# Qbot User Manual

# Overview

LewanSoul Qbot is a Smart Robort Car Kit that can programmable, with Ultrasonic Sensor, Light Sensor, Line Tracking Sensor, OLED Display, Bluetooth Module, Infrared Remote Control, Free Mobile APP for Arduino.

**Product Parameters:**

| | |
|---|---|
| Net Weight | About 0.308 pounds |
| Material | fiberglass |
| Bluetooth module | support |
| Package Dimensions | 9.8 x 6.2 x 2.4 inches |

**Product list:**

| | |
|---|---|
| Motor driven board | **1** |
| Upper chassis | **1** |
| Ultrasonic sensor | **1** |
| Charger | **1** |
| Infrared remote control | |
| Screwdriver | **1** |
| Screw and copper pillar kit | **1** |
| | **1** |

# Catalog

# Main function introduction

Qbot is an educational robot based on graphical programming and Arduino platform. This robot is perfect for learning STEM and robotic knowledges.Perfect choice for robot lovers and beginners (Age is better than 8 years old) to learn robotics, electronics and program.

Qbot has more than 10 sensor modules, highly integrated body makes assembly very convenient,which helps you save time installing the sensor module. Compared with many other robot products that need to be built for a long time, the whole assembly process of Qbot only takes 2 minutes, so that you are no longer bothered by the tedious assembly. The holes in the robot can be compatible with the LEGO bricks and you can extend its function yourself, this means that Qbot will have infinite possibilities.

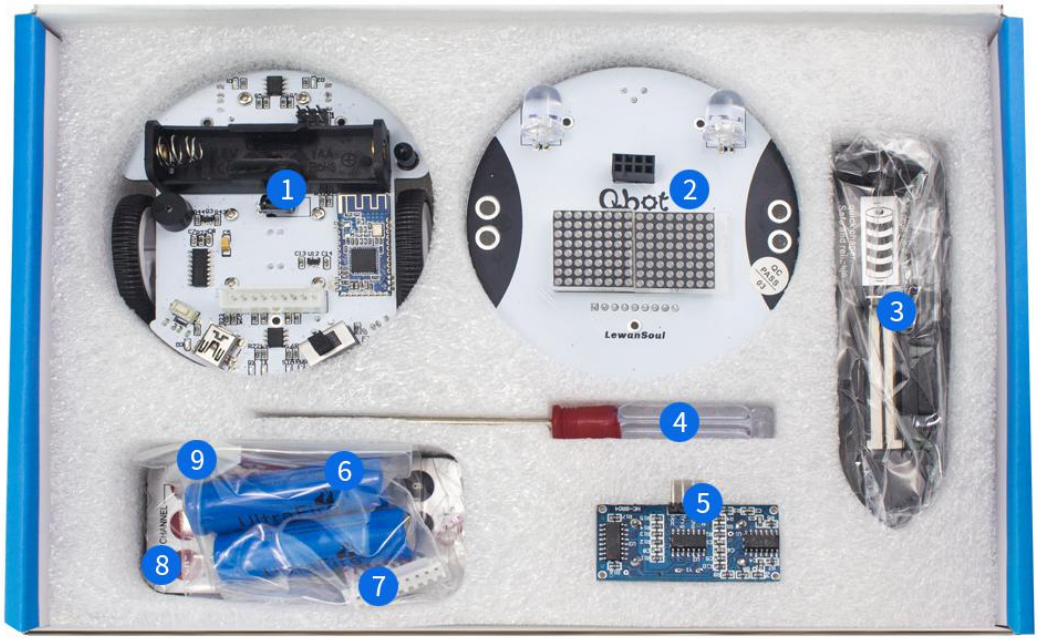
In order to remote control Qbot more easily,we provide customers with a mobile APP. The phone connects to Qbot via Bluetooth 4. APP internally presets 3 modes of work to enhance the interest of Qbot.
Qbot uses Drag and drop visual graphic programming software - WeMake, which is a software developed based on Scratch 2.0. It allows us to quickly learn programming and control robots.

# Structure diagram

1 Motor Driven Board  2 Upper Plate  3 Power Adapter  4 Screwdriver

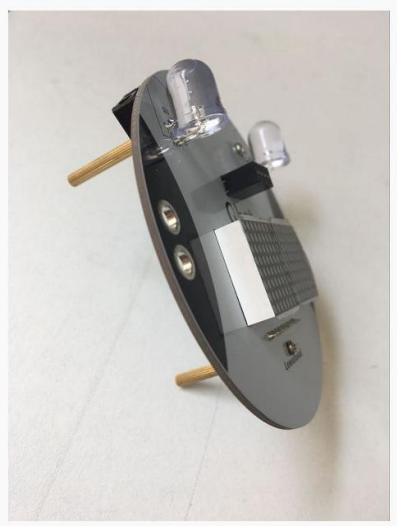
5 Ultrasonic Sensor  6 Lithium Battery  7 Flat Cable

8 Infrared Remote Control  9 Copper Columns & Screws

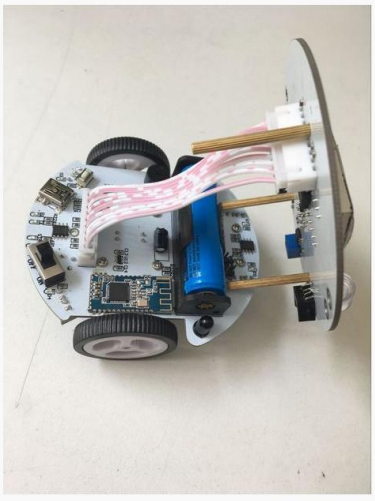


# The assembly of Qbot

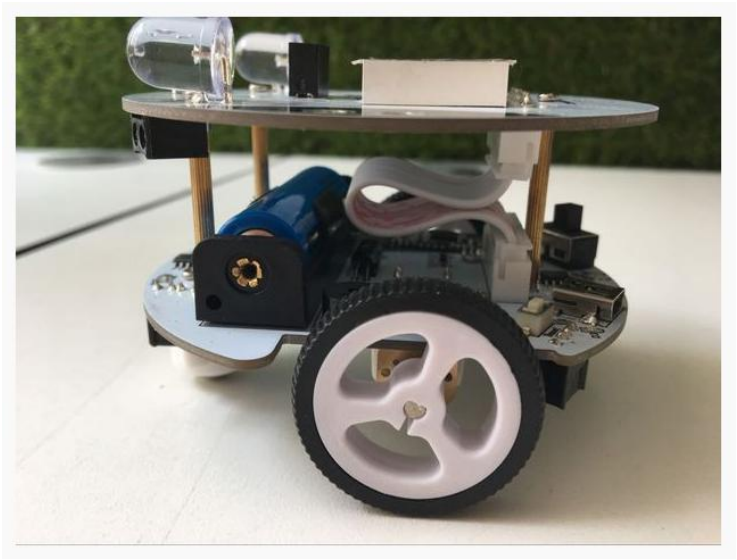
Assembly steps:
Step 1: We can fix 3 copper pillars onto control board.



