Table of Contents

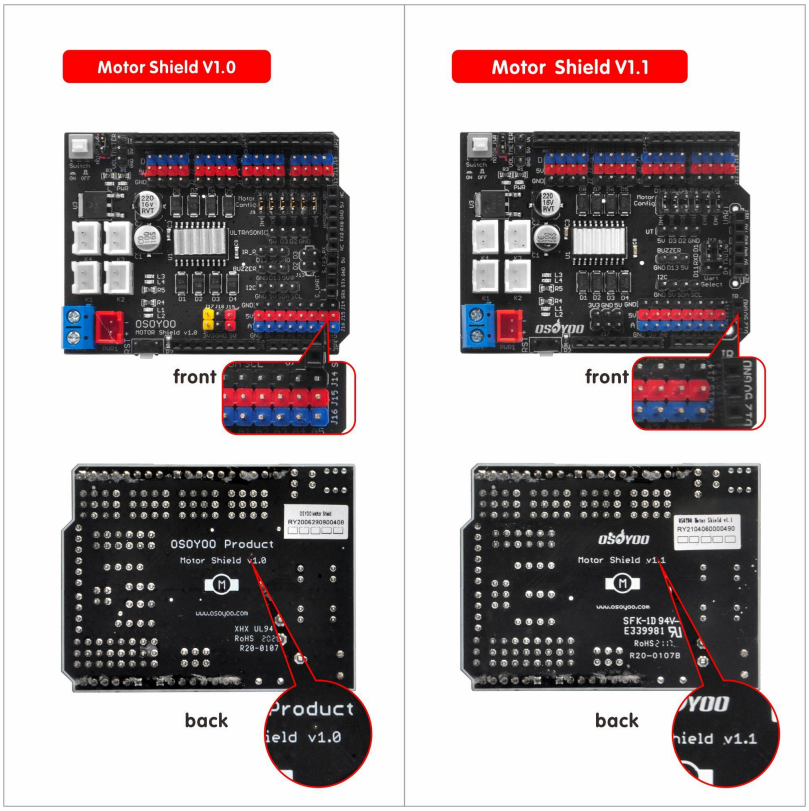
Introduction....2
Description....2
Parts and Devices....3
Lesson 1: Basic Robot Car Assembly....7
Objective....7
Parts and Devices....7
Hardware Installation....9
Connection....13
Software Installation....15
Testing....19
Lesson 2: IR Remote Controlled....20
Objective....20
Parts and Devices....20
Hardware Installation....21
Software Installation....23
Testing....26
Trouble shooting....26
Lesson 3: Line Tracking....28
Objective....28
Parts and Devices....28
Hardware Installation....29
Software Installation....31
Testing....34
Lesson 4: Don't Touch Me....35
Objective....35
Parts and Devices....35
Hardware Installation....36
Software Installation....40
Testing....43
Lesson 5: Obstacle Avoidance....44
Objective....44
Parts and Devices....44
Hardware Installation....45
Software Installation....46
Testing....48
Lesson 6: Imitation Driving with Bluetooth....50
Objective....50
Parts and Devices....50
Hardware Installation....51
Software Installation....51
Explanation of APP UI....55
Testing....57

OSOYOO Model-3 V2.0 Robot Car
(OSOYOO Motor Shield V1.1)

Introduction

Note: There are some different between two versions for OSOYOO motor shield(V1.0 and V1.1), this manual is for V1.1, if you got OSOYOO motor shield V1.0, please download this manual:

https://osoyoo.com/manual/20200017001.pdf



Description

Osoyoo Model-3 Robot Learning Kit is designed for beginners to learn Arduino programming and get hands-on experience on robot design and assembly.
We have developed a step-by-step tutorial which evolves from a simple car without any control to a multi-function robotic car controlled by mobile APP.

Every lesson has detailed sample code with comments, circuit graph, assembly instruction and video. Even if you have no programming experience, you can follow the step-by-step instruction and gradually become a master.

Our robotic car is 100% open source. If you are an intermediate player and have time to read our code comments, you can easily customize this robotic car to make your own project for science fair, college home work or even commercial applications.

