# 1. Get to Know your Robot

## 1． Key Points

You will learn：
*Recognizing every component of the car
*How to use Arduino IDE and finish some preparation work

Material needed：
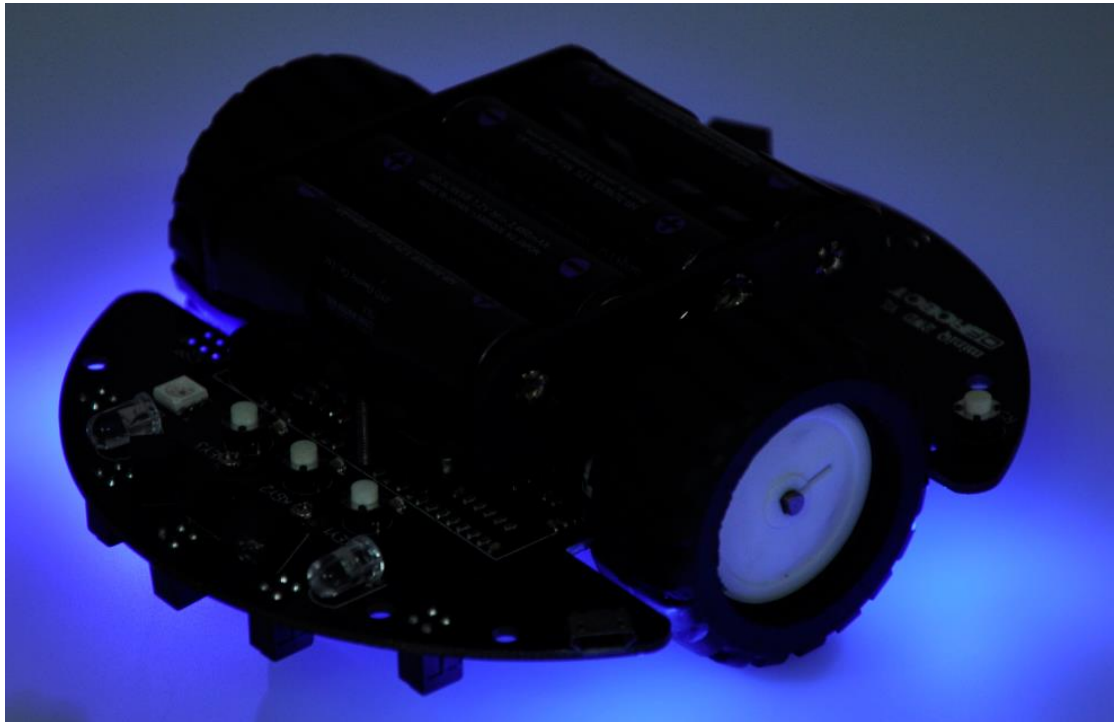*MiniQ v2.0
*4x AA batteries
*USB cable