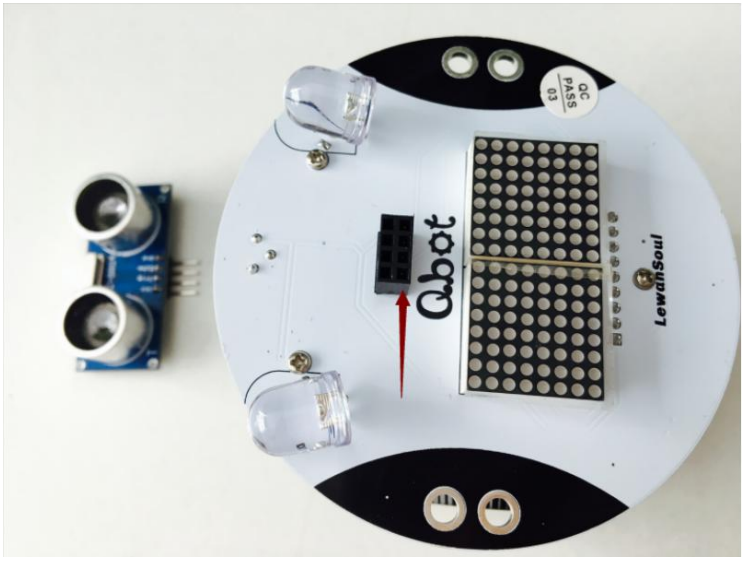
Step 2:Then use wires to connect two board and put lithium battery onto the motor board.

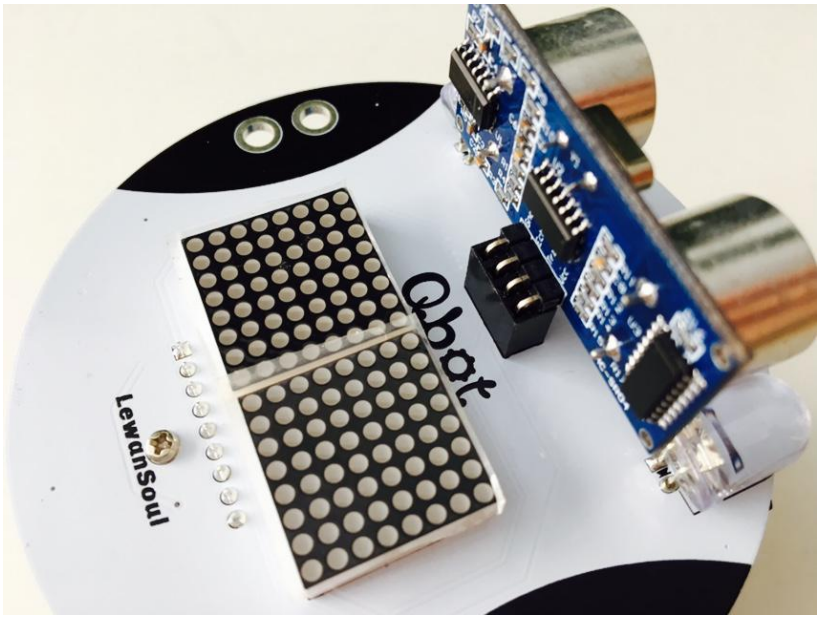


Step 3: Use screws to join two board together(control board and motor board).



Step 4: Fix ultrasonic module to the right position. (There are two rows of serial ports,you need to insert the ultrasonic sensor into the back row)






Video: Assembly
(You can also refer to the tutorial video)

# How to use Wemake to program Qbot

## 1.How to install WeMake on your computer

Wemake is a graphical programming tool developed based on scratch2.0, we can use this software to control. Through Wemake programming we can achieve the interaction between software and the physical world to make QBot do corresponding response according to the changes in the environment .
Wemake's simple operability makes it possible for everyone to build their own intelligent robots without having to learn esoteric electronic knowledge.
You can download the installation file of Wemake at ,,,,,, or contact the salesperson for it.
Install Wemake
Open installation file and select installation path.
Click “next”

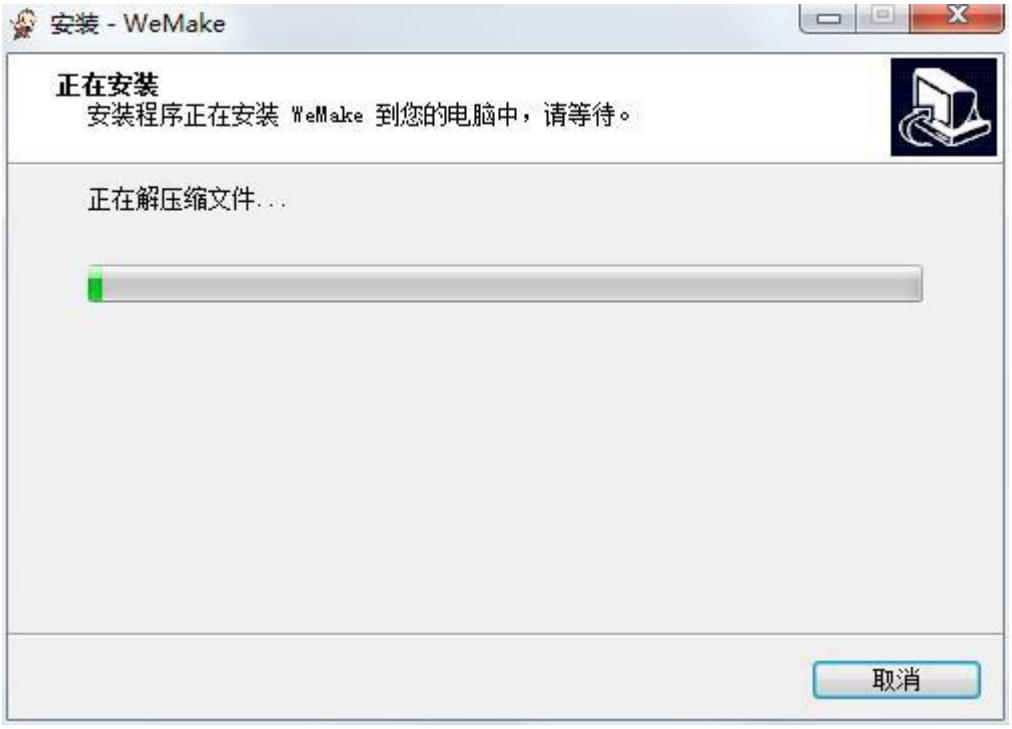

select destination location
Where do you want to install wemake ?
The installer will install wemake into the following folder

Click next to continue , if you want to select other folder ,click"browse"
At least 426.3MB of free disk space is required


Select additional tasks
What additional tasks do you want the installer to perform ?
Select the additional task that you want the installer to perform when it install Wemake, then click "next" button.


The installer is now ready to install wemake into your computer

Click install to continue with this installer, if you want to review or change the settings, please click “back”
Destination location additional task Additional shortcuts
Create a desktop shortcut
Click install




Installing
The installer is installing wemake into your computer, please wait.
Extracting compressed files
waiting for installation patiently


The wemake installation wizard finishes
The installer has installed Wemake into your computer,this application can be run by selecting the installed shortcut
Cilick “finish”exit the installer

Only after QBot is connected to Wemake, we can use Wemake to program QBot.
How can we connect Qbot to Wemake?
First, we need to connect Qbot to computer with USB cable, and open Wemake software.