This kit contains module parts including Tracking module, Infrared Remote Control and OSOYOO Motor shield for OSOYOO UNO, etc. With these modules, the robot car can work in multiple modes such as auto-go, infrared control and line tracking. You can use our APP to control the robot car through Bluetooth.

Parts and Devices

No.	Device	Picture	Qty.	Link
1	OSOYOO UNO R3 (fully compatible with OSOYOO UNO R3)		1	Click here to buy
2	OSOYOO Motor Shield		1	Click here to buy
3	IR receiver		1	Click here to buy

4	Buzzer Sensor Module		1	Click here to buy
5	Tracking Sensor		1	Click here to buy
6	Ultrasonic Sensor		1	Click here to buy
7	Servo Motor		1	Click here to buy
8	Voltage Meter		1	Click here to buy
9	Bluetooth Module		1	Click here to buy
10	IR remote controller		1	Click here to buy
11	Mount Holder for Ultrasonic Sensor		1	Click here to buy

12	Car Chassis		1	Click here to buy
13	Motor with wires		1	Click here to buy
14	Wheels		2	Click here to buy
15	Universal Wheel		1	Click here to buy
16	9V Battery Box		1	Click here to buy
17	9V Battery		1	Click here to buy
18	Phillips Screwdriver		1	Click here to buy
19	Hex Screwdriver		1	Click here to buy

20	20pin 15cm Female to Female Cable		1	Click here to buy
21	7pin 25cm Female to Female Cable		1	Click here to buy
22	3pin 15cm Female to Female Cable		1	Click here to buy
23	Rubberized Tape		1	Click here to buy

Screws & Nuts Listing

	M1. 5*8 Screws		M3 *10 Hex Screws		M3 Plastic Screws
	M1.5 Nuts		M3*10 Screws		M3 Plastic Pillars
	M2.2*8 Self Tapping Screws		M3 Nuts		M3 Plastic Nuts
	M2*4 Self Tapping Screws		M3*30+6 Copper Pillars		M3*20 Copper Pillars

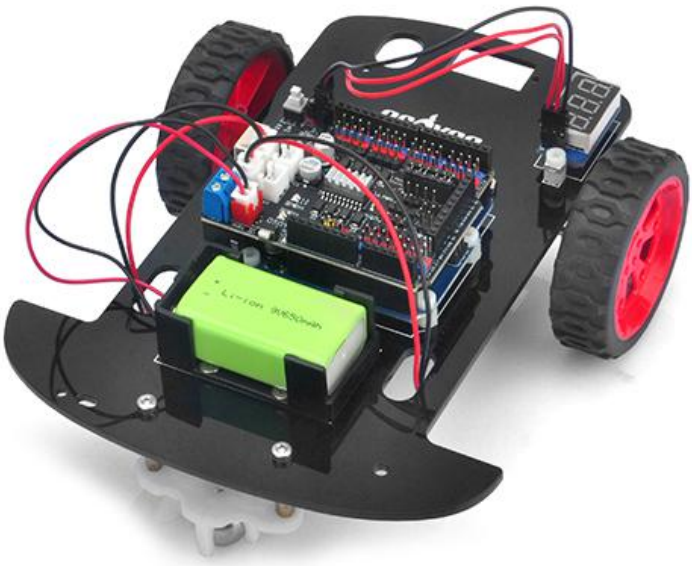
Lesson 1: Basic Robot Car Assembly

Objective

Welcome to the first lesson of Osoyoo Model-3 Robot Learning Kit!

In this “Hello World” version lesson, we will install the most important framework of the robot car and program the car to do some simple movements. If you have passed the test movement of this lesson, it means OSOYOO UNO for Arduino, motor control module, motors, batteries, chassis and wire connections between these parts are all functioning well.

As your experiments in future lessons are all based on the frame work of Lesson 1, it is very important to test the installation and sample code in this Lesson properly.