## 2． Introduction

First of all，congratulations on getting such a nice robot kit! This is an interesting and fully functional robot，at the same time, it also can help you learn Arduino well. Make it a light hunter, coffee transporter or obstacle avoiding robot and so on. Now, let's have a look at our robot：
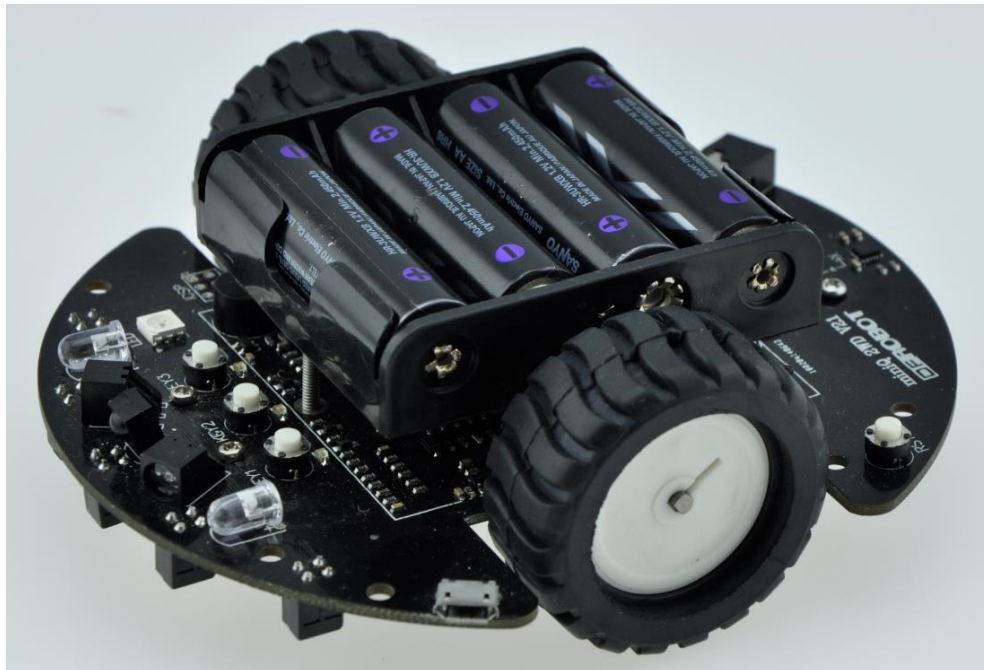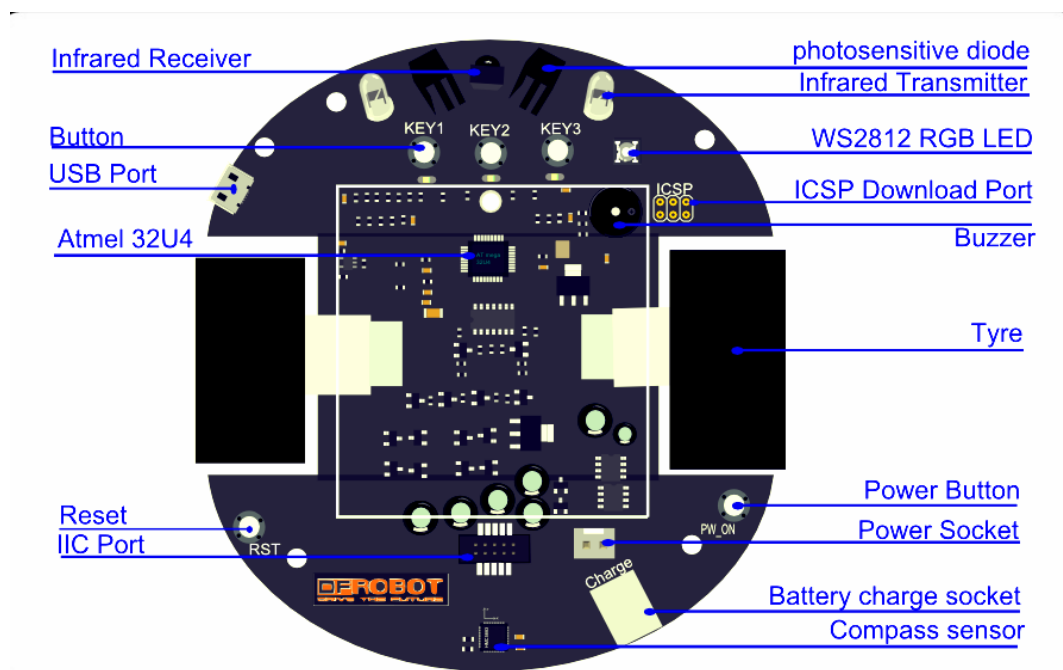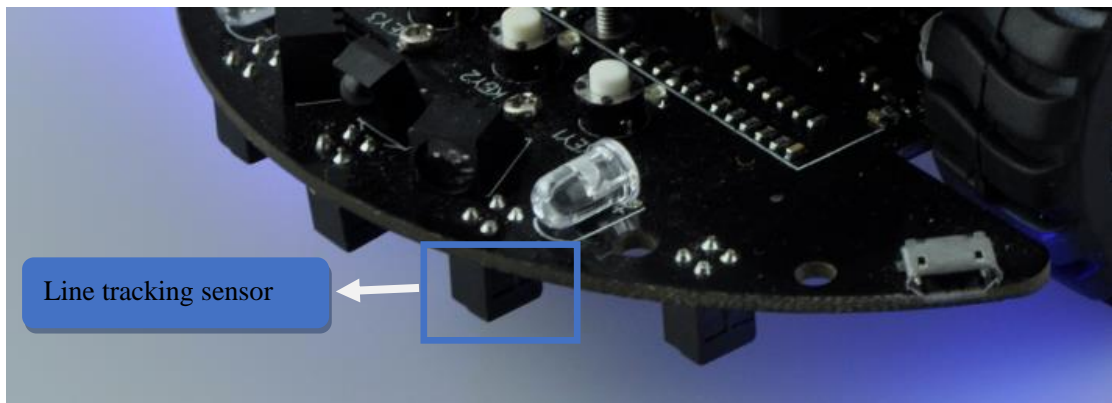


