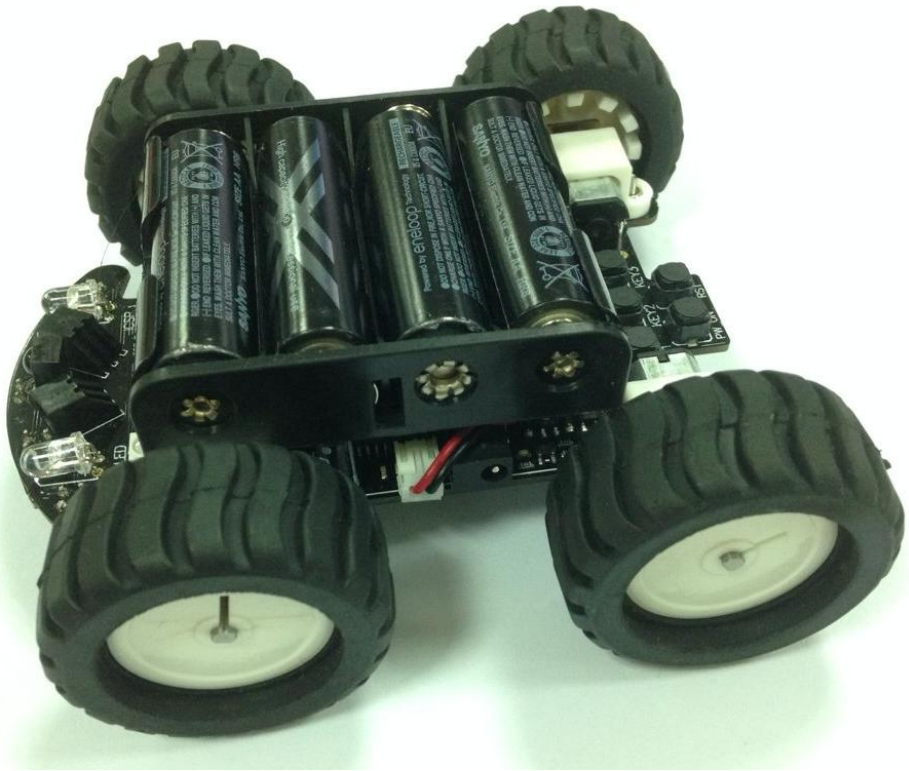
1. Get to Know your Robot

1. Key Points

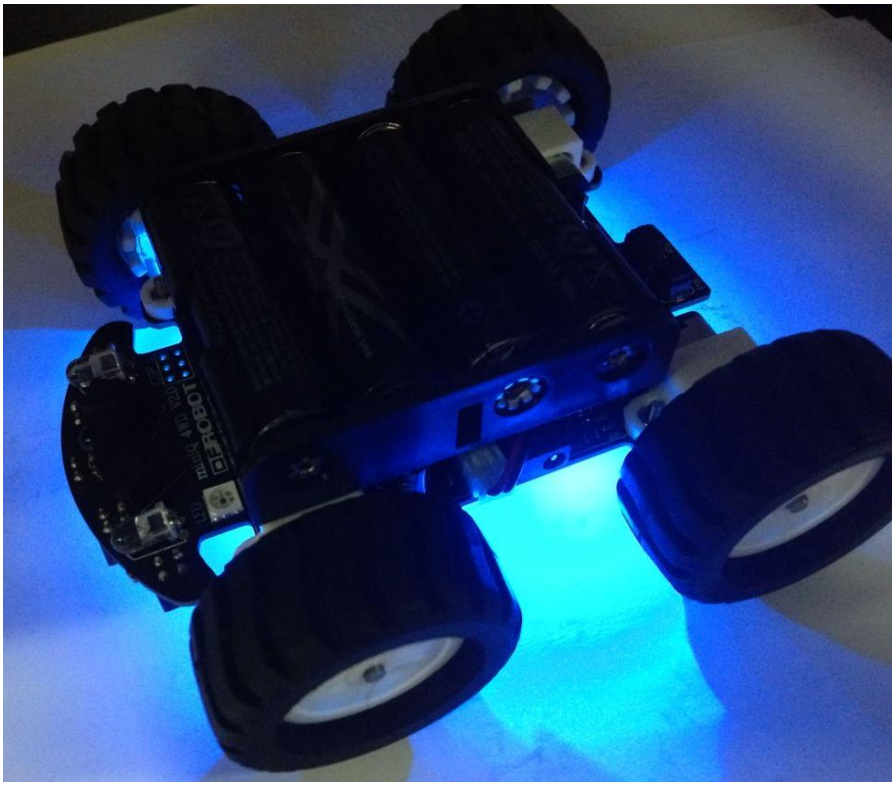
You will learn：
*Recognize every component of the car
*How to use Arduino IDE and finish some preparation work
Equipment needed：
*MiniQ II （with batteries）
*USB cable

