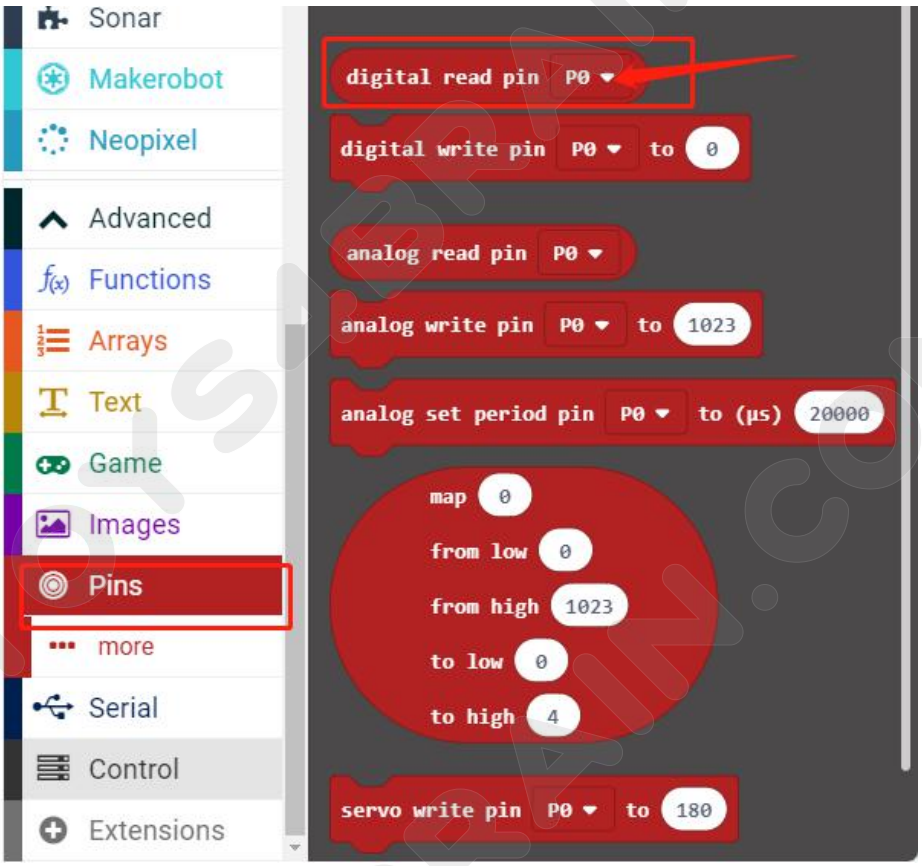

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright


Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
show leds
show icon
show string "Hello!"
forever
pause (ms) 100
on start


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
repeat 4 times
do
while true
do
for index from 0 to 4
do
for element value of list
do
Search...
if true then
else
Comparison
0 = 0
0 < 0
Boolean
and
or
Advanced

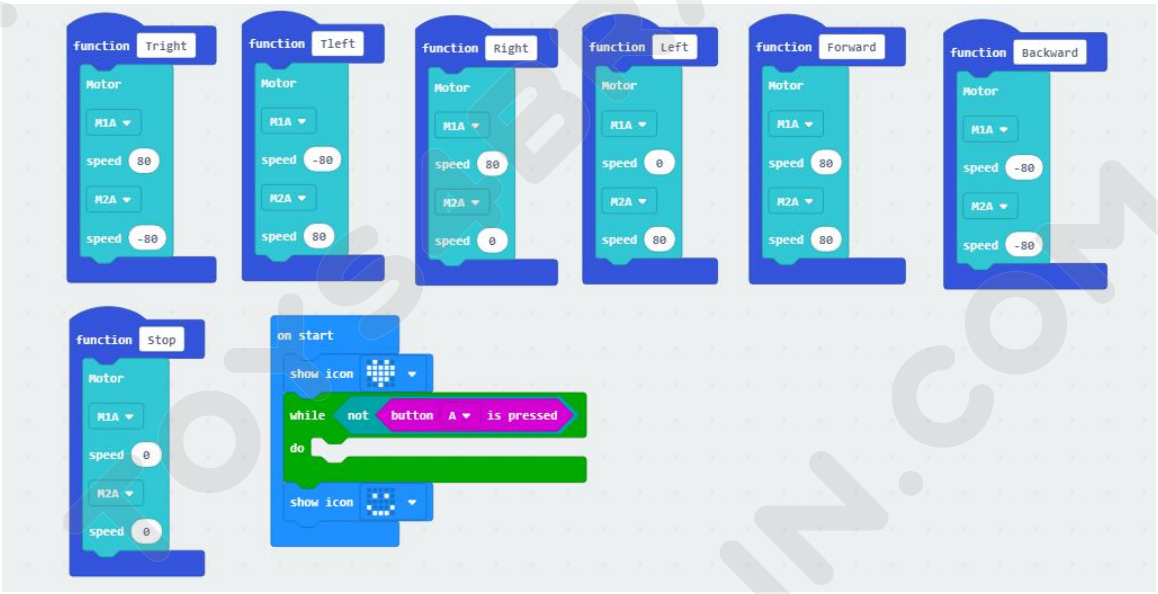

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
0
remainder of 0 ÷ 1
min of 0 and 0
max of 0 and 0
absolute of 0
square root 0
round 0
pick random 0 to 10
constrain 0 between 0 and 0
map 0 from low 0 high 1023 to low 0 high 4
pick random true or false


Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
more
Serial
Control
Extensions
digital read pin P0
digital write pin P0 to 0
analog read pin P0
analog write pin P0 to 1023
analog set period pin P0 to (µs) 20000
map 0
from low 0
from high 1023
to low 0
to high 4
servo write pin P0 to 180


forever
if
digital read pin P0
= 0
then
else
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
P16
P19
P20

Complete code：



Lesson 8 Robot Car following object movement

Overview:

In this lesson we will learn about robot car following object movement.

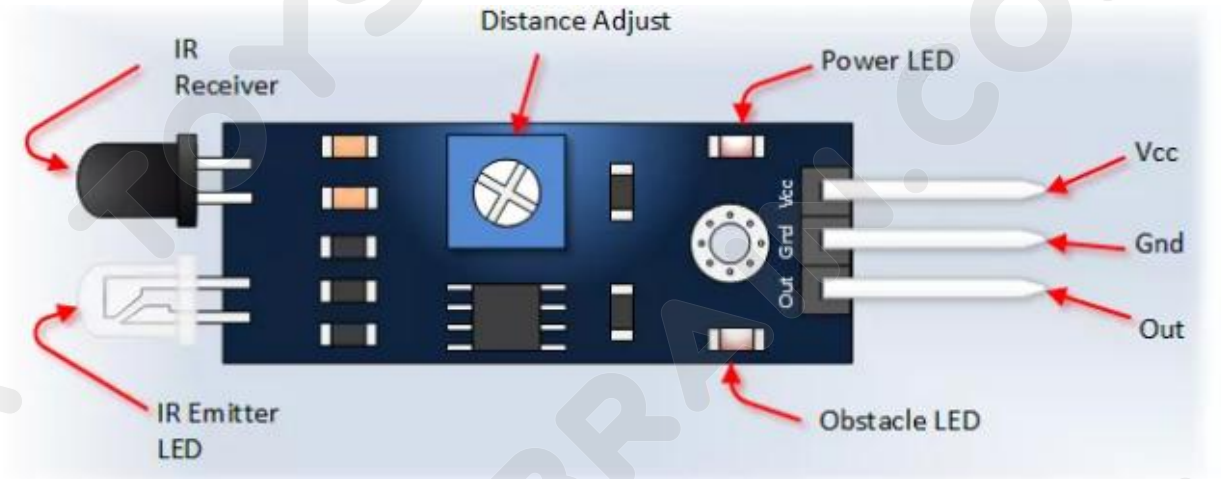
Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared obstacle avoidance sensor module:

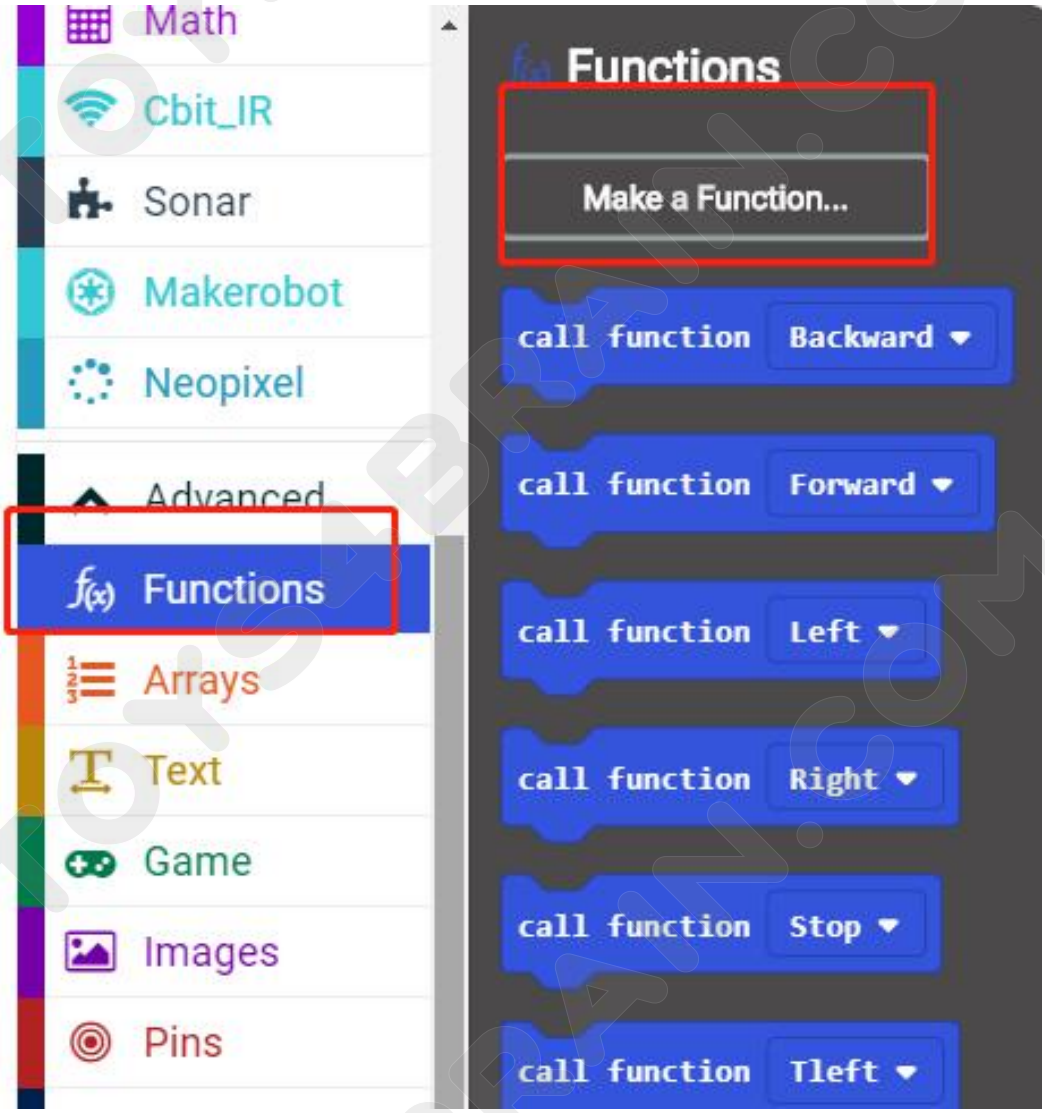
This is yet another one of those modules with cool possibilities. You could for example, sound an alarm when something got too close or you could change the direction of a robot or vehicle.