1)    MiniQ v2.0

2) LEDs on the bottom of MiniQ V2.0

Components explained：



3) Components and locations

Line tracking sensor

4) front view

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：upload 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. Gadgeteer port: 2.0C port, can be used to any 2.0C component
13. Power port：power provided from this port
14. Magnet sensor：can be used for direction measurement
15. Charge port: if your batteries can be charged， you can charge them from this port thus they can be hold in the car
16. Infrared line-follow sensor: can be used for detecting for white or black lines

# 3. Uploading your first program

Program controls every step of your robot. So you must know how to upload your program into your robot. And firstly, you need to upload 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.
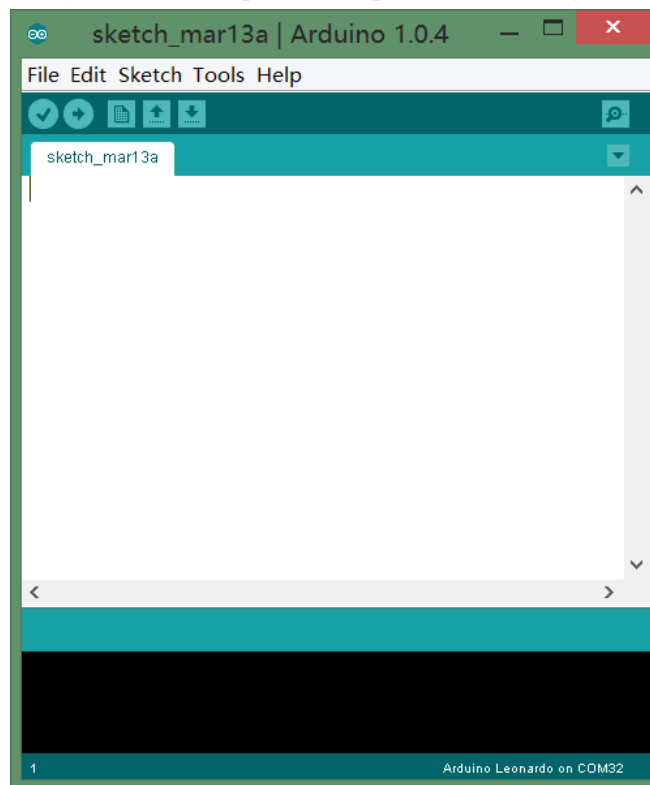
- Windows Installer, Windows (ZIP file)
- Mac OS X
- Linux: 32 bit, 64 bit
- source