2. Introduction

First of all，congratulations to you for getting such an attractive robot. This is an interesting and fully functioning robot，at the same time, it also can help you learn Arduino well. You can realize your idea like hunting the light or transport drink and orientation recognition and so on. Now, let's have a look at our robot：

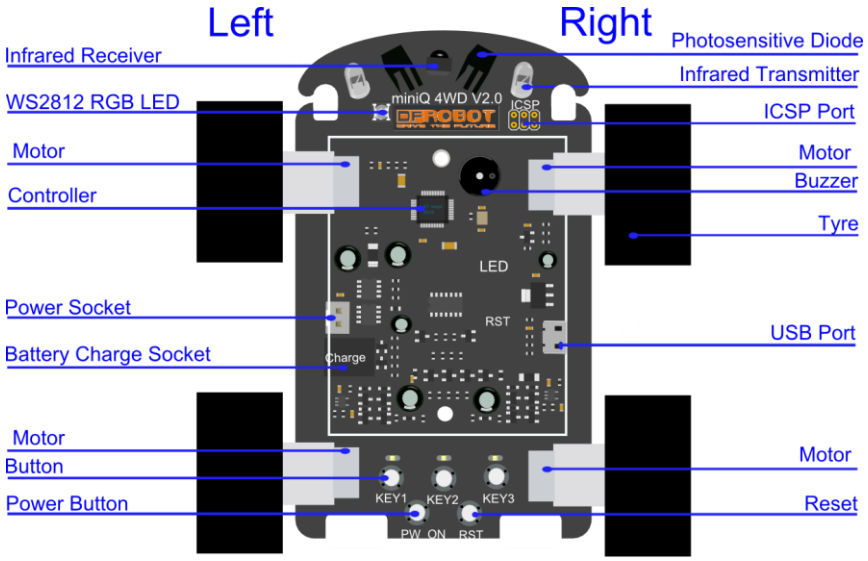


1) Front view of MiniQ II

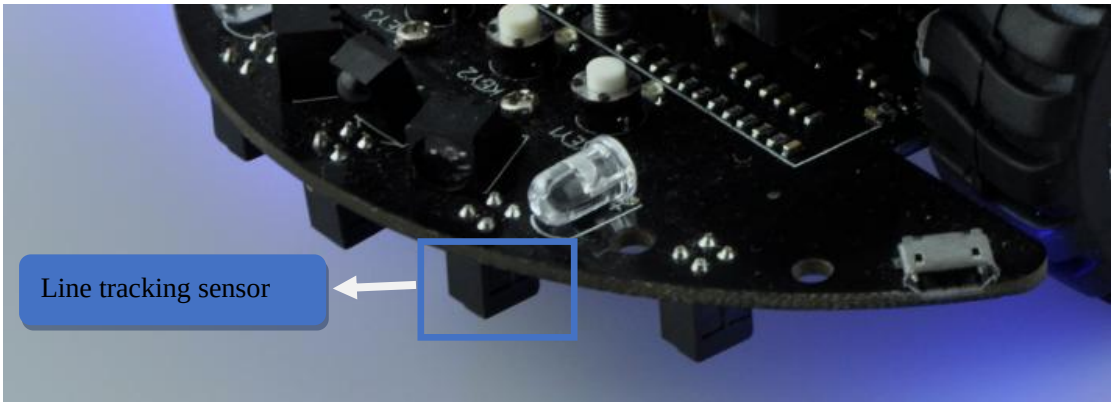


2) LEDs on the bottom of MiniQ II

Components on the car：



3) Components and their locations



4) The front view of the robot

Function about every component：

1. Infrared transmitter：transmit the infrared signal, the signal can be used for detecting obstacles
2. Photosensitive diode：sensitive with the light, so it can help you get some information about the light
3. Infrared receiver：receive infrared signal, the signal can be used for obstacle avoidance
4. Button：can be programmed for your idea
5. RGB LED：you can change its color use your code, it can show as an alarm and other things you want
6. USB port：download your code and let your robot talk to your computer
7. Buzzer（passive）：be an alarm bell or sing a simple song