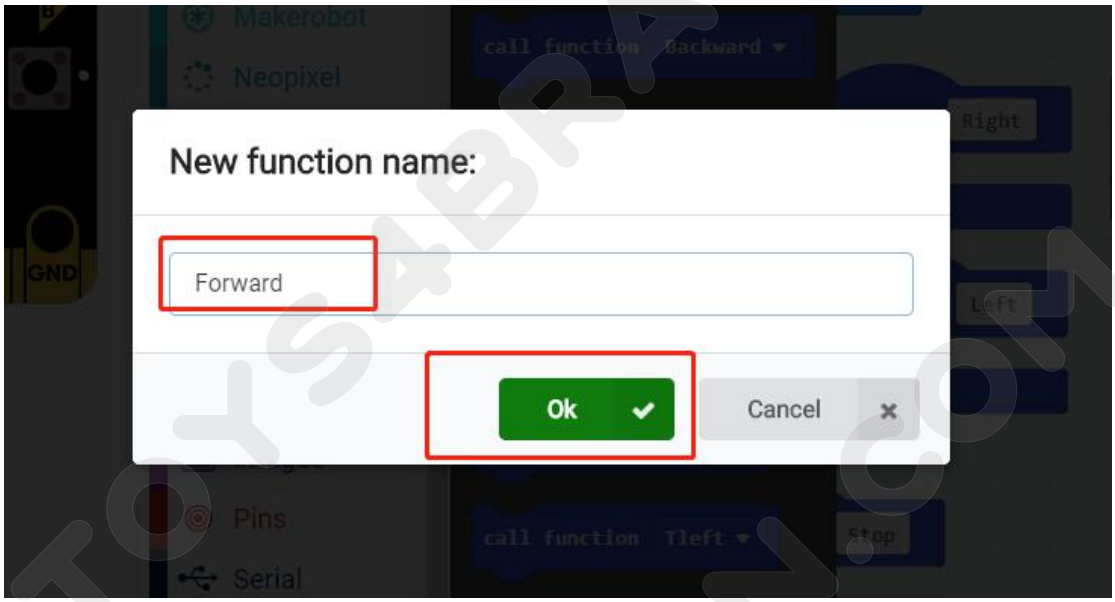
The device consists of an Infrared Transmitter, an Infrared Detector, and support circuitry. It only requires three connections. When it detects an obstacle within range it will send an output low.

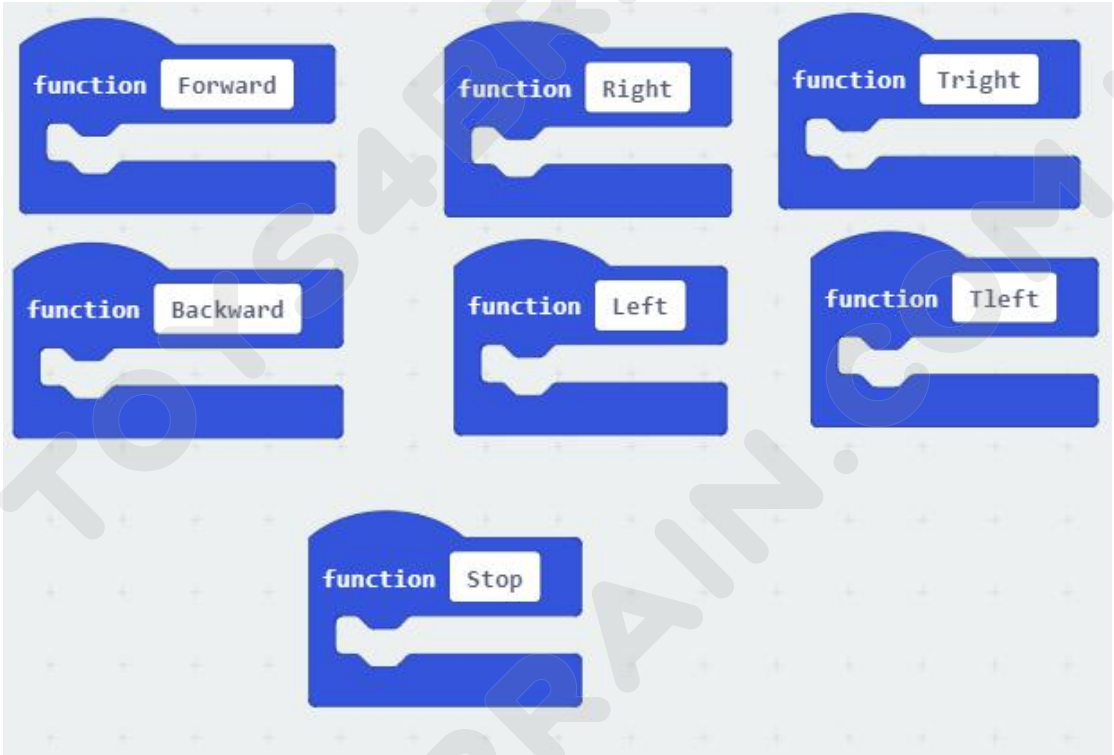


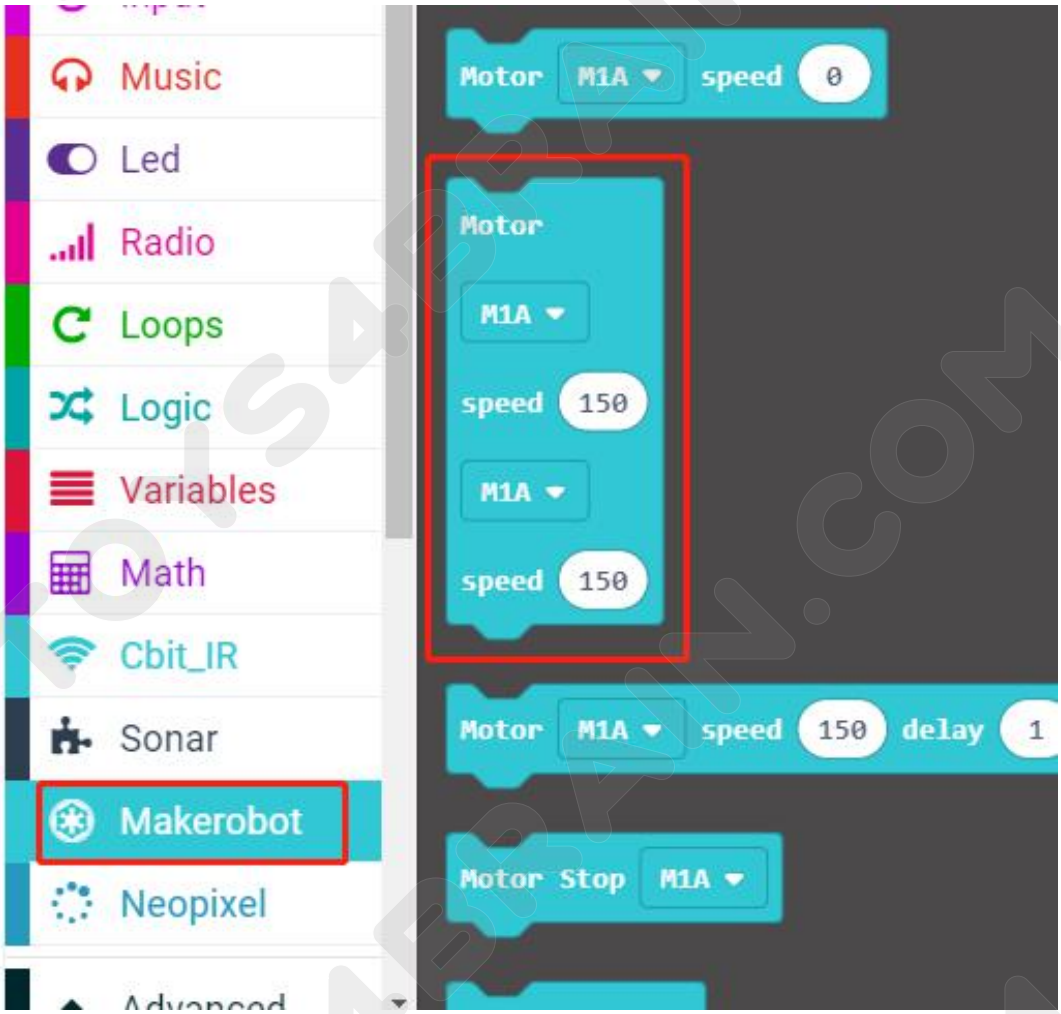
Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