**Next steps**

Getting Started

Reference

Environment

Examples

Foundations

FAQ
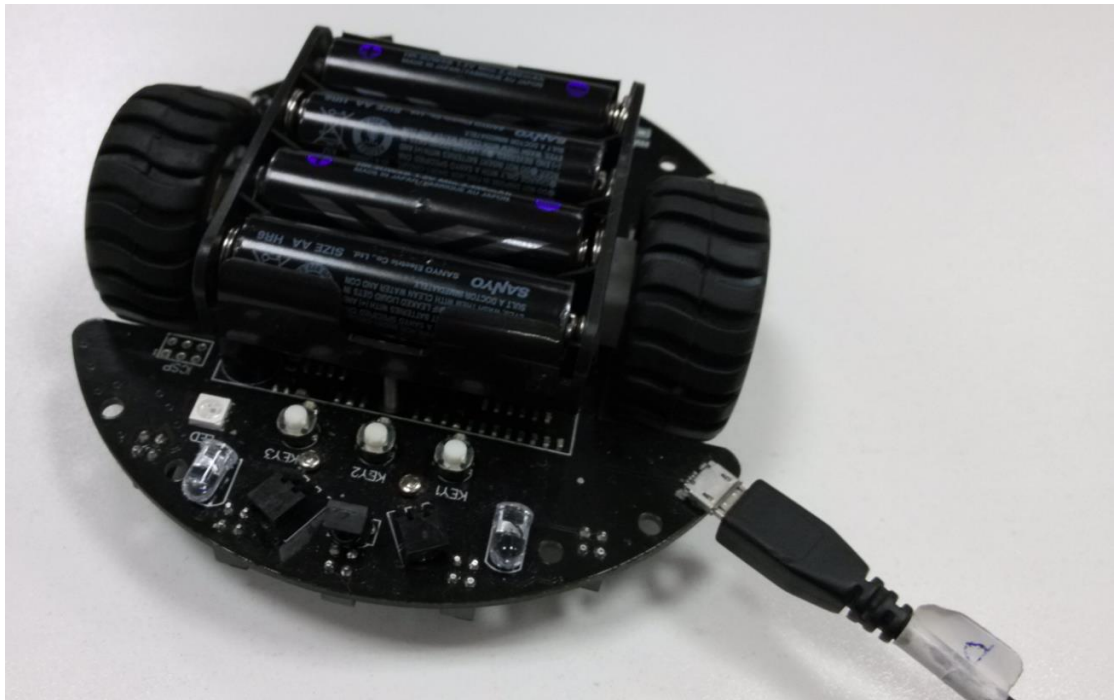
5) Upload page

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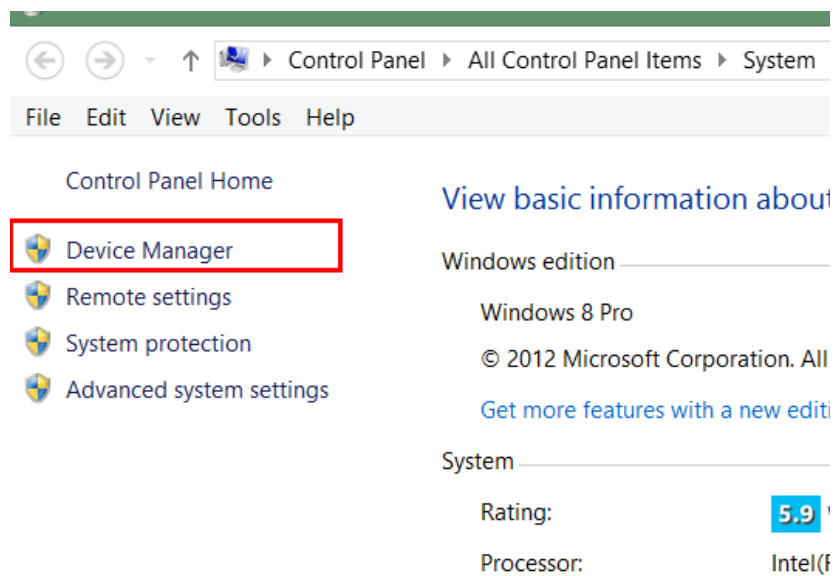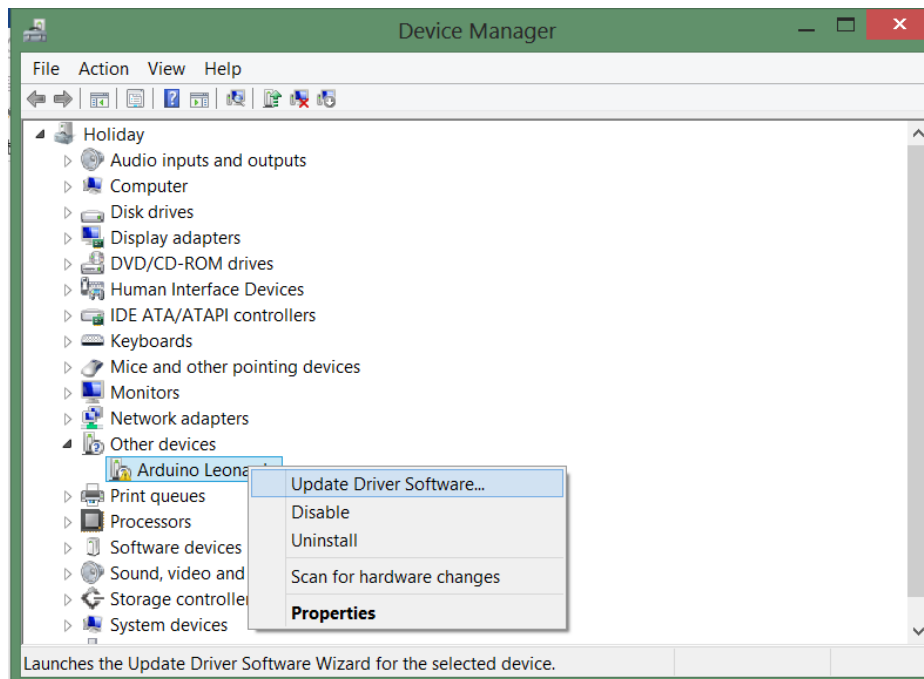