8. Controller：runs your code
9. Motor：can be controlled to run forward or backward, so that the car can turn left or right freely
10. Reset button；Reset the robot, the program in the robot will runs again from its initiation
11. Power switch：power switch of the robot
12. Power port：power provided from this port
13. Charge port: if your batteries can be charged， you can charge them from this port thus they can be hold in the car
14. Infrared line-follow sensor: can be used for detecting for white or black lines

3.Download your first program

Program controls every step of your robot. So you must know how to download your program into your robot. And firstly, you need to download the software, this is the link：ArduinoIDE.

- Open the website:http://arduino.cc/en/Main/Software, you will see：

Arduino IDE

Arduino 1.0.5

Download

Arduino 1.0.5 (release notes), hosted by Google Code:

NOTICE: Arduino Drivers have been updated to add support for Windows 8.1, you can download the updated IDE (version 1.0.5-r2 for Windows) from the download links below.

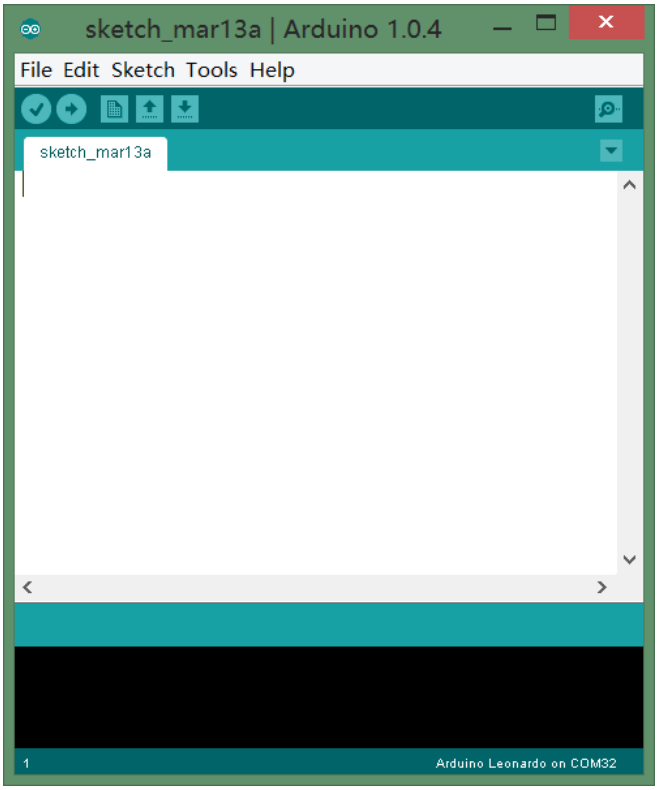
- Windows Installer, Windows (ZIP file)
- Mac OS X
- Linux: 32 bit, 64 bit
- source