computer
user manual
WeMake
recycle
videoconv...
xdhszClien...
OBS Studio
word file
QQ截图
20171011...
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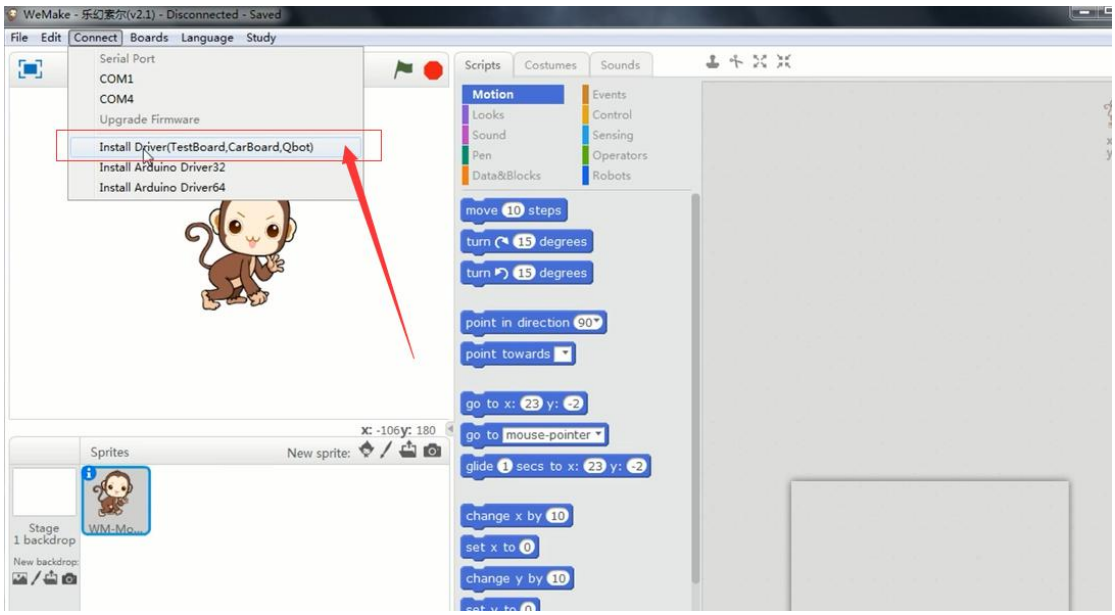
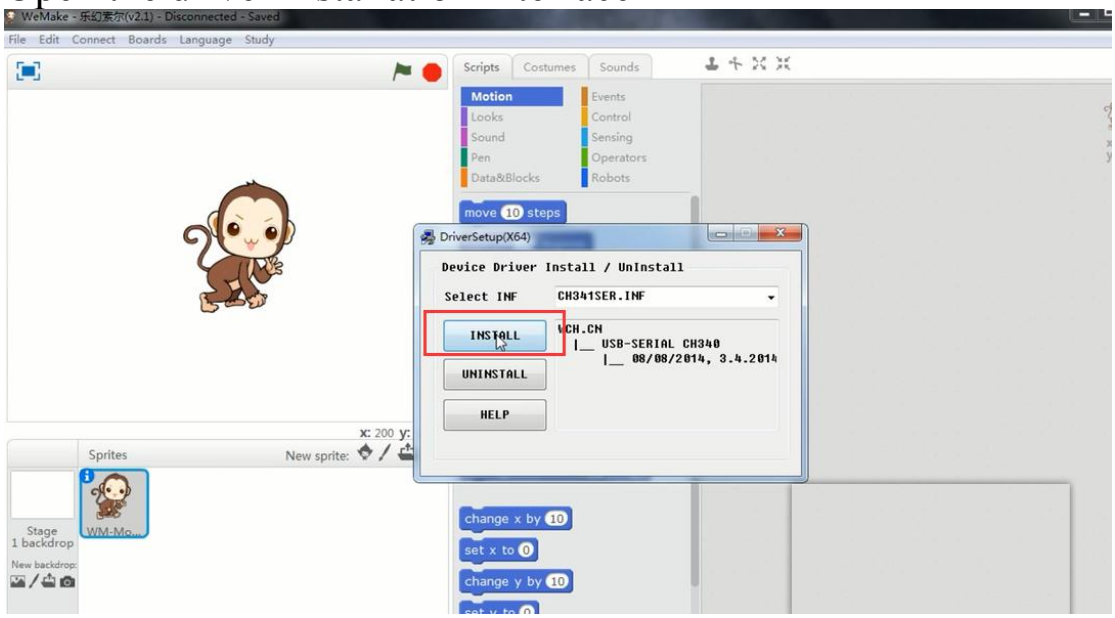
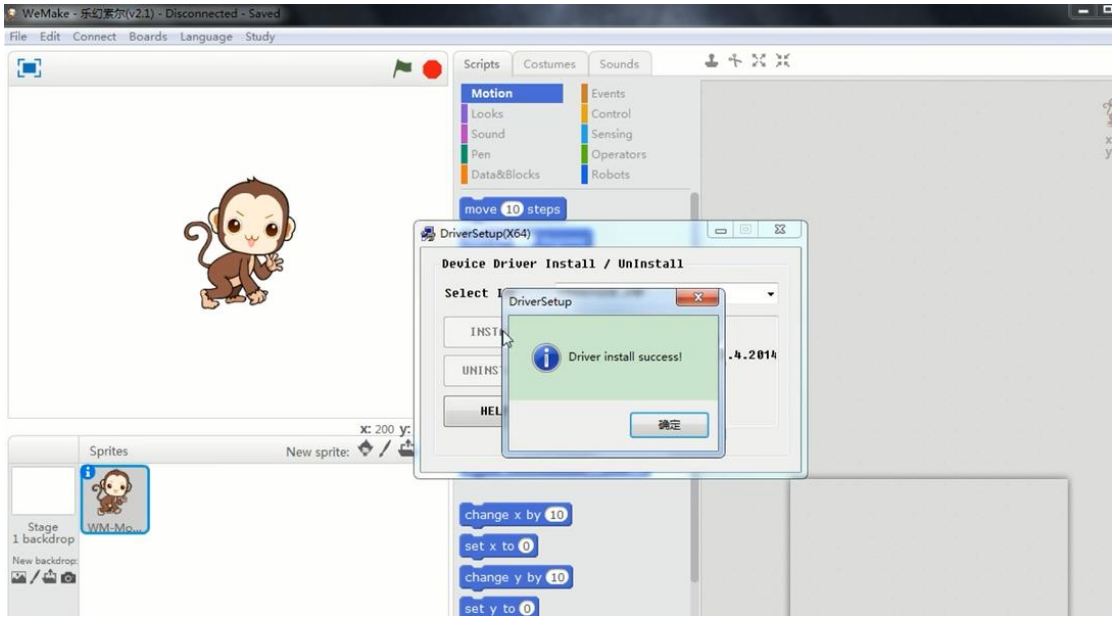
## 2.How to install the driver

Ues the WeMake at the first time, you should install the driver. select the corresponding port in Menu>connect>Install Driver