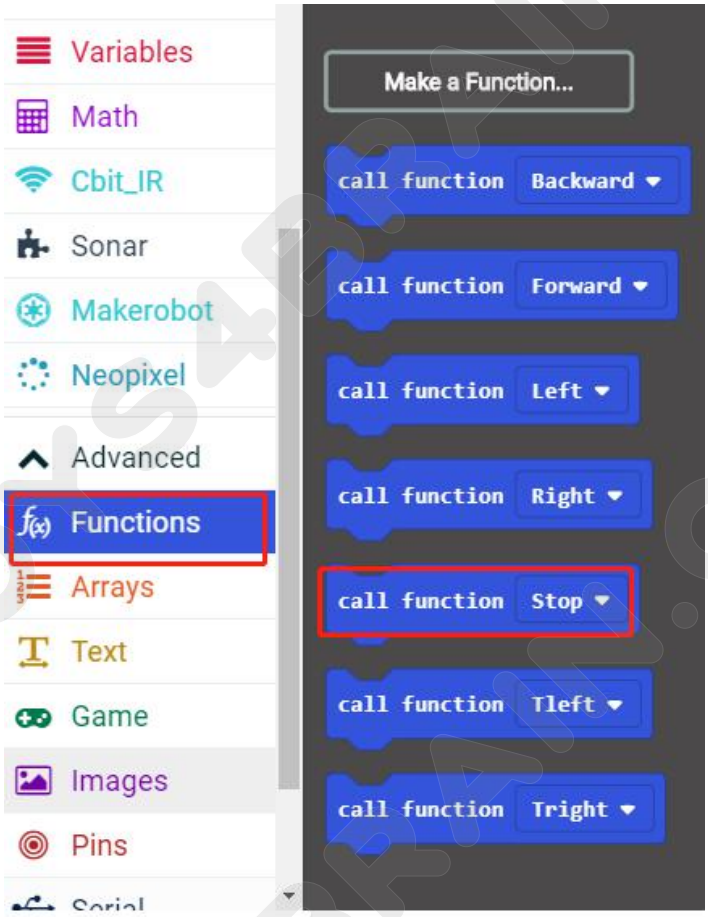


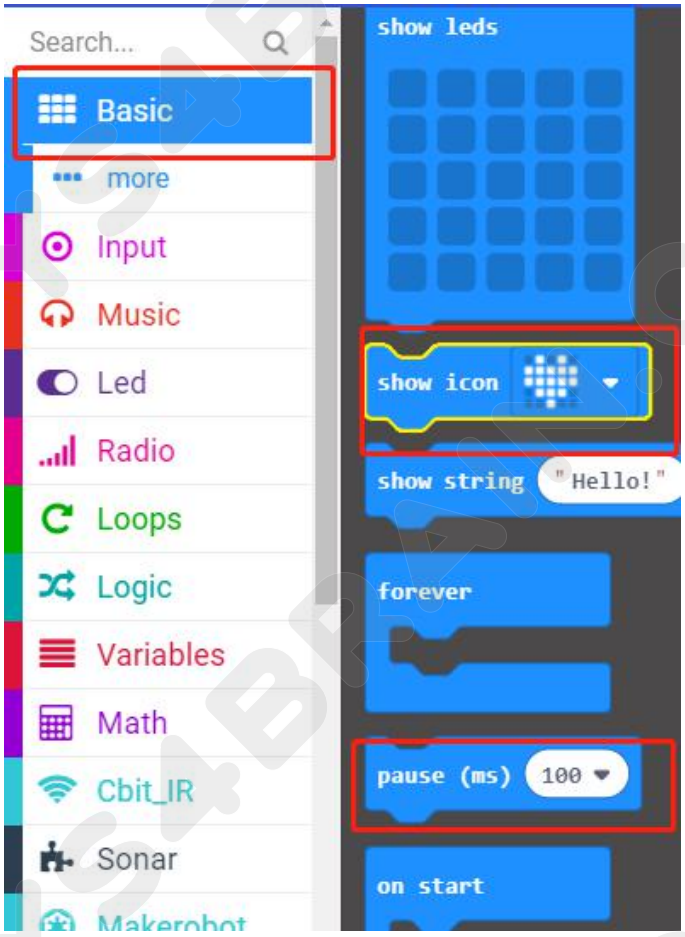

Makerobot
Neopixel
call function Backward
Right
GND
New function name:
Forward
Left
Ok
Cancel
Pins
call function Tleft
Stop
Serial