Next steps

Getting Started
Reference
Environment
Examples
Foundations
FAQ

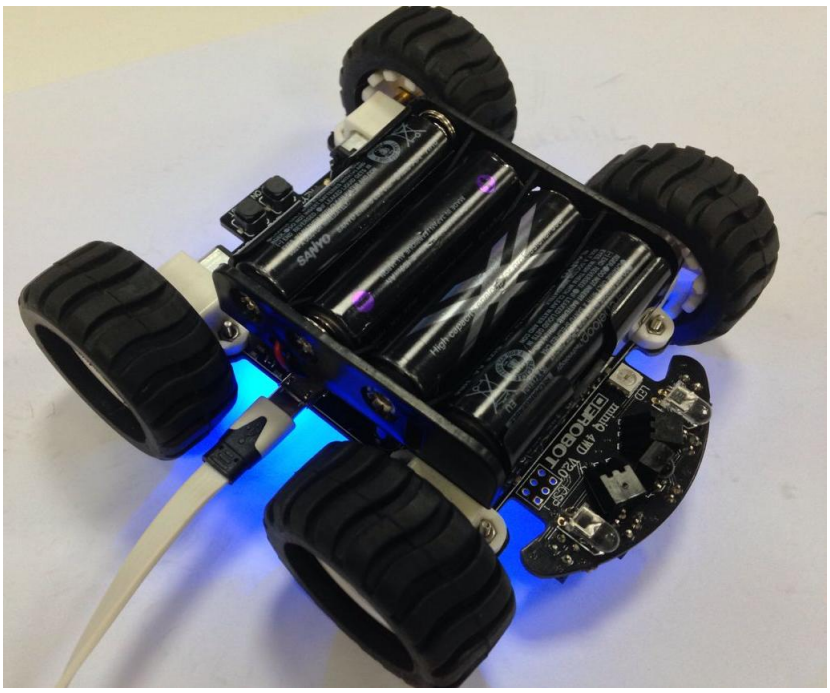
5) Download page

- You should download the right version to fit your system of your computer, take windows for example： if you finish the download and open the software, you will see：