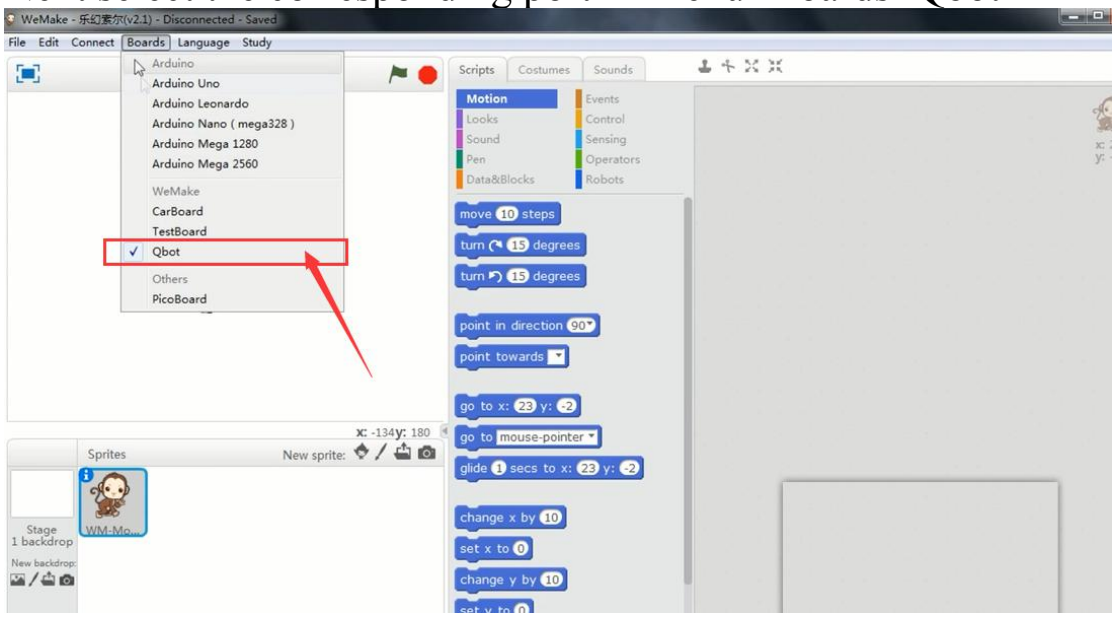

Open the driver installation interface



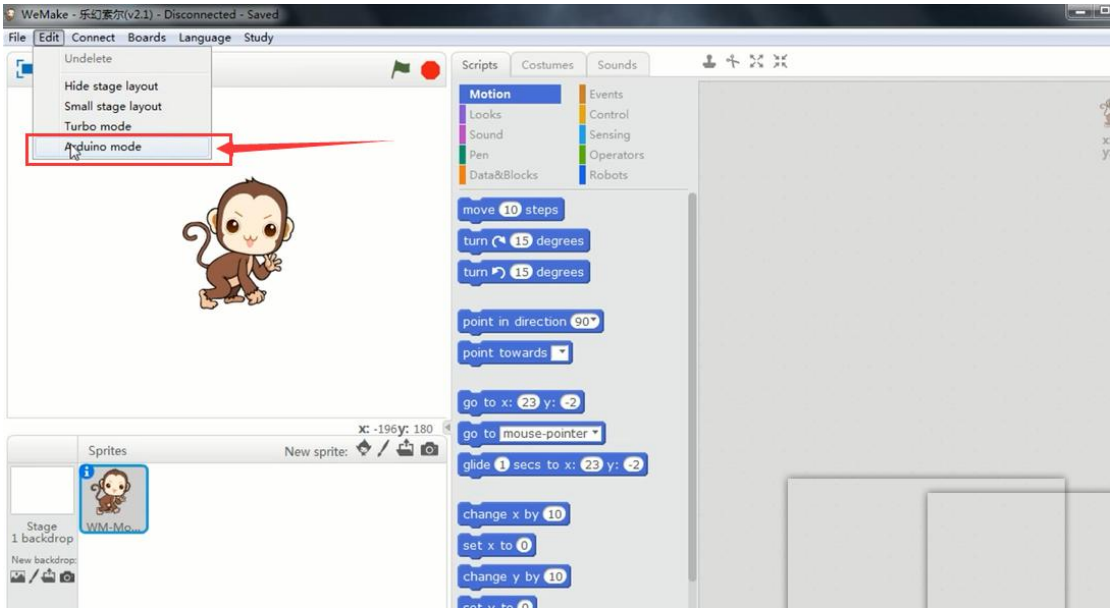



Waiting for installation. The window is automatically closed after the installation is complete.

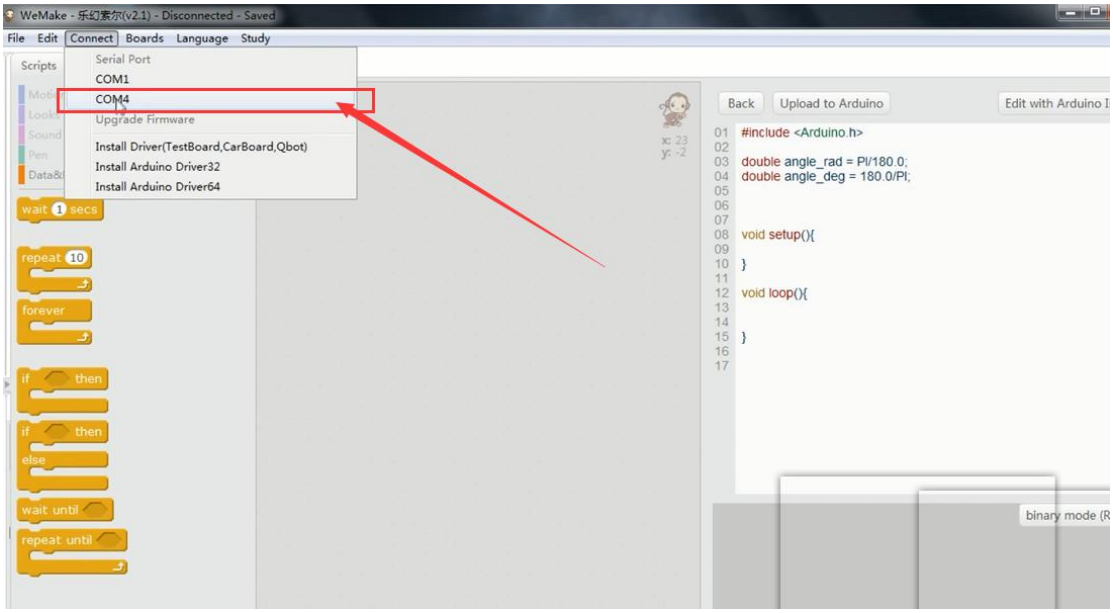
Next select the corresponding port in Menu>Boards>Qbot