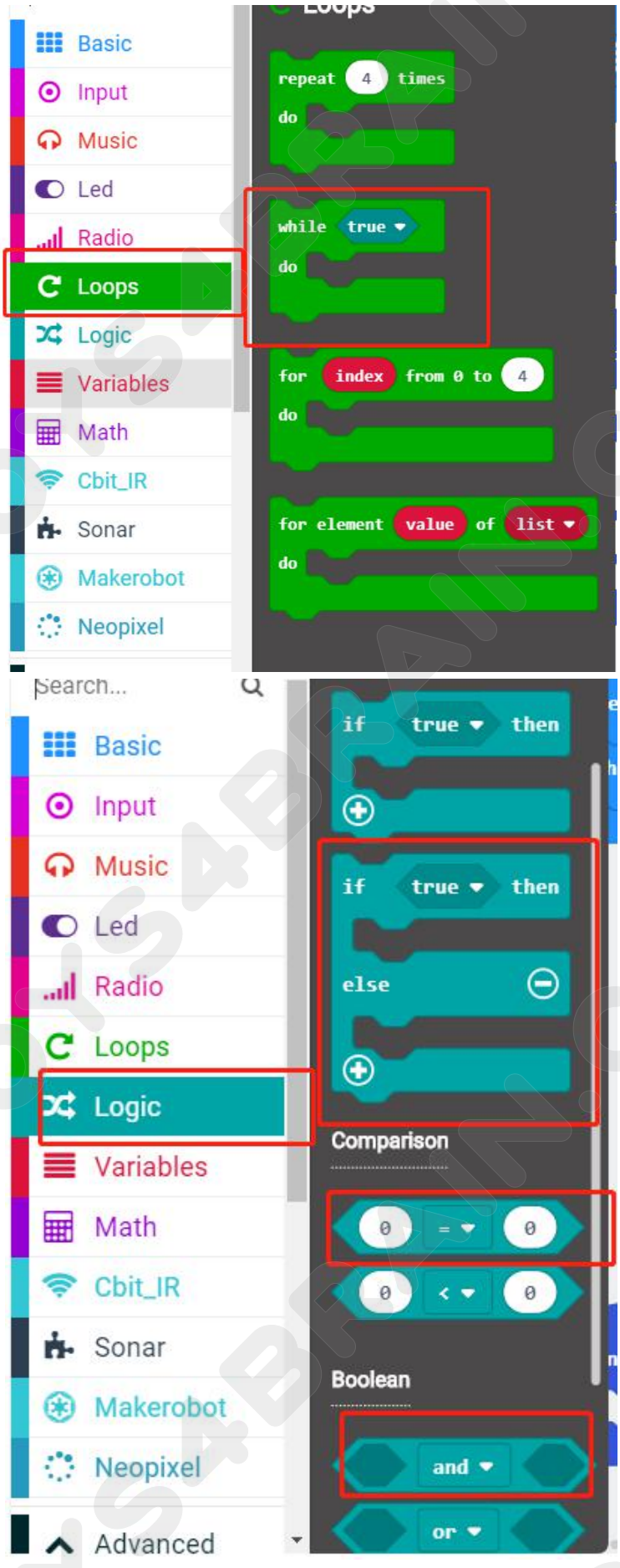

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

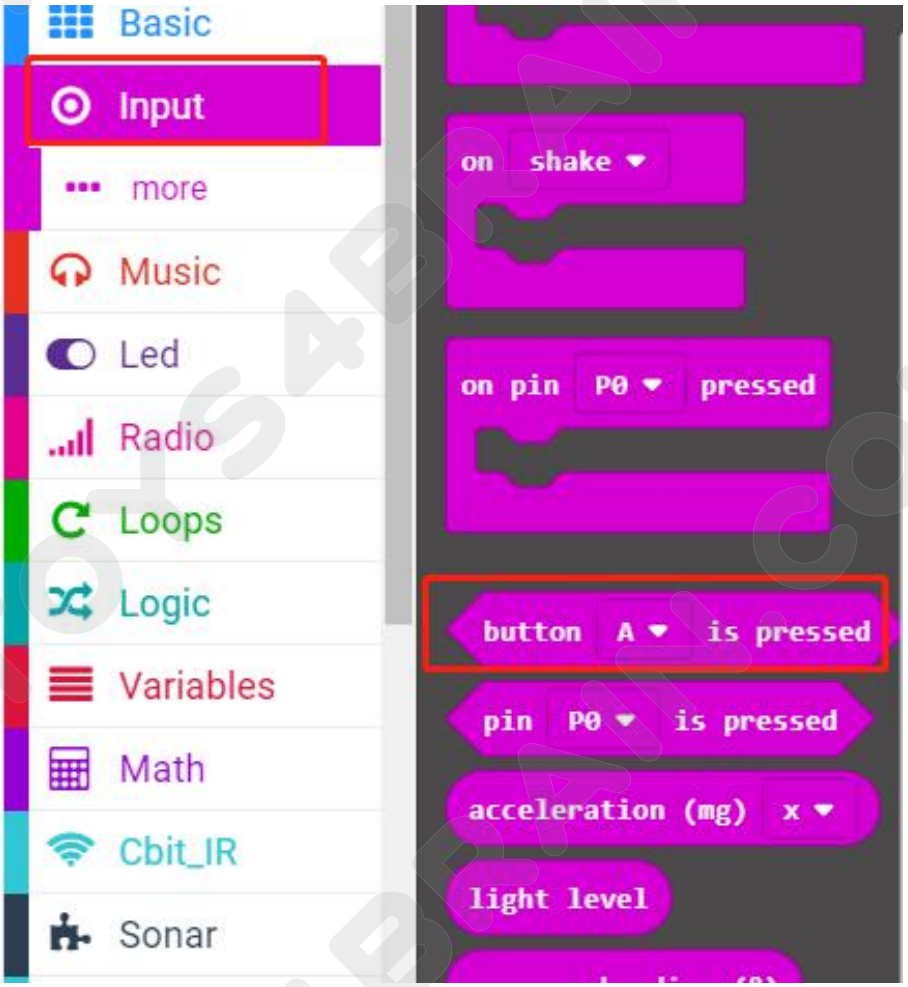

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A

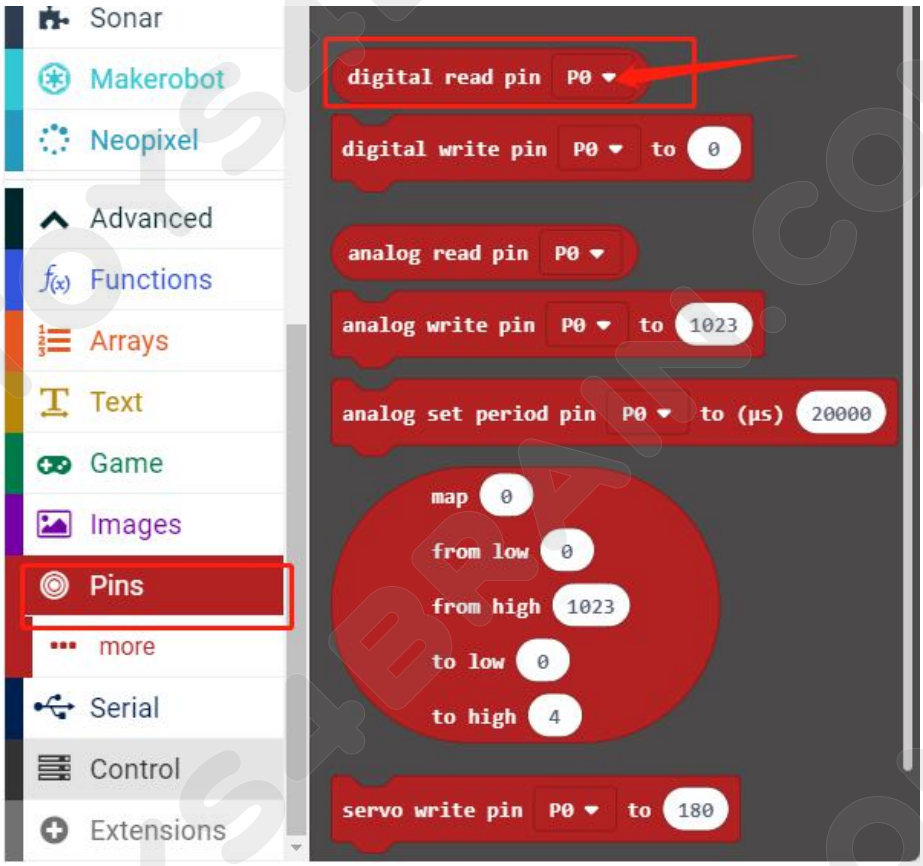

function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

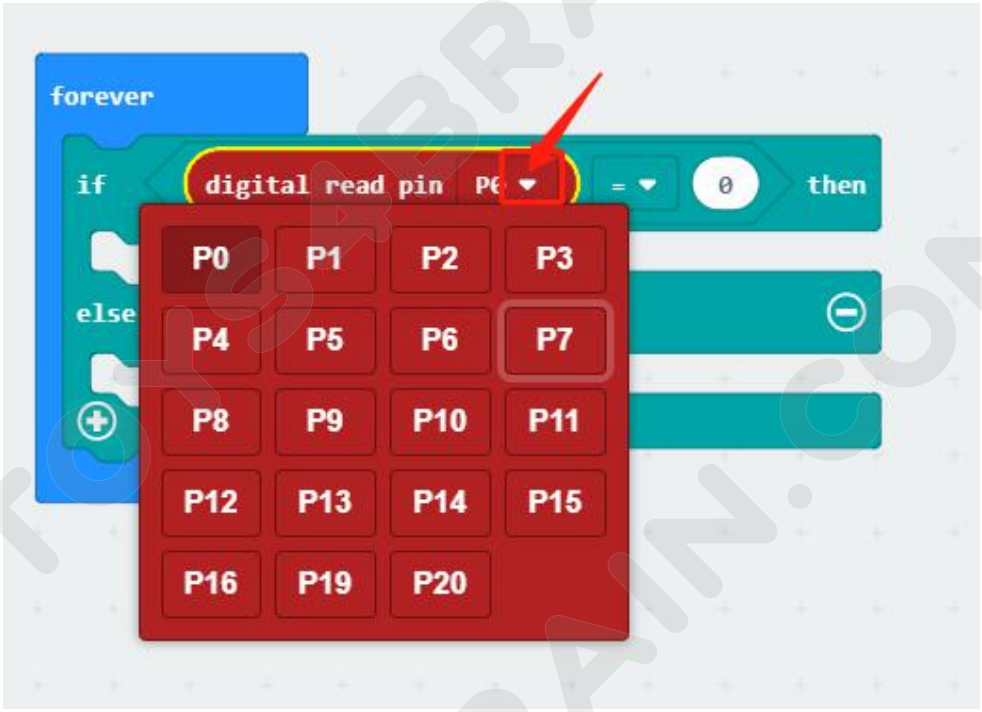

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright


Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
show leds
show icon
show string "Hello!"
forever
pause (ms) 100
on start

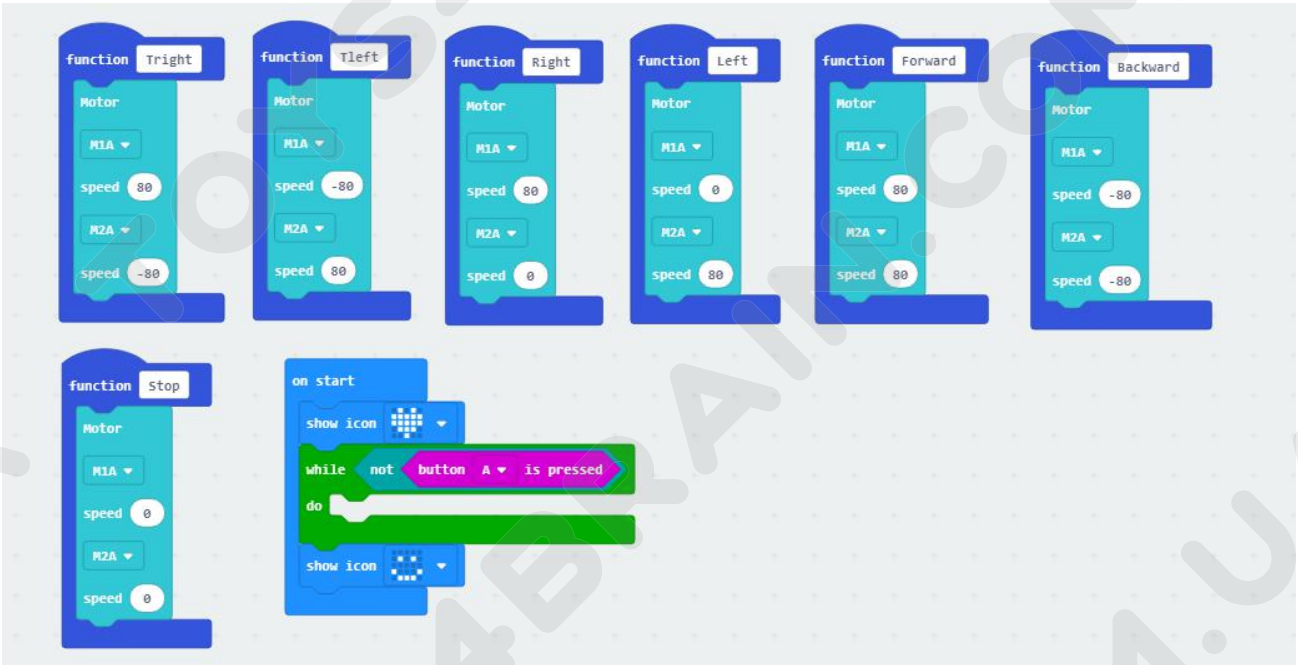

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
repeat 4 times
do
while true
do
for index from 0 to 4
do
for element value of list
do
Search...
if true then
else
Comparison
0 = 0
0 < 0
Boolean
and
or
Advanced

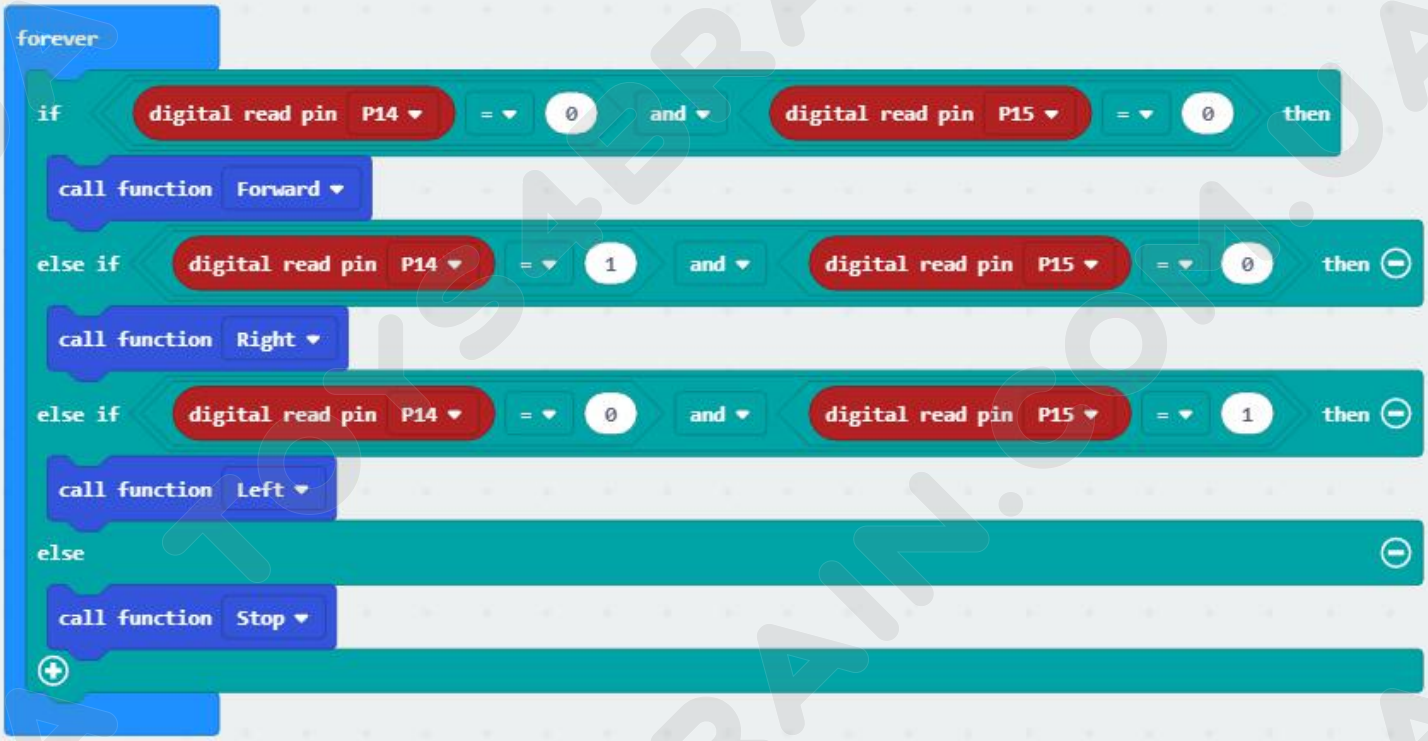

Basic
Input
more
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
on shake
on pin P0 pressed
button A is pressed
pin P0 is pressed
acceleration (mg) x
light level


Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
more
Serial
Control
Extensions
digital read pin P0
digital write pin P0 to 0
analog read pin P0
analog write pin P0 to 1023
analog set period pin P0 to (µs) 20000
map 0
from low 0
from high 1023
to low 0
to high 4
servo write pin P0 to 180



Complete code：




forever
if digital read pin P14 = 0 and digital read pin P15 = 0 then
call function Forward
else if digital read pin P14 = 1 and digital read pin P15 = 0 then
call function Right
else if digital read pin P14 = 0 and digital read pin P15 = 1 then
call function Left
else
call function Stop

Lesson 9 Infrared Remote Control Robot Car

Overview:

In this lesson we will learn about the Infrared Remote Control Robot Car.

Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Infrared receiver module:

• Very low supply current

• Photo detector and preamplifier in one package

• Internal filter for PCM frequency

• Supply voltage: 2.5 V to 5.5 V

• Improved immunity against ambient light

• Insensitive to supply voltage ripple and noise

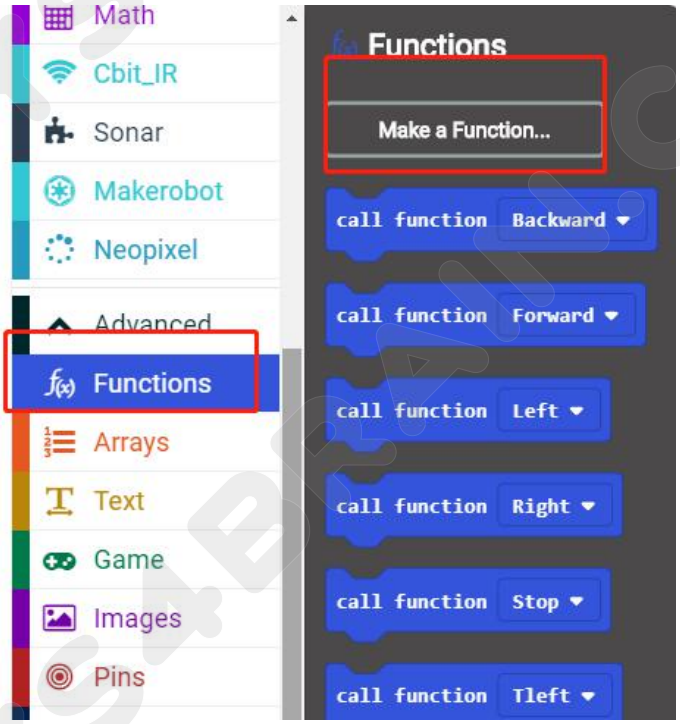
Remote control:

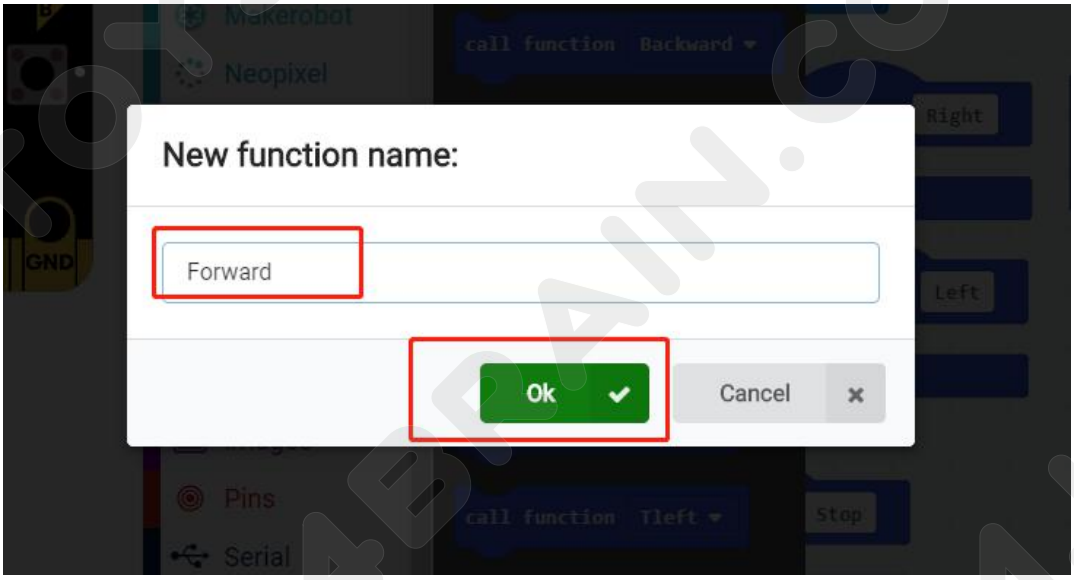
Electronic Device

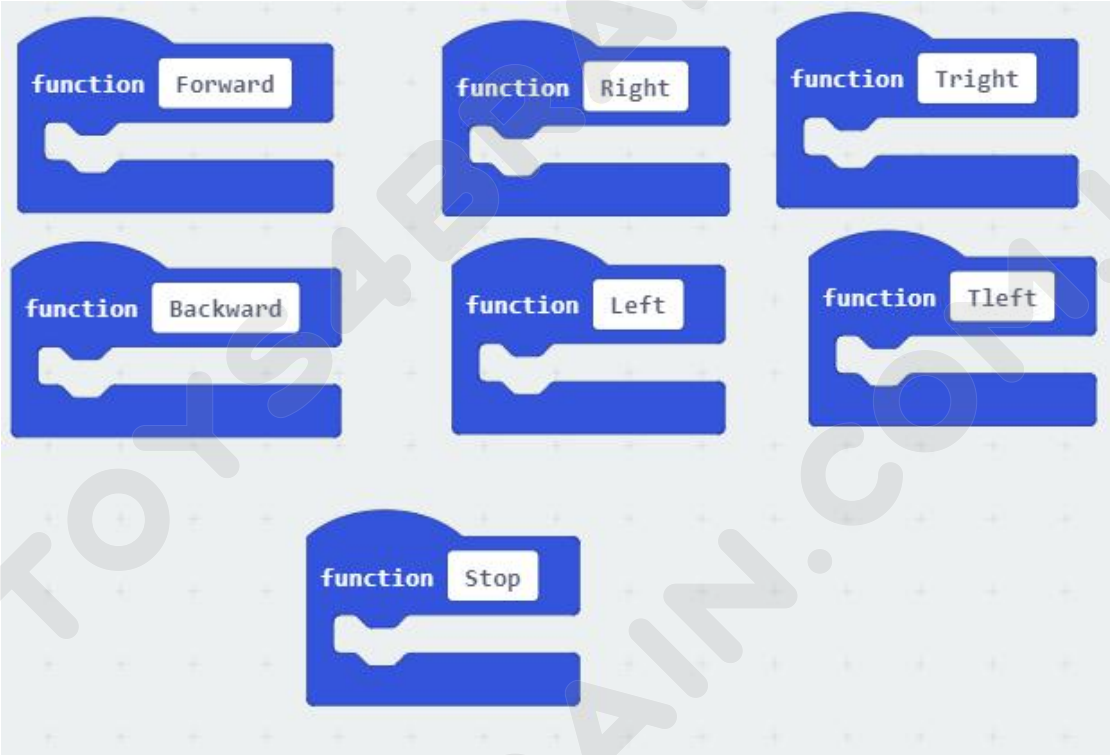
In electronics, a remote control is an electronic device used to operate the device from a distance, usually wirelessly. For example, in consumer electronics, a remote control can be used to operate devices such as a television set, DVD player or other home appliance, from a short distance. A remote control is primarily a convenience feature for the user, and can allow operation of devices that are out of convenient reach for direct operation of controls. In some cases, remote controls allow a person to operate a device that they otherwise would not be able to reach, as when a garage door opener is triggered from outside or when a Digital Light Processing projector that is mounted on a high ceiling is controlled by a person from the floor level.