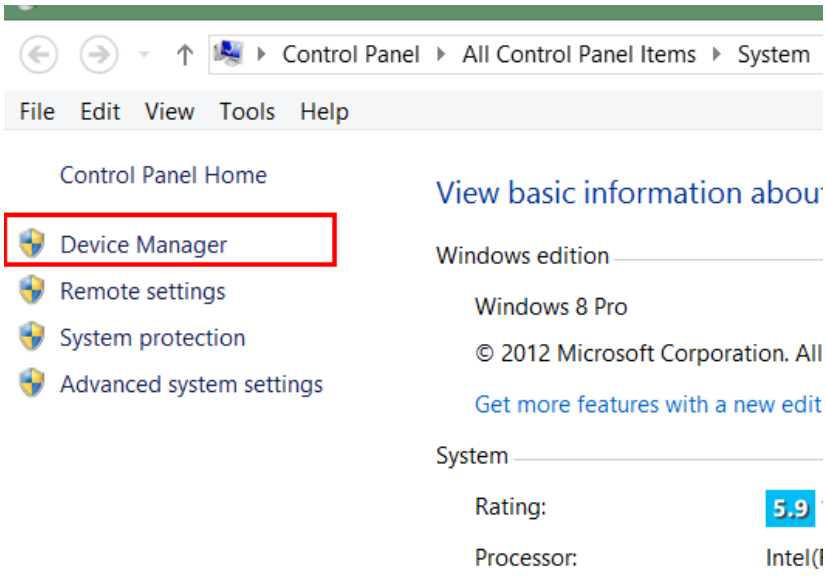
6) ArduinoIDE

- OK，connect miniQ to your computer，



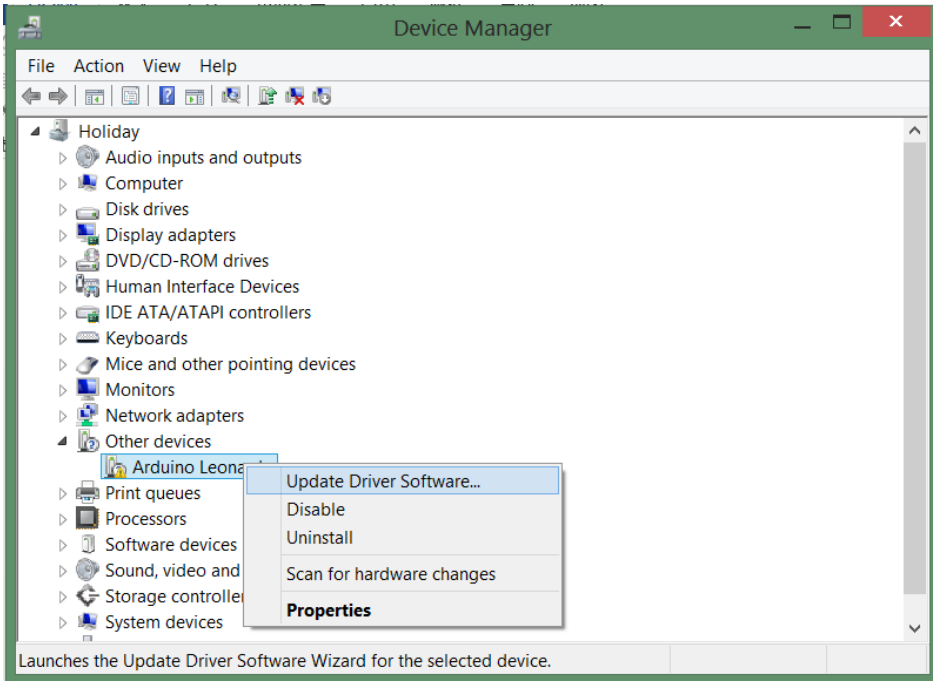
7) Connect to your computer

- Press the power button，you will see the leds on the bottom of the MiniQ will be ligthed, this shows that the robot gets power successfully
- Next step， install the driver. Open the device manager:Right click my Computer→Properties→Device Manger