select the corresponding port in Menu>Edit>Ardunio mode



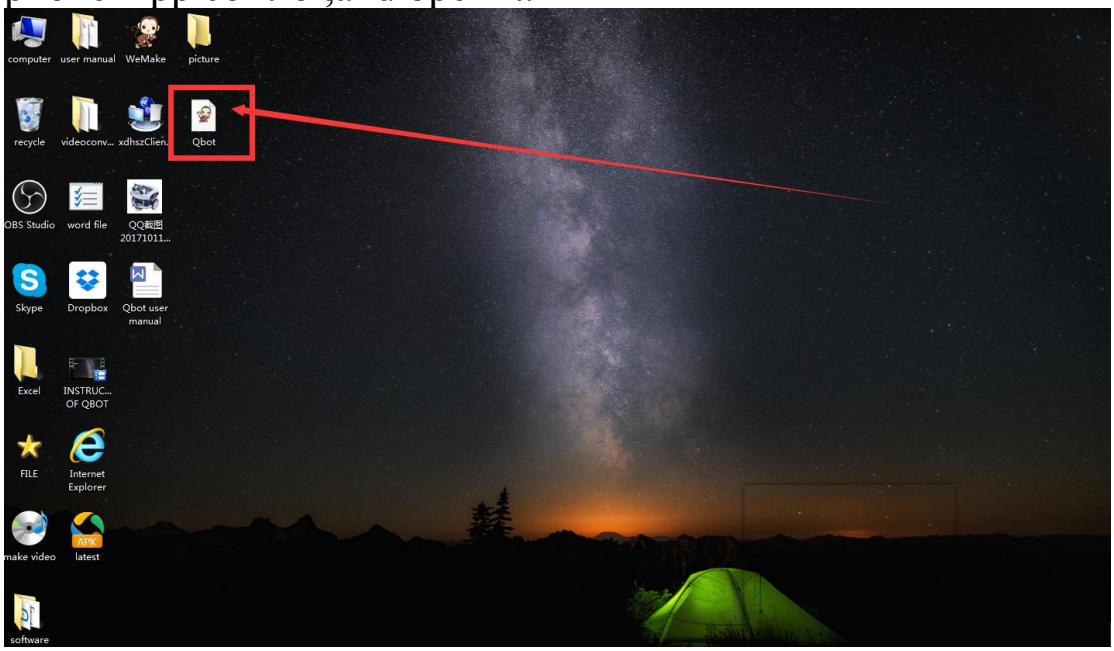

connect the Qbot,select the corresponding port in Menu>Connect>COM4

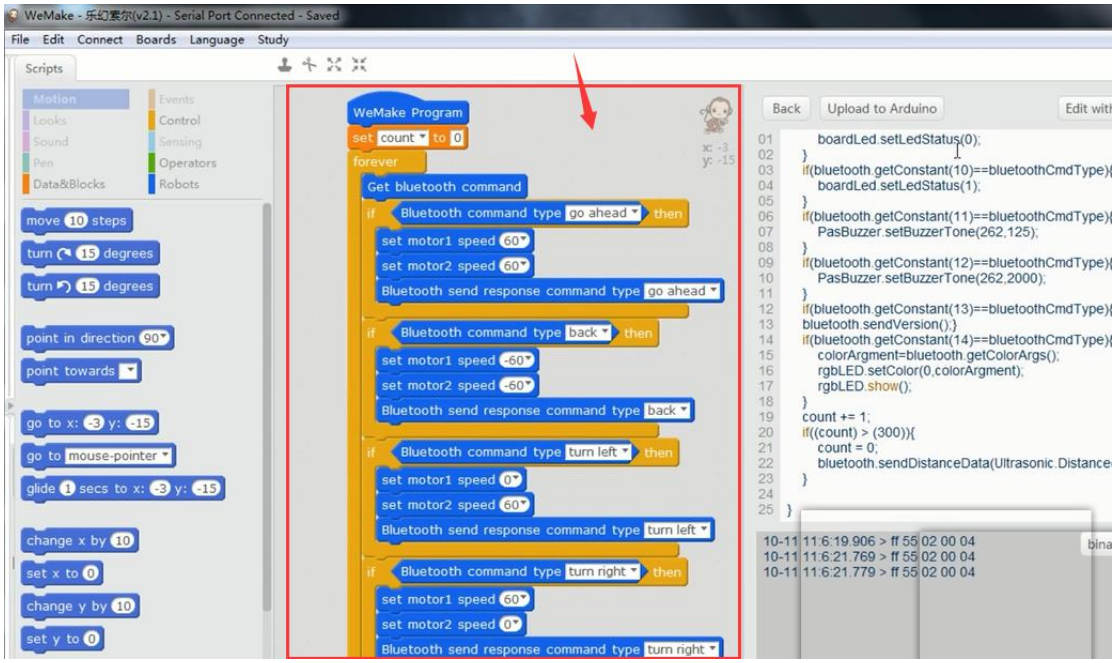


## 3.How to download the firmware

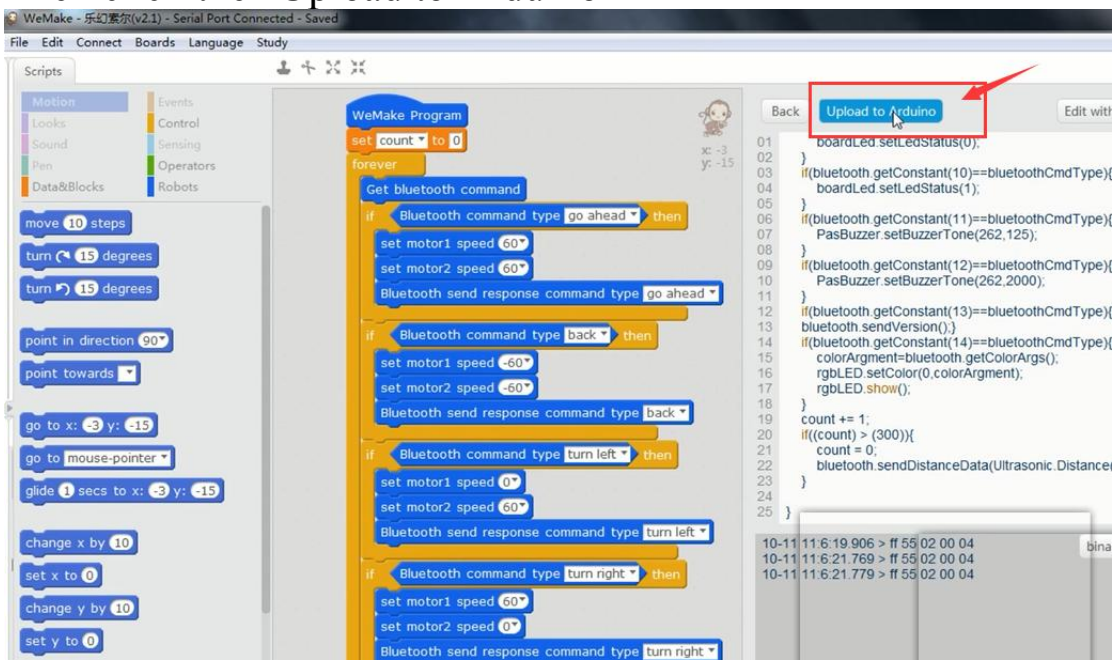
There are two ways for controlling the Qbot, one is use Infrared remote control and the other way is use mobile phoneApp.Different functions require different firmware to control.If you use the first way to control the Qbot you can control it directly by the Infrared remote control,because the default state of Qbot that the firmware we have installed.If you use the second way you should install the firmware by yourself.

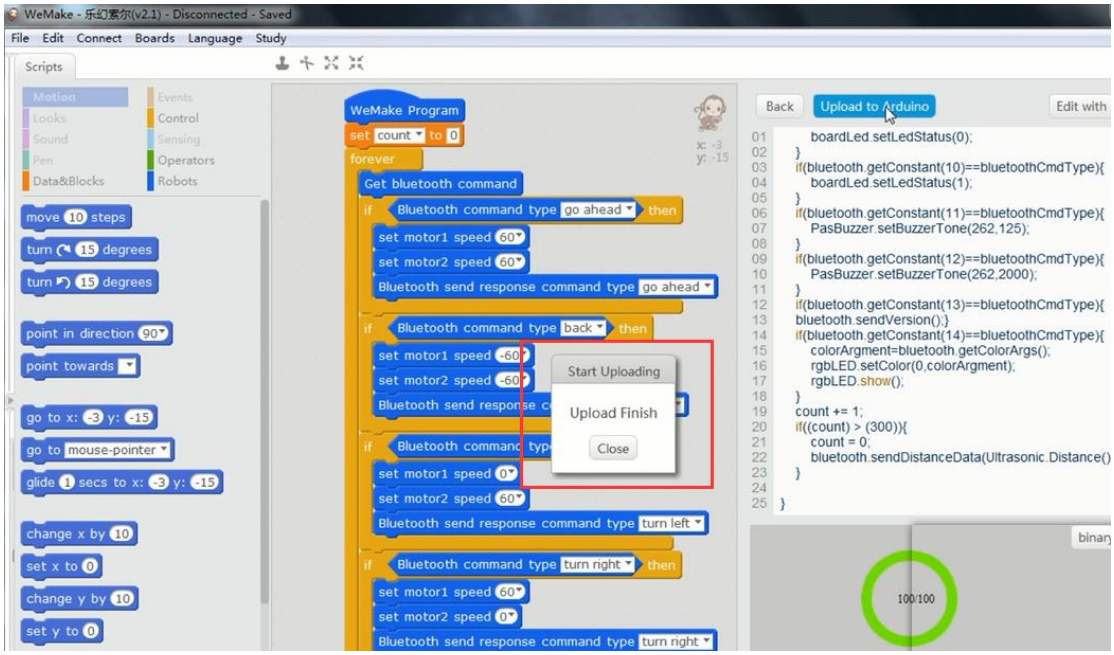
After connecting the Qbot, then find the firmware that of mobile phone App control,and open it.