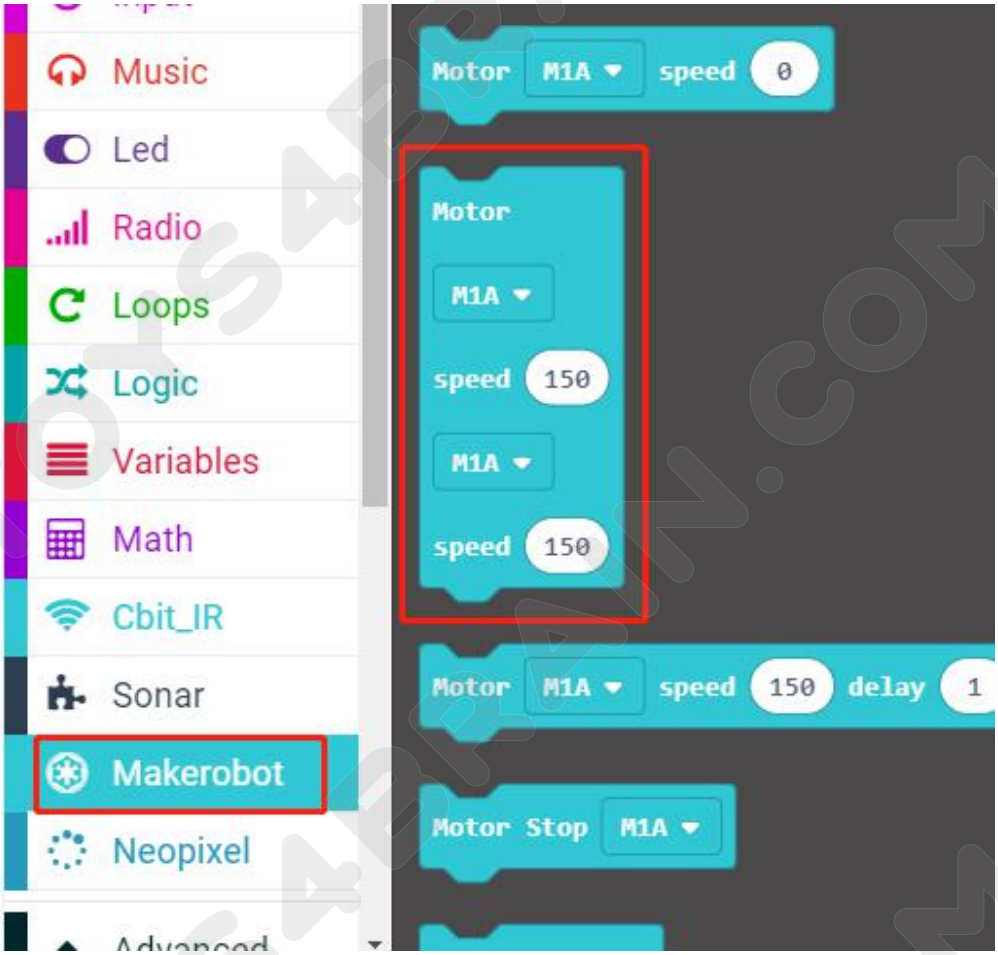
Code:

Then connect the micro:bit to the computer via USB, click the computer icon in the computer, click the URL in the micro: location disk to enter the programming interface, and then click Add Package. Copy github.com/zhuning239/makerobot to the input field, click OK to add the package, and then you can build the block using our extension package.

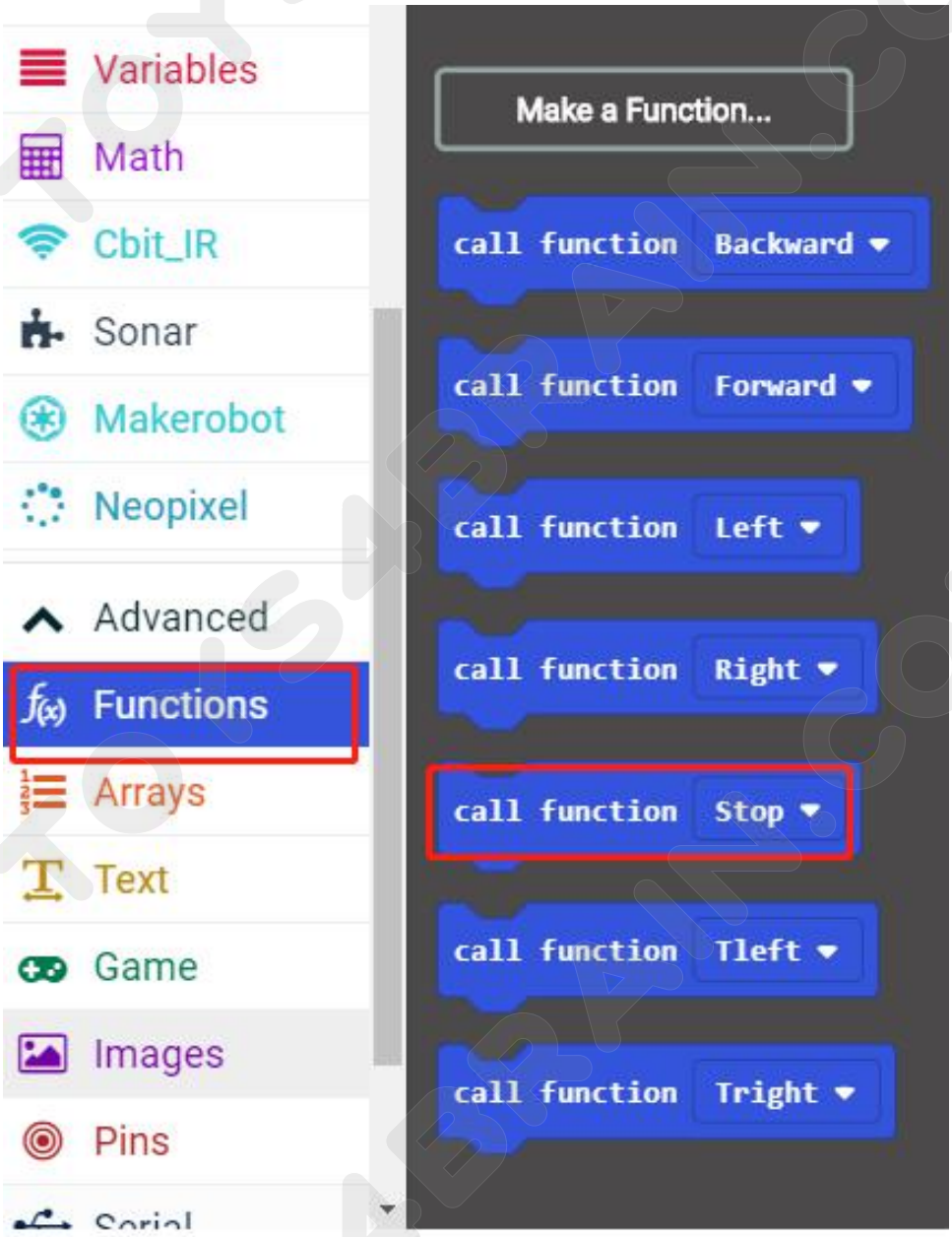




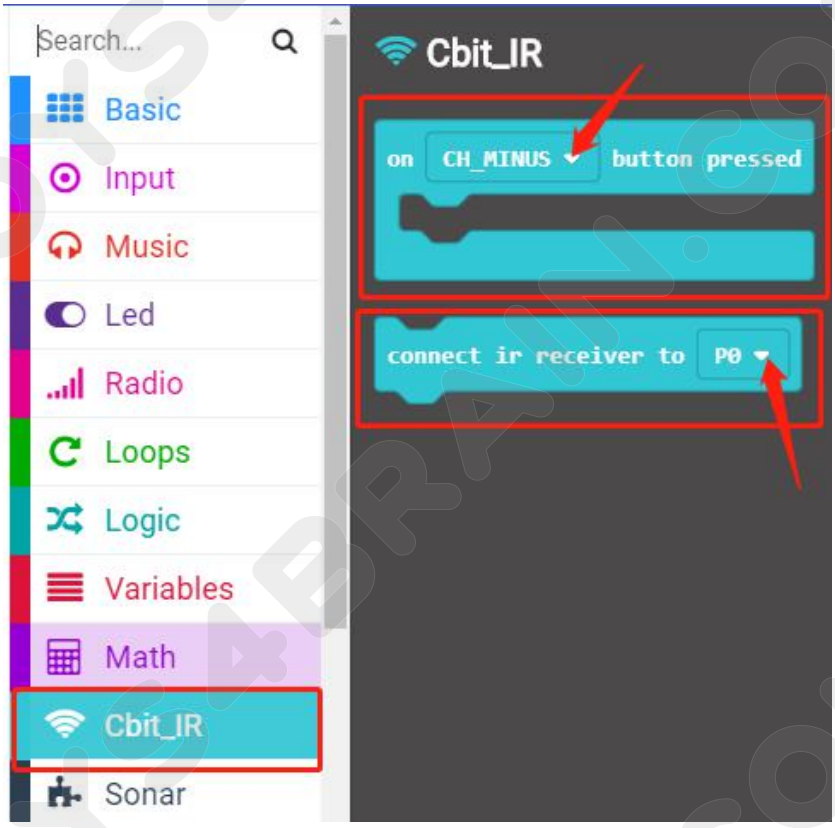

function Forward
function Right
function Tright
function Backward
function Left
function Tleft
function Stop

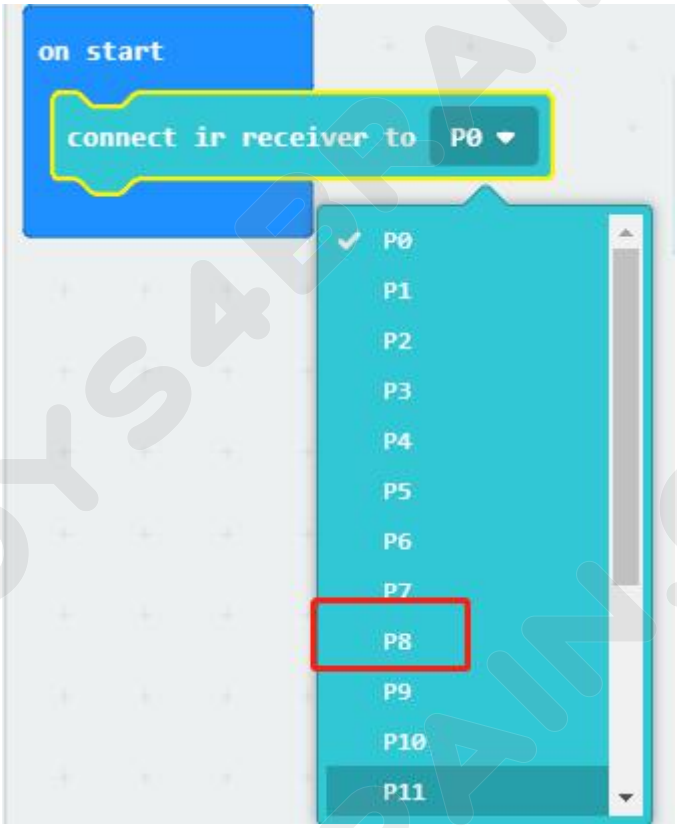

Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Motor M1A speed 0
Motor
M1A
speed 150
M1A
speed 150
Motor M1A speed 150 delay 1
Motor Stop M1A


function Tleft
Motor
M1A
speed -100
M2A
speed 100
function Tright
Motor
M1A
speed 100
M2A
speed -100
function Stop
Motor
M1A
speed 0
M2A
speed 0
function Forward
Motor
M1A
speed 100
M2A
speed 100
function Backward
Motor
M1A
speed -100
M2A
speed -100
function Left
Motor
M1A
speed 0
M2A
speed 90
function Right
Motor
M1A
speed 90
M2A
speed 0