6) ArduinoIDE

➢ OK，connect miniQ to your computer，

7) Connecting the MiniQ

➢ Press the power button，you will see the leds on the bottom of the MiniQ light up, this indicates that the robot gets power successfully

➢ Next step，install the driver. Open the device manager: Right click my Computer→Properties→Device Manger
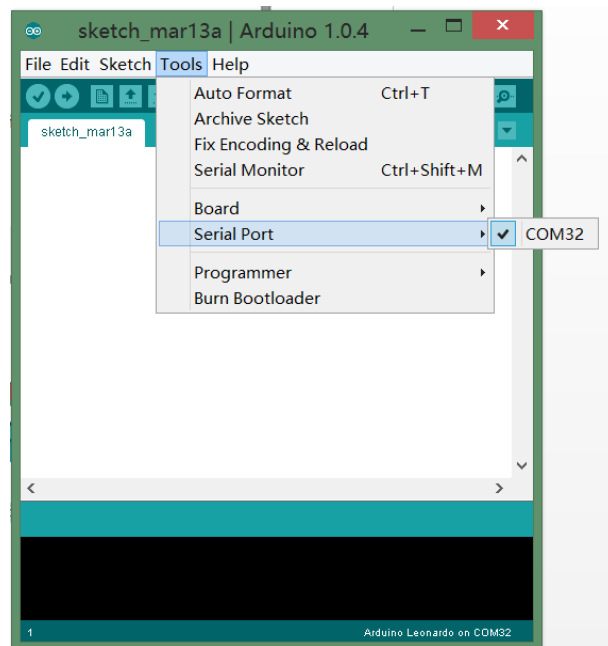