Then click the “Upload to Ardunio”

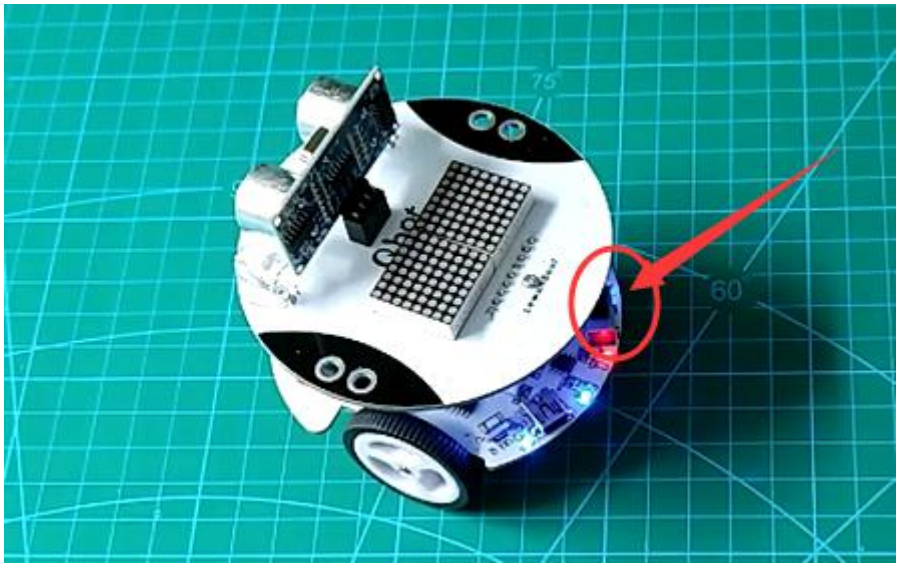





When it appears Upload finish,you can start controlling your Qbot with moile phone.

# How to use mobile phone to control the Qbot

First turn on the switch of the Qbot




Then open the Qbot APP that have been download on your mobile phone.


After connecting the bluetooth,you can start controlling your Qbot.


Qbot
Qbot
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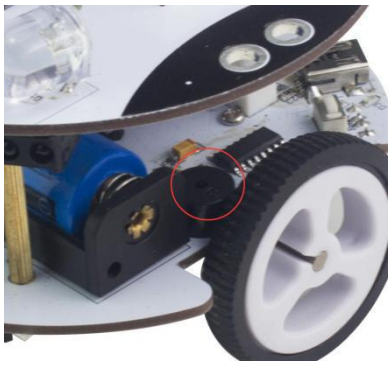
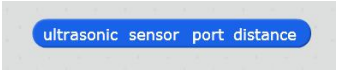
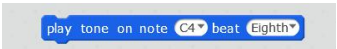
# Different ways of playing

## 1.Alarming and stoping while facing the obstacle

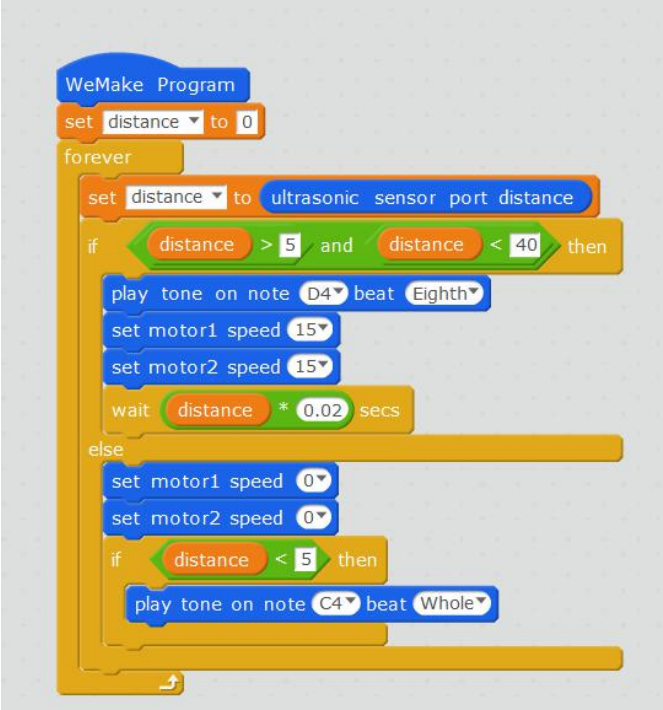
**Hardware principle of buzzer:** A buzzer can send out various tunes of different beats.



**Software Command**

| Script Type | Command | Comment |
|---|---|---|
| Robots |   | Get the distance measured by ultrasonic module |
| Robots |   | The playing tone is 1/8 of the C4 beat |

**Create a target:** Ultrasonic detects the distance automatically,the closer the distance is, the higher the alarm frequency of the buzzer. When only 5cm from the wall is detected, Qbot stops and the buzzer make long sound of beep which indicates that the parking is completed.




## 2.Avoid the edge

In this episode , we continue to use the line tracking sensor to achieve some other play. This also allows everyone to know more applications of line tracking sensor in the actual scene.

**Software Command:**

| Script Type | Command | Comment |
|---|---|---|
| Robots | Edge sensor 1 has detected the edge | Get the status of Edge sensor 1 |
| Robots | Edge sensor 2 has detected the edge | Get the status of Edge sensor 2 |

**Create a Target:** Our map is a large black runway, and Qbot can be placed inside the runway. After turning on the switch, it will run when it touches the black line. That means the Qbot will continue to move within the black runway.

Realization: We can monitor whether Qbot touch the black line or not through line tracking sensor so as to control the movement of Qbot.

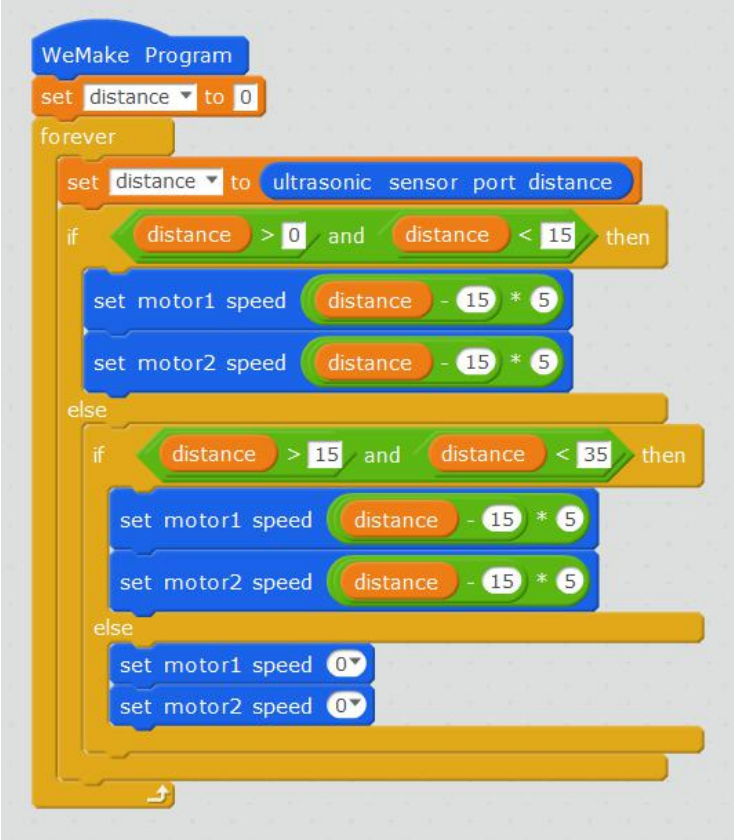

## 3.Follow the Object

In this episode, we continue to use ultrasonic sensor to perform some other gameplay. This also allows you to know more about applications of ultrasonic sensor.