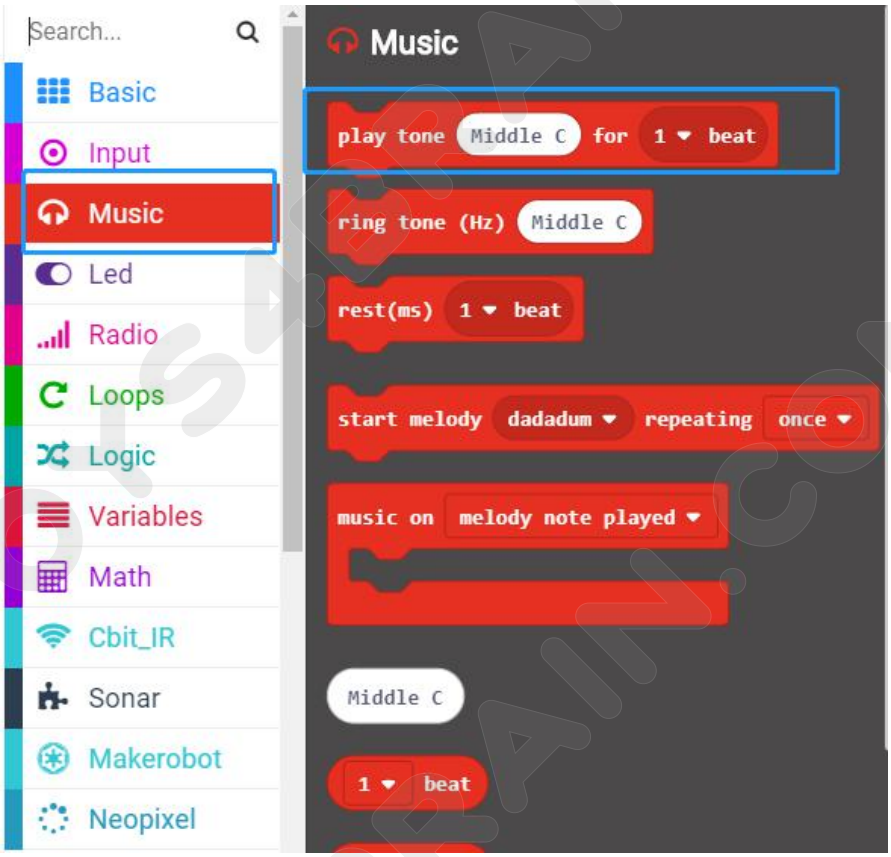

Variables
Math
Cbit_IR
Sonar
Makerobot
Neopixel
Advanced
Functions
Arrays
Text
Game
Images
Pins
Make a Function...
call function Backward
call function Forward
call function Left
call function Right
call function Stop
call function Tleft
call function Tright


Search...
Basic
more
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
show leds
show icon
show string
" Hello! "
forever
pause (ms)
100
on start

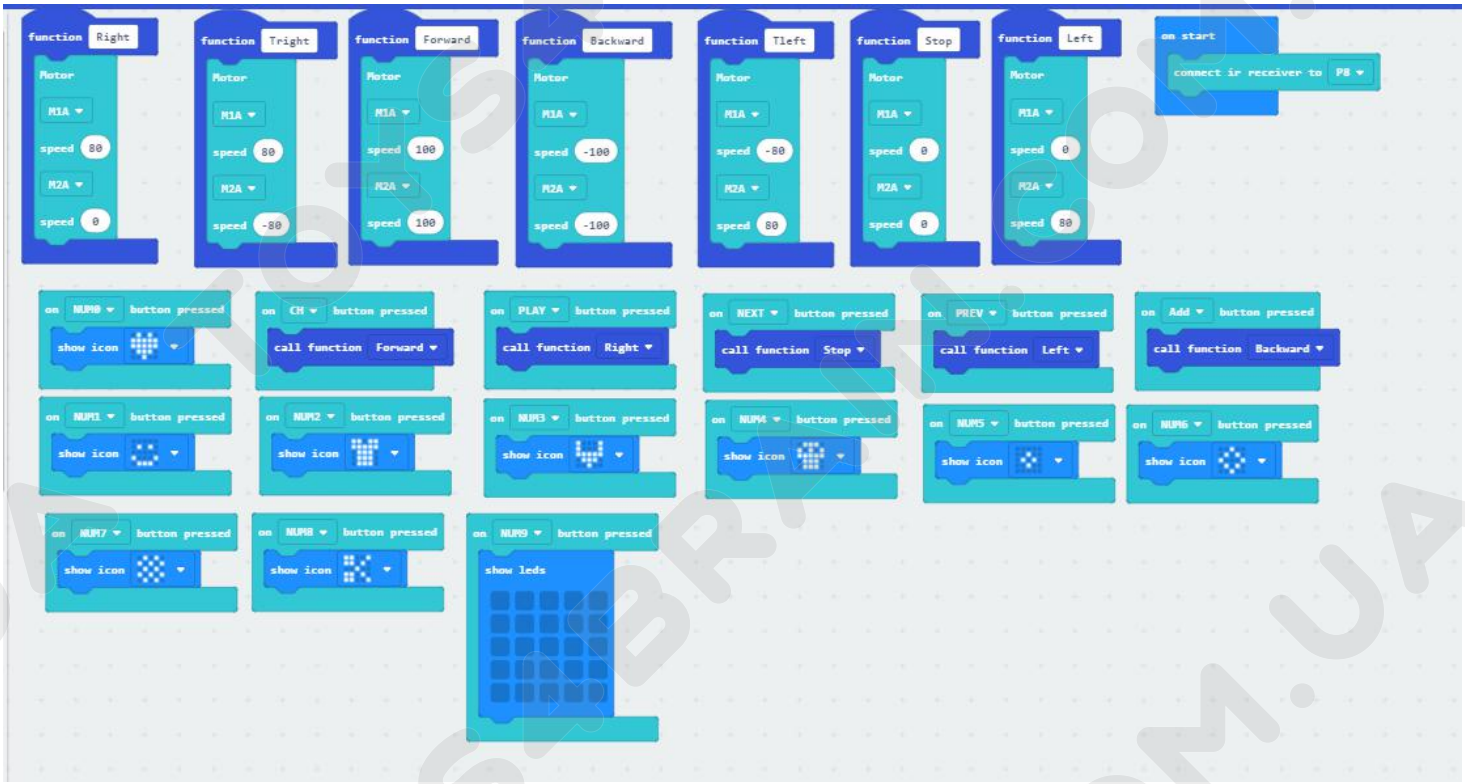

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Cbit_IR
Sonar
Cbit_IR
on
CH_MINUS
button pressed
connect ir receiver to
P0

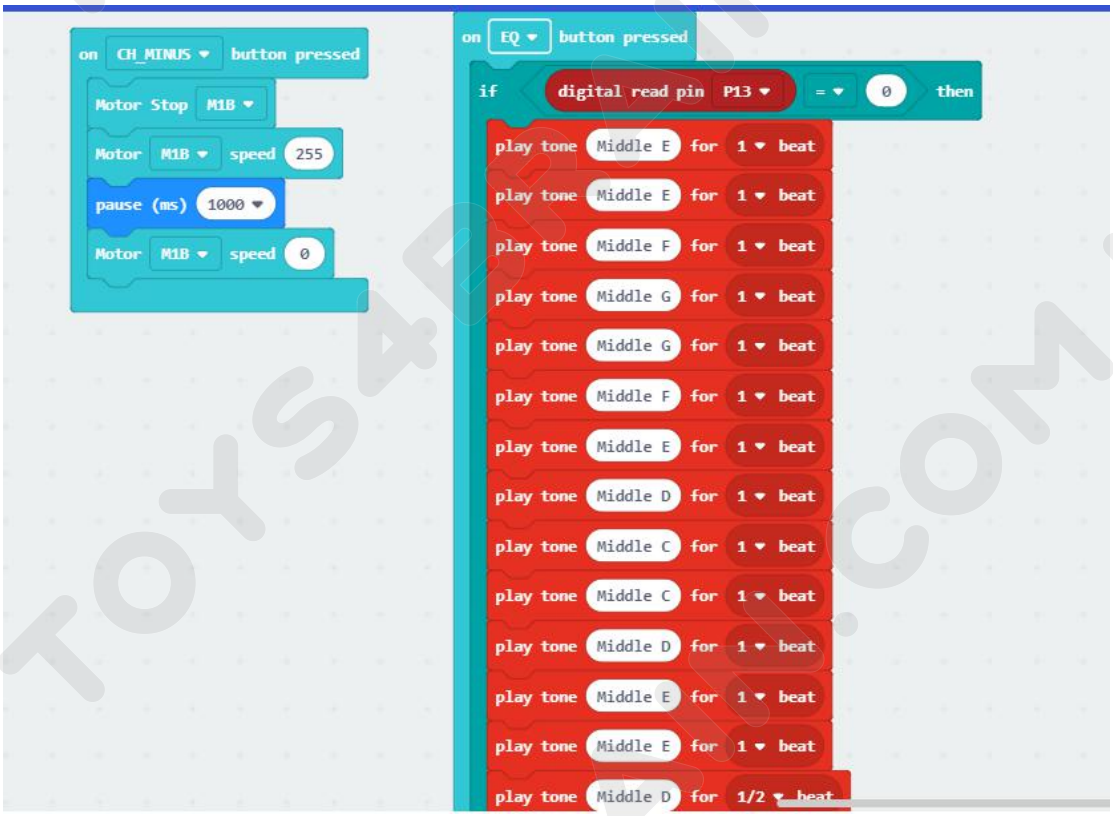

on start
connect ir receiver to P0
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11


on CH_MINUS button pressed
CH_MINUS
CH
CH_Add
PREV
PLAY
NUM_200
NEXT
NUM_100
Minus
Add
EQ
NUM0