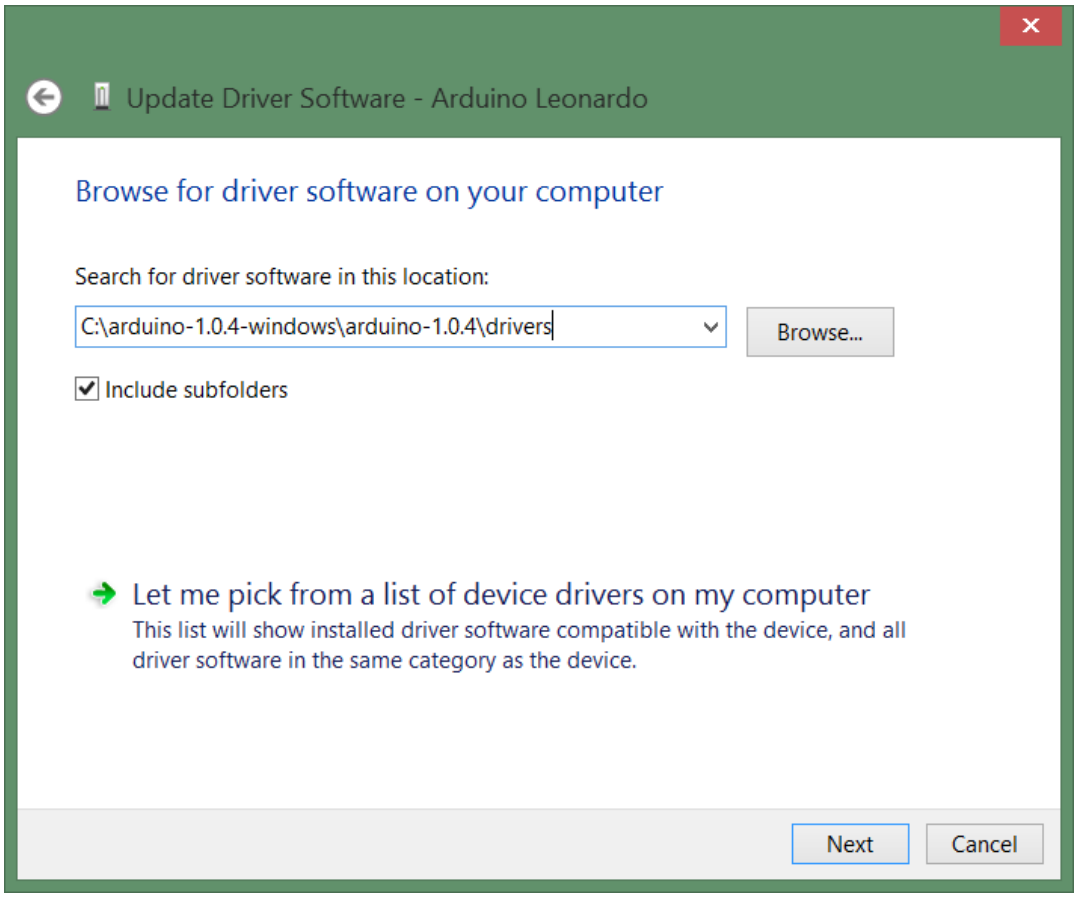
8) Open device manager

You will see：



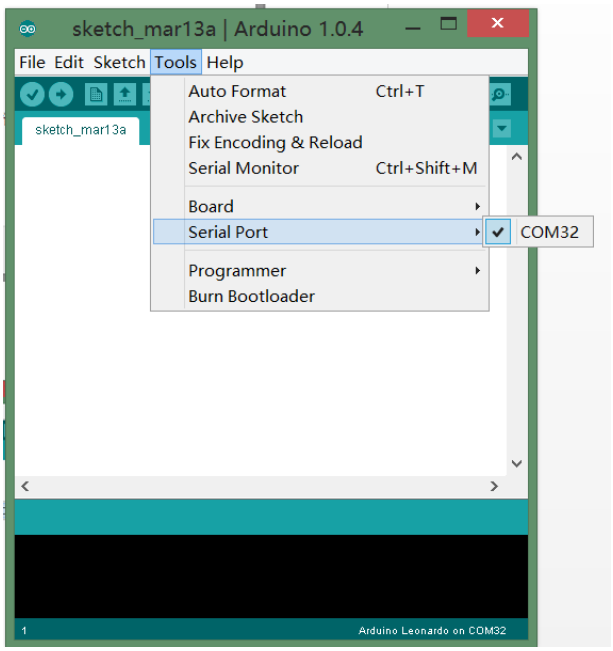
9) Unknow device

It shows we need to install its driver, you can install it by windows itself but it is faster do it yourself, right click Arduino Leonardo→Browse my computer for driver software→C:\arduino-1.0.4-windows\arduino-1.0.4\drivers→Next， you will finish the installing.



10) Install the driver

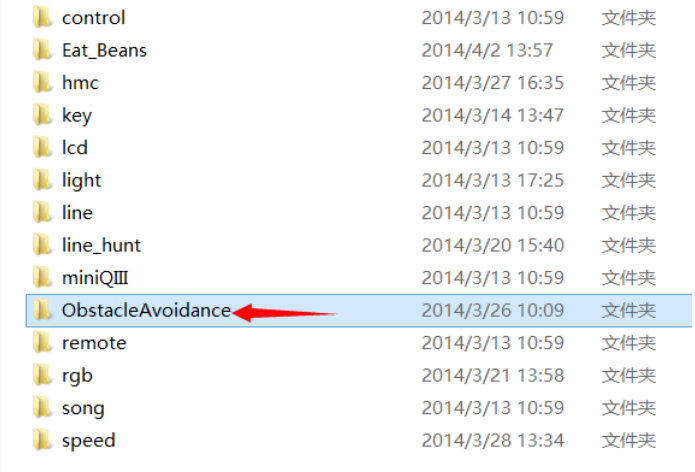
➢ After the action above, open the Arduino IDE, you will see:



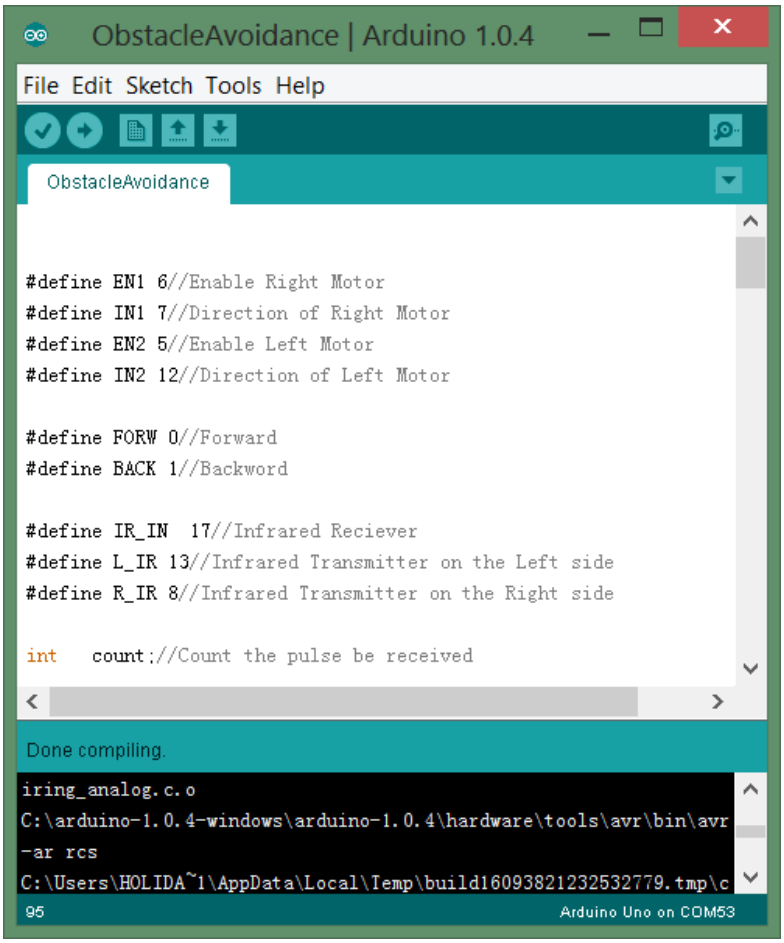
11) Arduino Serial Port

Click “Tools”→ “Board” to choose”Leonardo”, and “Tools”→”Serial Port” to choose the port.

➢ Now，open the file“ObstacleAvoidance.ino”,

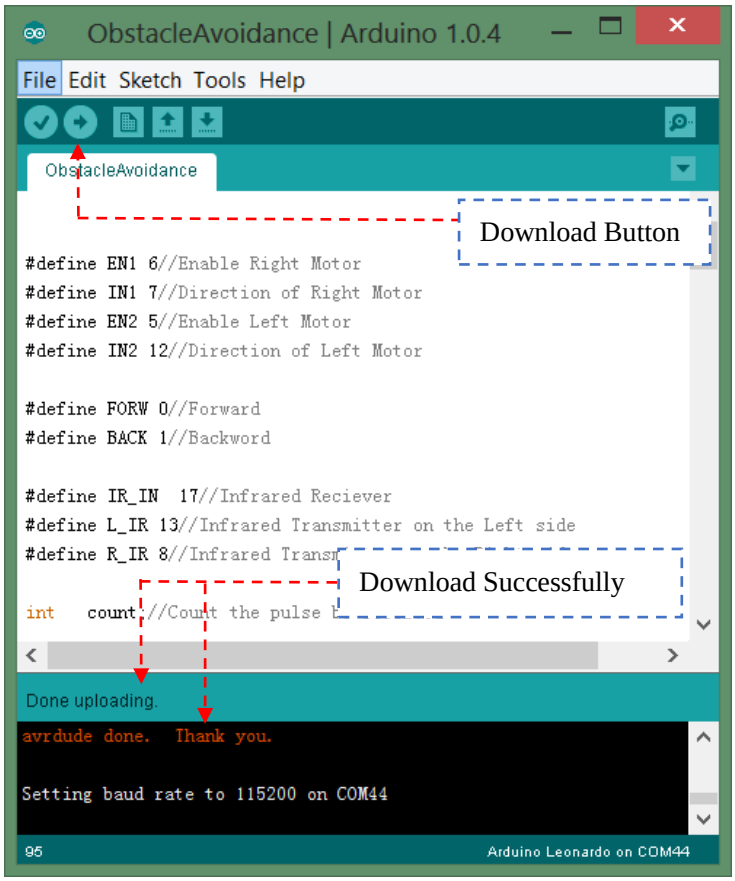


12) You need to open this folder



13) Program has bee opened

- Click the upload button and wait for the the message below.



14) Program upload

Well, take off the USB cable, put your robot on the ground and see what will happen, it avoid the obstalce itself, doesn't it?

4.Pin Map of Connecting

Line follow sensor:

A0--IR0 （No.1 count from the left）

A1--IR1 （No.2 count from the left）

A2--IR2 （in middle）

A3--IR3 （No.2 count from the right）

A4--IR4 （No.1 count from the right）

Follow light: A5

Motors

D5-- PWM control from left motor D12--EN1 direction control from left motor

D6-- PWM control from right motor D7--EN2 direction control from right motor

RGB LED : D10

Infrared obstacle avoidance:

Transmitter：D13—IRL　　left transmitter sensor

D8—IRR　　right transmitter sensor

Receiver:　D17—IRS　　receiver sensor

Receiver：IRS--D17

Button：D4

Encoder：
D0--INT2　Right Motor
D1--INT3　Left Motor

Buzzer
D16—MOSI—Buzzer