**Software Command:**

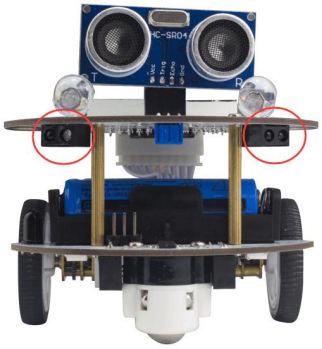
| Script Type | Command | Comment |
|---|---|---|
| Robots | ultrasonic sensor port distance | Get the distance measured by the ultrasonic wave |

**Create a Target:** The ultrasonic sensor measures the distance between the Qbot and the obstacle. If the distance is less than 15 cm, Qbot will move backward, the smaller the distance , the faster the speed. If the distance is greater than 15 cm, Obot will move forward, the greater the distance, the faster the speed. Therefore, the distance between Qbot and the obstacle is about 15cm.




# 4.Tracking

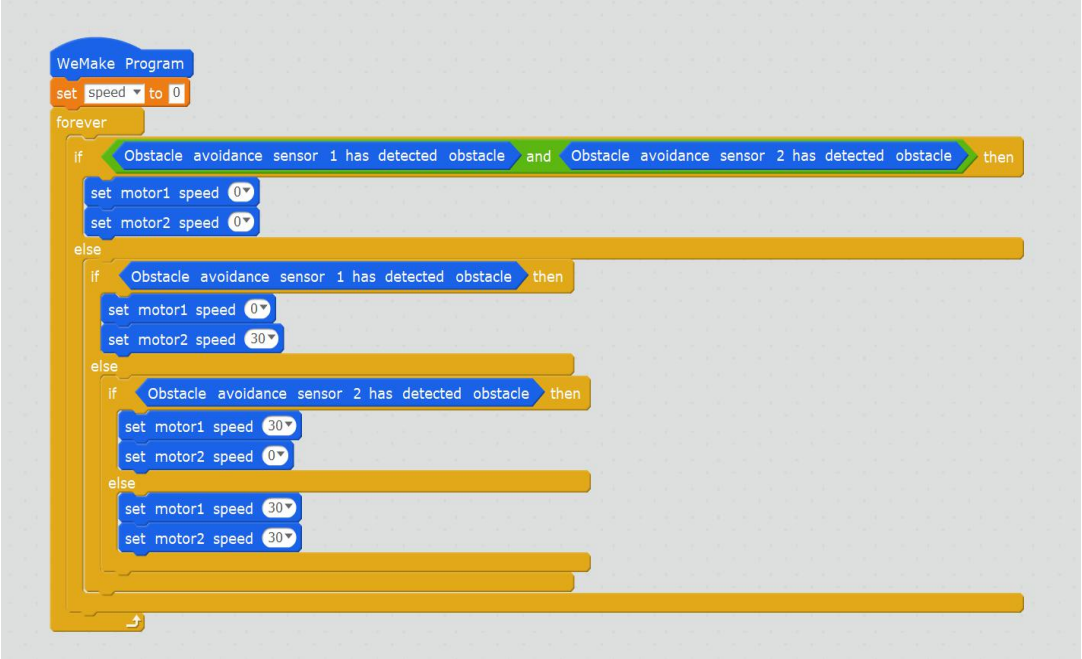
**Hardware principle of obstacle avoidance sensor :**The basic principle of the obstacle avoidance sensor and the working principle of the tracking sensor are basically the same. If there is no obstacle in a certain range,the emitted infrared rays gradually fade away as the distance farther and farther away, and finally disappear. If there is an obstacle, the infrared encounters an obstacle which is reflected to the sensor receiver. The sensor detects this signal and it will know there is an obstacle ahead.



**Software Command**

| Script Type | Command | Comment |
|---|---|---|
| Robots |  | Gets the status of the No.1 obstacle avoidance sensor |
| Robots |  | Gets the status of the No.2 obstacle avoidance sensor |

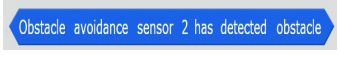
**Create a target:** Through the obstacle avoidance sensor for the position identification of the object ahead to achieve automatic tracking



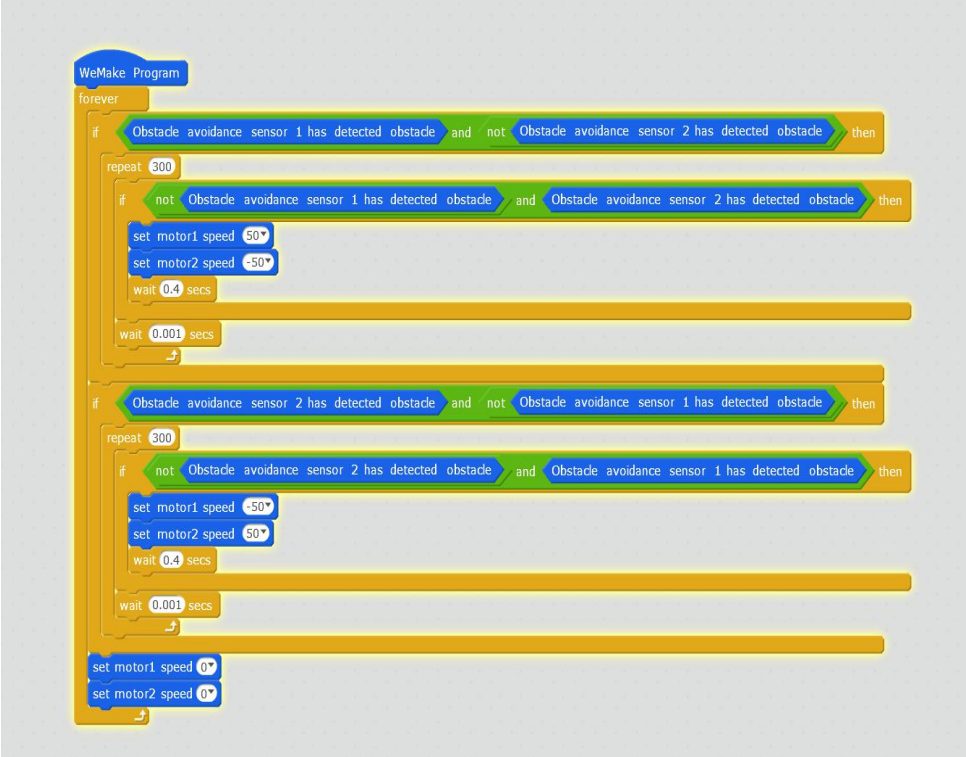

## 5.gesture control

In this episode, we will continue to use obstacle avoidance sensors to achieve new gameplay!