Complete code：



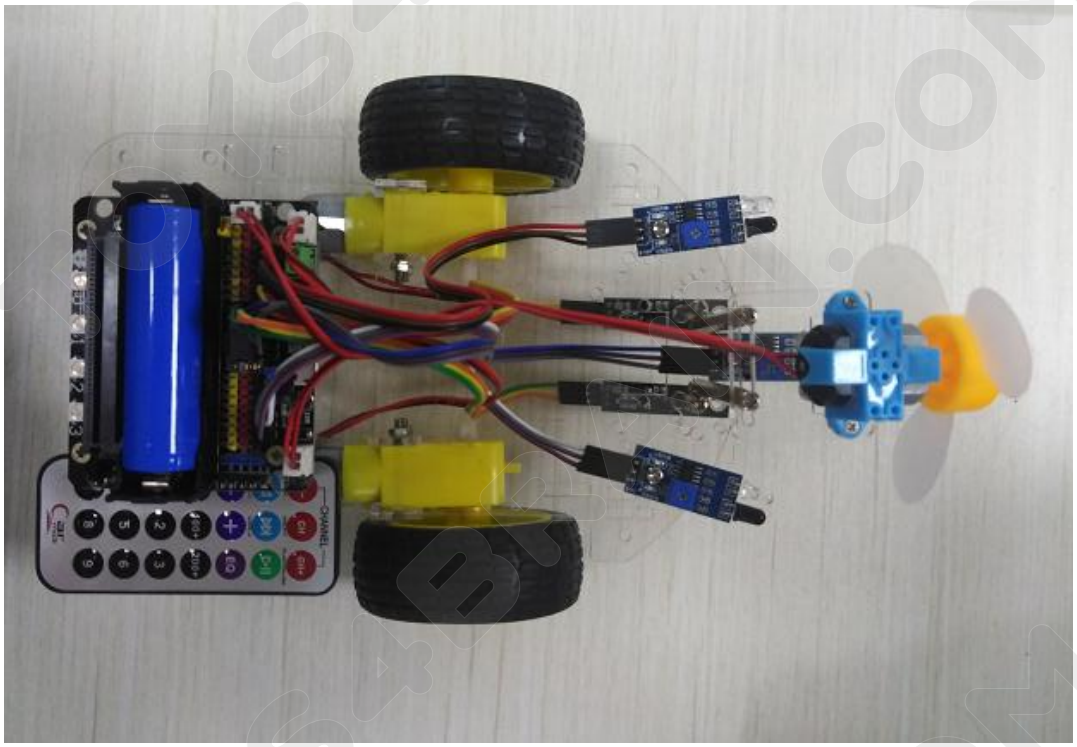

on CH_MINUS button pressed
Motor Stop M1B
Motor M1B speed 255
pause (ms) 1000
Motor M1B speed 0
on EQ button pressed
if digital read pin P13 = 0 then
play tone Middle E for 1 beat
play tone Middle E for 1 beat
play tone Middle F for 1 beat
play tone Middle G for 1 beat
play tone Middle G for 1 beat
play tone Middle F for 1 beat
play tone Middle E for 1 beat
play tone Middle D for 1 beat
play tone Middle C for 1 beat
play tone Middle C for 1 beat
play tone Middle D for 1 beat
play tone Middle E for 1 beat
play tone Middle E for 1 beat
play tone Middle D for 1/2 beat


play tone Middle D for 2 beat
play tone Middle E for 1 beat
play tone Middle E for 1 beat
play tone Middle F for 1 beat
play tone Middle G for 1 beat
play tone Middle G for 1 beat
play tone Middle F for 1 beat
play tone Middle E for 1 beat
play tone Middle D for 1 beat
play tone Middle C for 1 beat
play tone Middle C for 1 beat
play tone Middle D for 1 beat
play tone Middle E for 1 beat
play tone Middle D for 1 beat
play tone Middle C for 1/2 beat


play tone Middle D for 1 beat
play tone Middle D for 1 beat
play tone Middle E for 1 beat
play tone Middle C for 1 beat
play tone Middle D for 1 beat
play tone Middle E for 1/2 beat
play tone Middle F for 1/2 beat
play tone Middle E for 1 beat
play tone Middle C for 1 beat
play tone Middle D for 1 beat
play tone Middle E for 1/2 beat
play tone Middle F for 1/2 beat


play tone Middle E for 1 beat
play tone Middle D for 1 beat
play tone Middle C for 1/2 beat
play tone Middle D for 1/2 beat
play tone Low G for 1 beat
play tone Middle E for 1/2 beat
play tone Middle E for 1/2 beat
play tone Middle E for 1 beat
play tone Middle F for 1 beat
play tone Middle G for 1 beat
play tone Middle G for 1 beat
play tone Middle F for 1 beat
play tone Middle E for 1/8 beat
play tone Middle F for 1/8 beat

Physical picture:



Lesson 10 Bluetooth remote control robot car

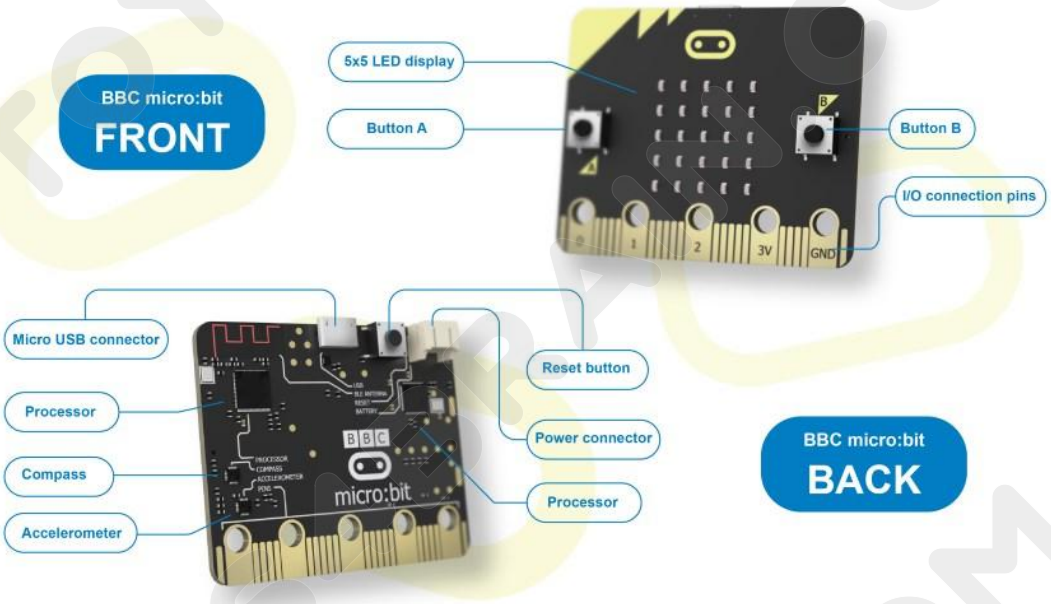
Overview:

In this lesson we will learn about Bluetooth remote control robot car.

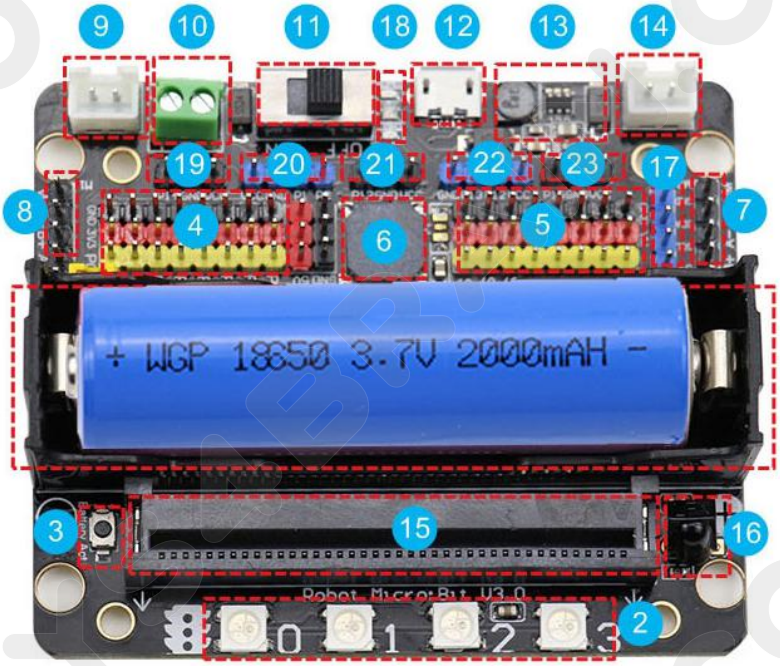
Component Required:

- USB data cable * 1
- OKYSTAR DIY Car Robot * 1

Micro:bit



Robot micro:bit V3.0 (extension board):



1, lithium battery holder

2, four-way full color programmable RGB

3, anti-reverse battery activation button

4, micro: bit 8 way IO port

5, 8 way servo interface

6, programmable passive buzzer

7, DC motor / stepper motor interface

8, DC motor / stepper motor interface

9, the robot left motor interface

10, 5V external power supply interface

11, the power switch

12, micro USB charging interface

13, charging circuit

14, the robot right motor interface

15, micro:bit gold finger interface

16, IR infrared remote control receiver

17, I2C interface

18, power indicator

19, the left infrared obstacle avoidance interface

20, infrared tracking module interface

21, fire extinguishing sensor interface

22, ultrasonic module interface

23, the right infrared obstacle avoidance interface

Complete code：

Due to the revision of the online web programming of microbit's official website, our Bluetooth remote control program cannot be directly imported into the microbit disk from the online program, otherwise it will not be able to connect to the Bluetooth, and will also flash back even the Bluetooth is connected

Solution:
1.Download the program from our network drive and drag it to the microbit drive symbol directly. (note: our program cannot be imported into online programming, otherwise the Bluetooth module cannot be used)

Note:

About App We only provide the Android version here. For other versions, you can also search for related apps on other related websites to control our Bluetooth car.