8) Open device manager

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.
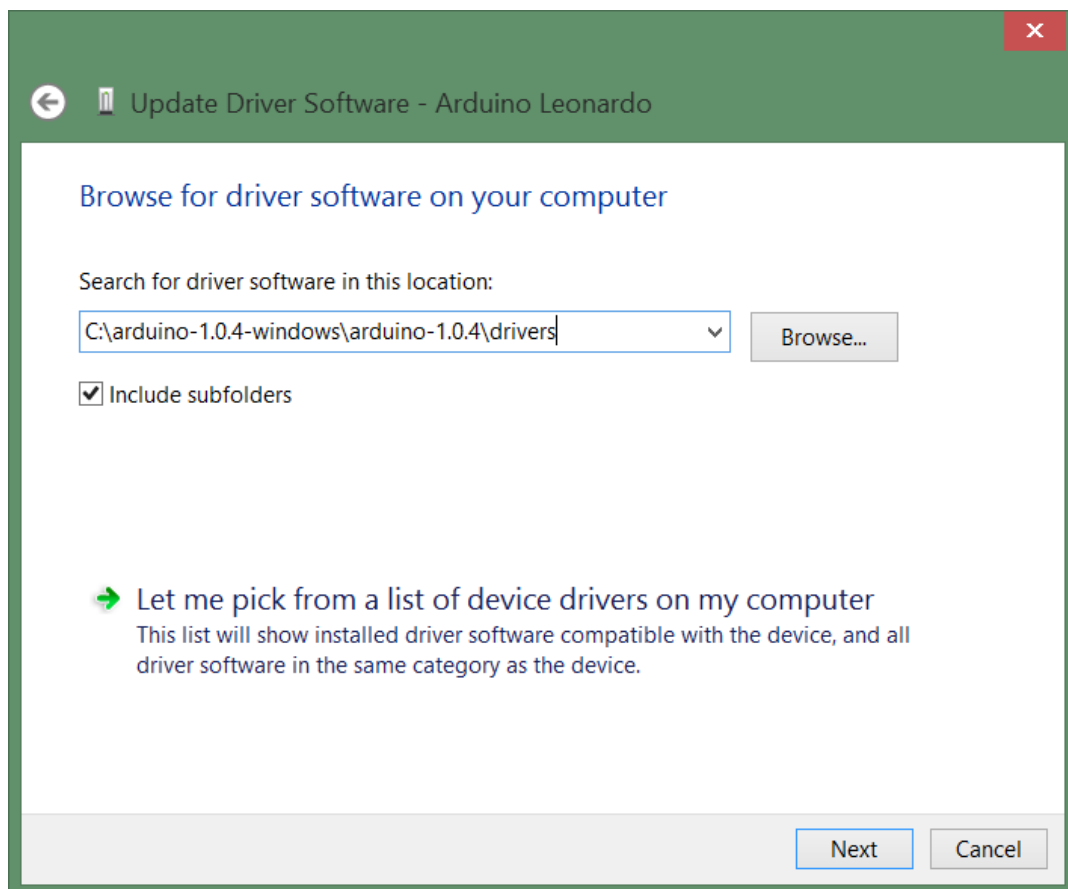


10) Install the driver

➤ 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",



| control | 2014/3/13 10:59 | 文件夹 |
| Eat_Beans | 2014/4/2 13:57 | 文件夹 |
| hmc | 2014/3/27 16:35 | 文件夹 |
| key | 2014/3/14 13:47 | 文件夹 |
| lcd | 2014/3/13 10:59 | 文件夹 |
| light | 2014/3/13 17:25 | 文件夹 |
| line | 2014/3/13 10:59 | 文件夹 |
| line_hunt | 2014/3/20 15:40 | 文件夹 |
| miniQⅢ | 2014/3/13 10:59 | 文件夹 |
| ObstacleAvoidance | 2014/3/26 10:09 | 文件夹 |
| remote | 2014/3/13 10:59 | 文件夹 |
| rgb | 2014/3/21 13:58 | 文件夹 |
| song | 2014/3/13 10:59 | 文件夹 |
| speed | 2014/3/28 13:34 | 文件夹 |