**Software Command**

| Script Type | Command | Comment |
|---|---|---|
| Robots |  | Gets the status of the No.1 obstacle avoidance sensor |
| Robots |  | Gets the status of the No.2 obstacle avoidance sensor |

**Creat a target:** Using 2 obstacle avoidance sensors at the top of the Qbot to determine the direction of movement of the object ahead, so as to make a left or right turn



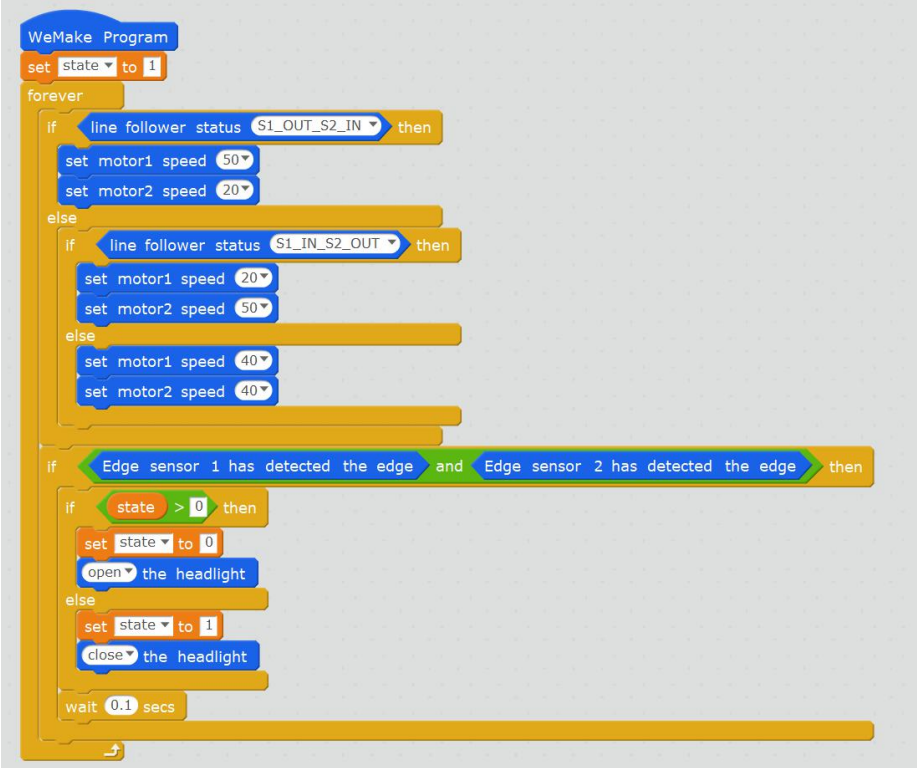

# 6.illuminate the night

**LED hardware principle:** There are two large LED lights with 1cm diameter on the Qbot. We can control the situation of lights(off/ on) by programming

**Software Command:**

| Script Type | Command | Comment |
|---|---|---|
| Robots |   | Turn on or off the Headlight. |

**Create a target:** Qbot travels along the black track which has been marked . When traveling to the designated section, 2 LED lights of Qbot open and illuminate the road ahead. When Qbot leaves the specified section , LED lights turn off.




# 7.Parking automatically

In this episode, we use edge sensor to achieve new gameplay!

**Software Command:**

| Script Type | Command | Comment |
|---|---|---|
| Robots | Edge sensor 1 has detected the edge | Get the status of Edge sensor 1 |
| Robots | Edge sensor 2 has detected the edge | Get the status of Edge sensor 2 |

**Create a Target:** We can make Qbot park automatically

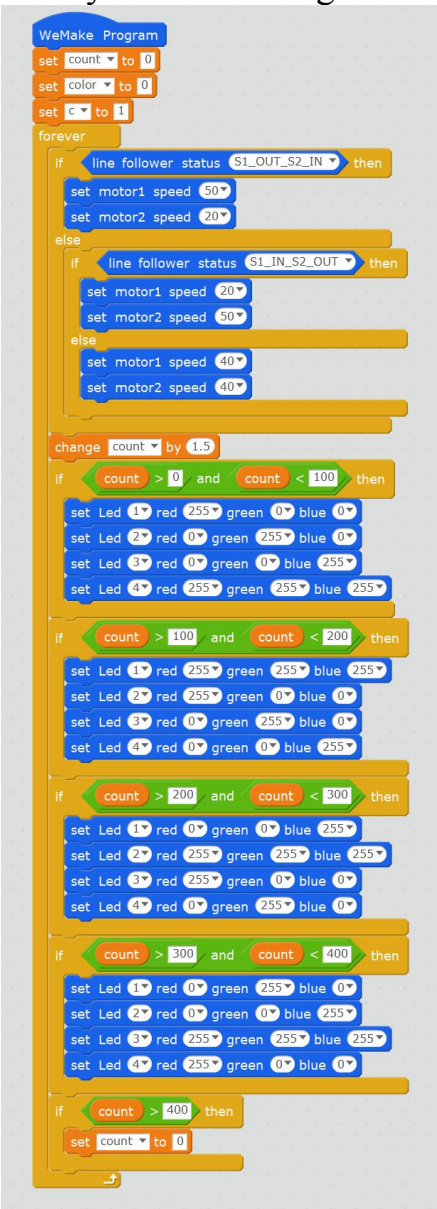

# 8.RGB lights dancing

**Hardware principle of RGB light :** There are four "LED lights" on the LED module. Each LED light is composed of a red LED lamp bead, a green LED lamp bead and a blue LED lamp bead.

**Software Command**

| Script Type | Command | Comment |
|---|---|---|
| Robots |   | Set the color of the RGB light<br>"all" : select the light which you want to control |

**Create a target:** When Qbot moves, RGB lights randomly issued a variety of colors of light.




## 9. Football match

Have you ever seen robot play football? In this episode, we will show you how our Qbot play this fantastic game!

**Create a Target:** The Qbot has expanded holes and is compatible with the structure bracket of the Lego blocks. You can expand the mechanical structure of Qbot by yourself!

Realization :Carry out the robot soccer contest with mobile phone.

## 10. Trajectories control

**Game description:** You can draw trajectories on your mobile phone APP to control the movement of Qbot. Then Qbot will move along the track.

## 11. Through the maze

How to apply obstacle avoidance sensors to the actual scene? We'll show it in this episode!

**Software Command**

| Script Type | Command | Comment |
|---|---|---|
| Robots |   | Get the status of the No.1 obstacle avoidance sensor |
| Robots |   | Get the status of the No.1 obstacle avoidance sensor |

**Create a target:** Using 2 obstacle avoidance sensors at the top of the Qbot combined with an ultrasonic sensor, the Qbot avoids obstacle and goes out of the maze.

# 12. Ultrasonic Ranging

**Hardware principle of Ultrasonic sensor:** The ultrasonic sensor is the input device for detecting the distance. It has two “eyes”. One is used to launch ultrasonic waves. The ultrasound will bounce when it encounters an obstacle, which is received by another “eye”. Sound propagation takes a certain amount of time so that we can measure the distance of the obstacle based on the time it takes to send and receive the ultrasonic wave.

# Technical Support

If there is anything that you do not understand, please check the instructions or the accompanying video tutorial, if the problem still can not be solved, please feel free to contact us by email at support@lewansoul.com

Please visit the following link or scan the QR codes to get related instructions and
video tutorial.

| | Get instructions(Dropbox) | Get video tutorial(Youtube) |
|---|---|---|
| Link | http://bit.ly/2rJshh6 | http://bit.ly/2t4MNwS |
| QR code | | |