12) You need to open this folder
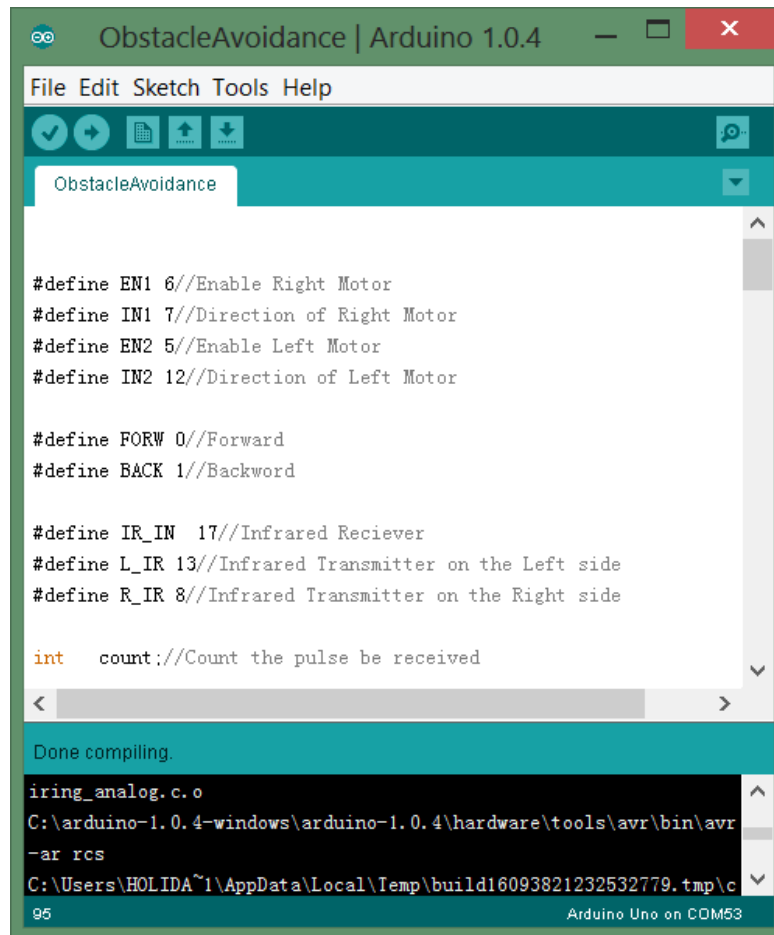
13) Program has bee opened

➢ Click the upload button and wait for the the message below.
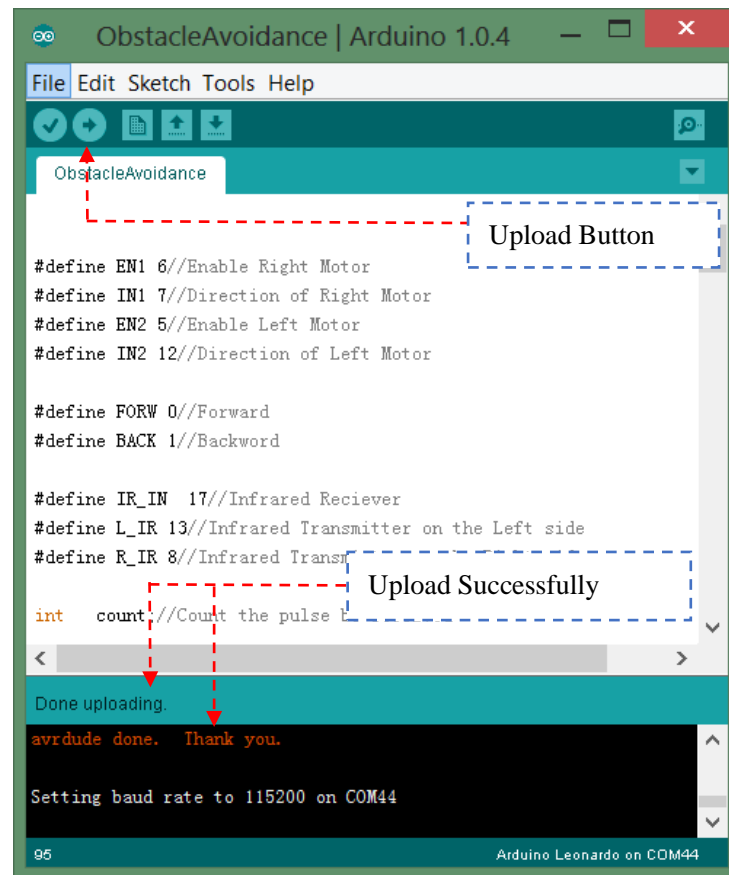
14) Program upload

Well, take off the USB cable, put your robot on the ground and see what happens, it avoids 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）

Photo resistance

A5--AD5

Motors

D5--PWM1    D12--EN1        left motor

D6--PWM2    D7--EN2         right motor

RGB LED

D10--WS2812

HMC5883(Compass)
D2--SDA
D3--SCL

Infrared obstacle avoidance：
Transmitter：IRL--D13    IRR--D8
Receiver：IRS--D17

Button：
D4--AD6

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

Buzzer
D16—MOSI—Buzzer