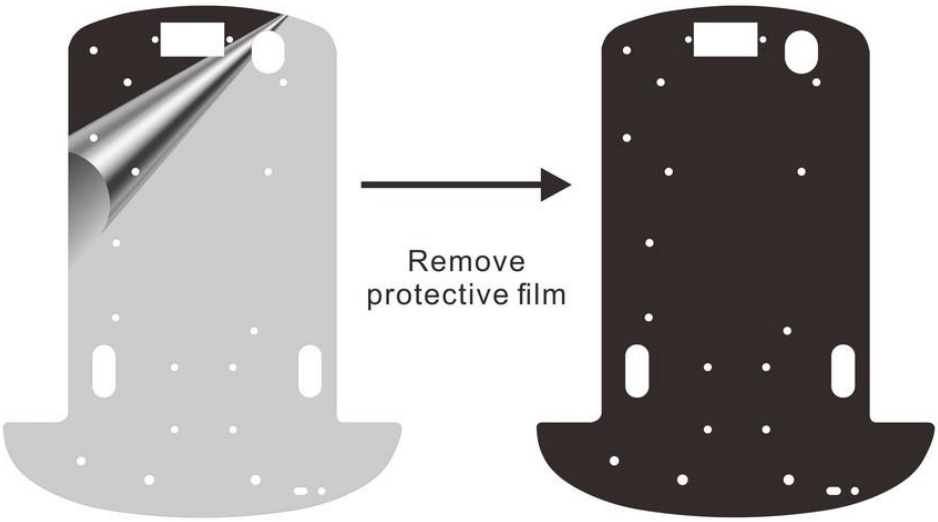
Parts and Devices

No.	Device	Picture	Qty.	Link
1	OSOYOO UNO R3(fully compatible with OSOYOO UNO R3)		1	Click here to buy
2	OSOYOO Motor Shield		1	Click here to buy
3	Voltage Meter		1	Click here to buy
4	Car Chassis		1	Click here to buy
5	Motor with wires		1	Click here to buy
6	Wheels		2	Click here to buy
7	Universal Wheel		1	Click here to buy

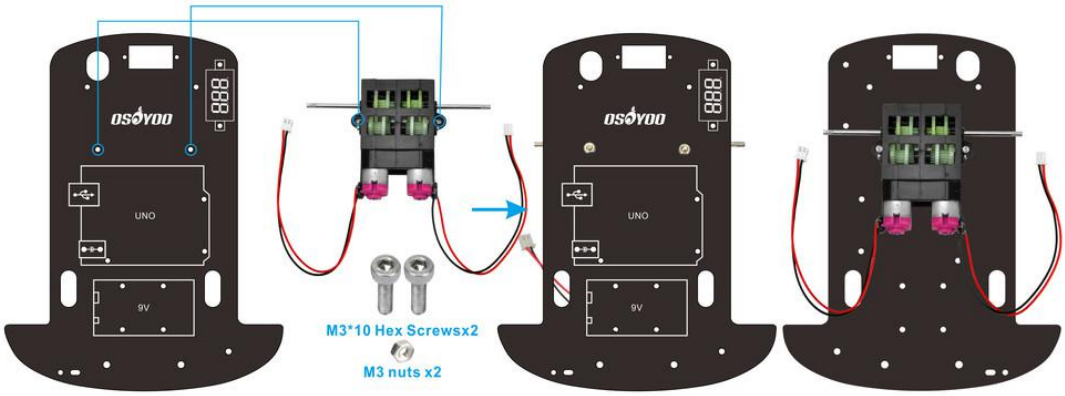
8	9V Battery Box		1	Click here to buy
9	9V Battery		1	Click here to buy
10	Phillips Screwdriver		1	Click here to buy
11	Hex Screwdriver		1	Click here to buy
12	20pin 15cm Female to Female Cable		1	Click here to buy
13	3pin 15cm Female to Female Cable		1	Click here to buy

Hardware Installation

Step 1. Remove the protective film from the chassis:

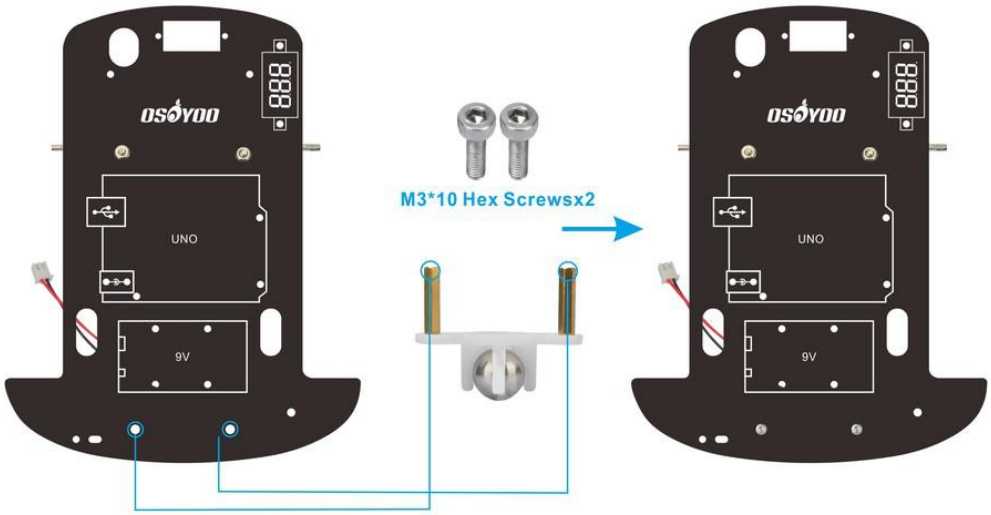


Step 2. Install the motor under the chassis with M3 Hex screws and nuts as follow:

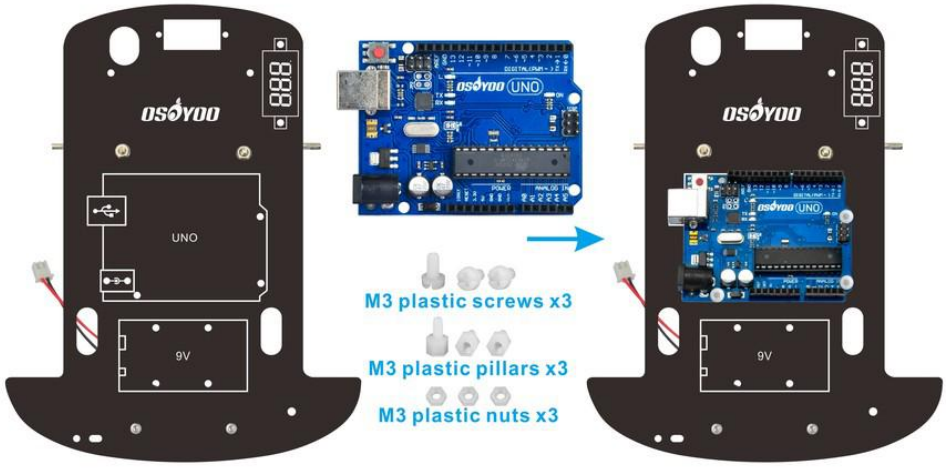


Step 3. Install the universal wheel with the M3 Hex screws and copper pillars:

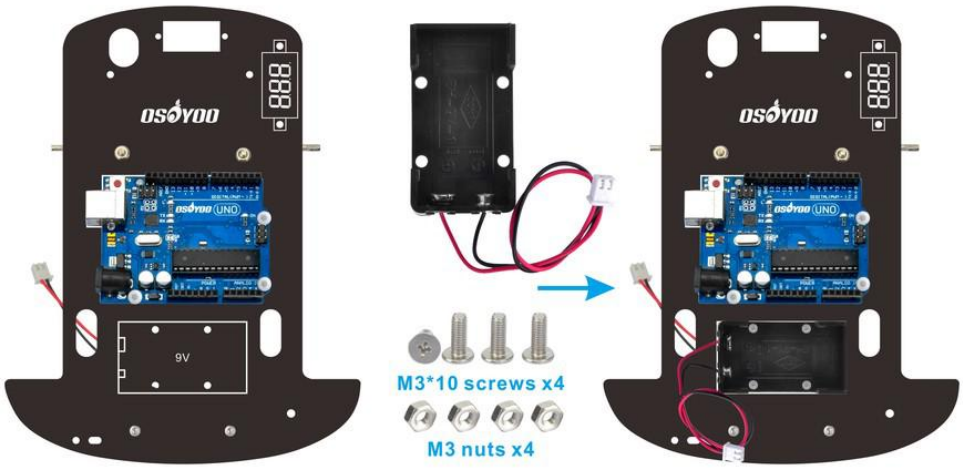
Step 4. Install the universal wheel under the chassis with the M3 Hex screws:



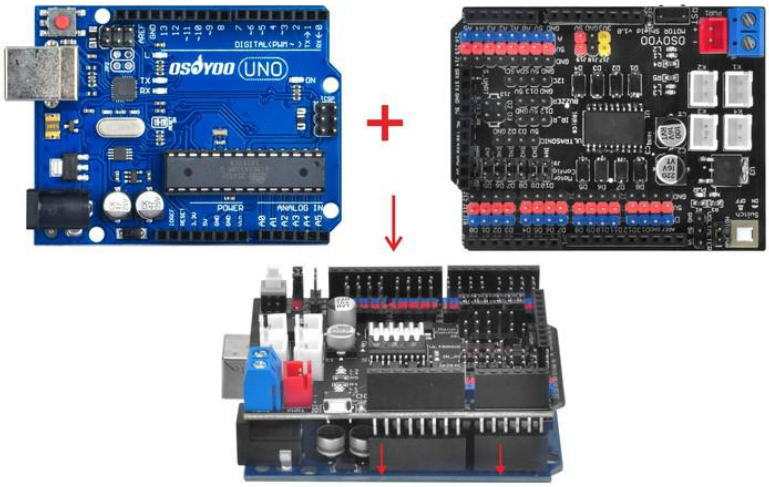
Step 5. Install OSOYOO UNO Board on the chassis with M3 plastic screws, pillars and nuts:



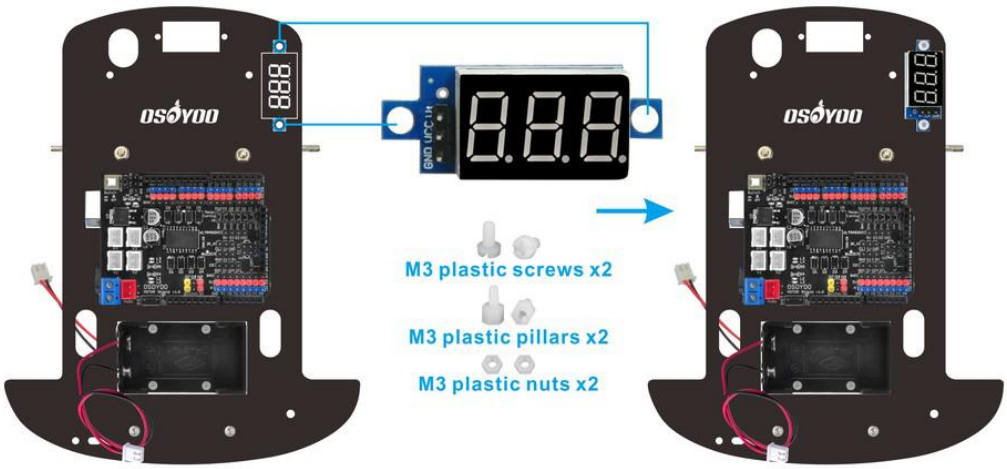
Step 6. Install the battery box on the chassis with M3 Phillips screws and nuts:



Step 7. Plug the OSOYOO Motor Shield Board in OSOYOO UNO board：

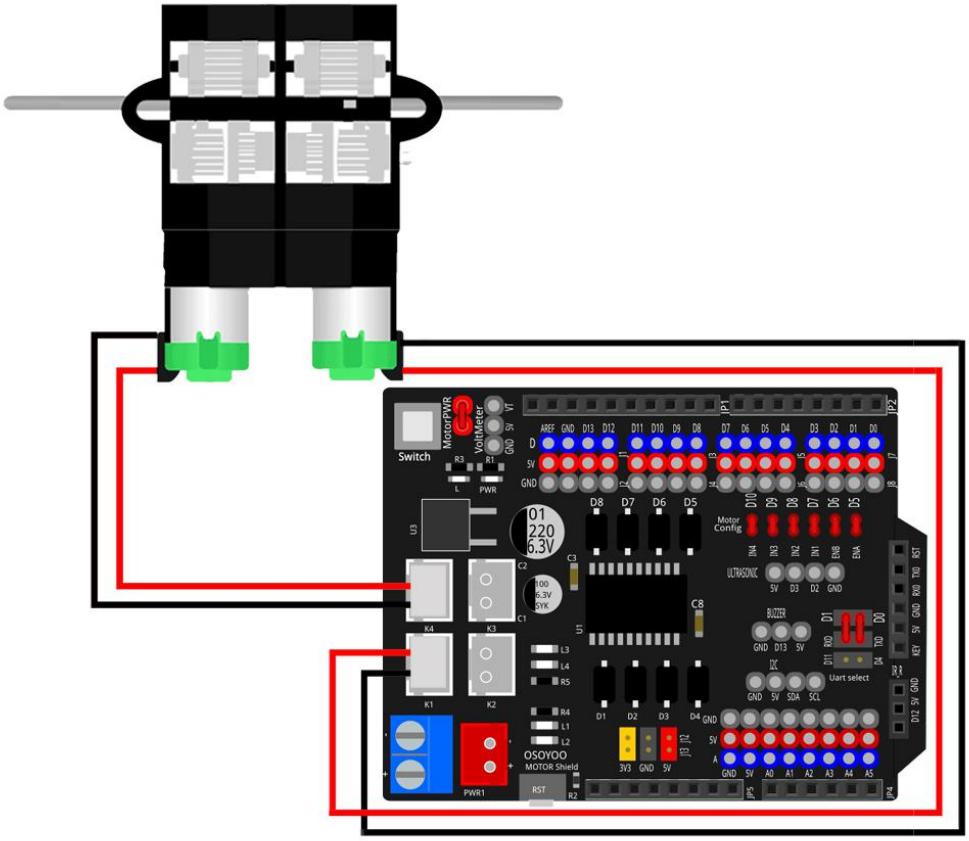


Step 8. Install the voltage meter on the chassis with M3 plastic screws, pillars and nuts:



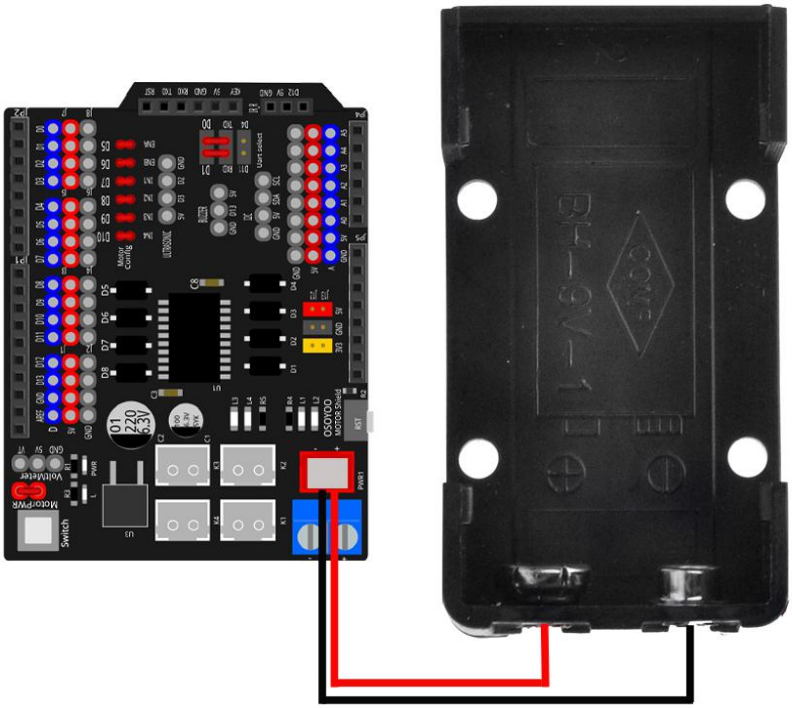
Connection

Step 1. Connect OSOYOO Motor Shield with the motor:



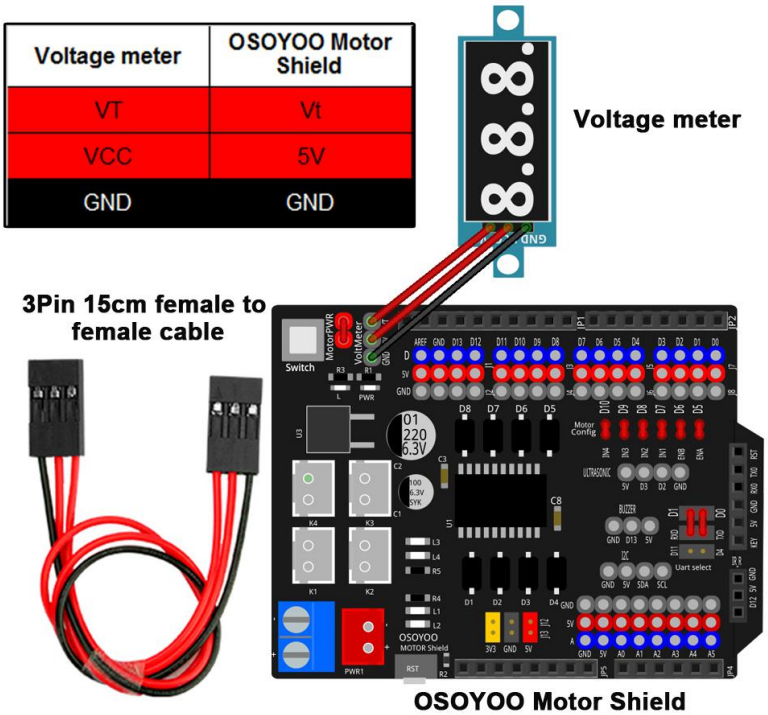
More detail about OSOYOO Motor Shield V1.1 please refer to this link:
https://osoyoo.com/2023/01/16/introduction-of-osoyoo-motor-shield-v1-1-v1-2/

Step 2. Connect OSOYOO Motor Shield with the battery box:

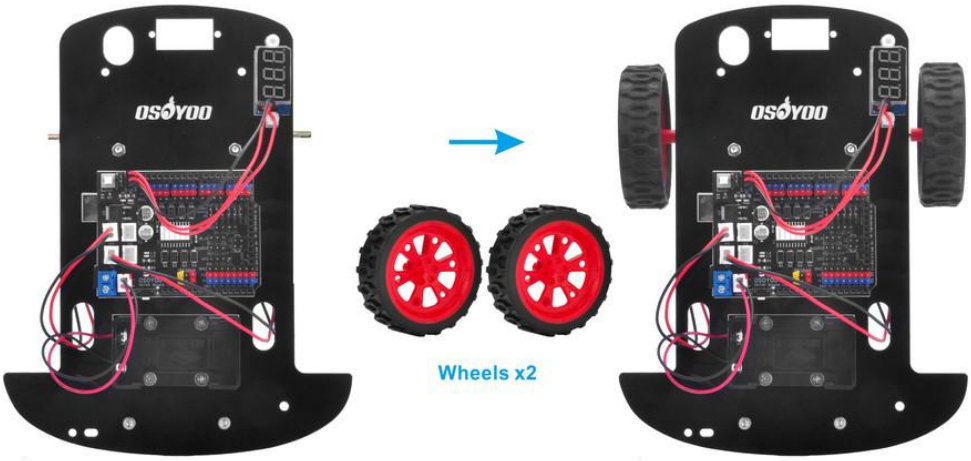


Step 3. Connect OSOYOO Motor Shield V1.1 with the voltage meter:

Voltage meter	OSOYOO Motor Shield
VT	Vt
VCC	5V
GND	GND



Step 4. Install the wheels:



Now hardware installation is almost done. Before we install the battery into the box, we need to upload the sample code into OSOYOO UNO for Arduino first.

Software Installation

Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7 zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/

Step 1:

Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step).

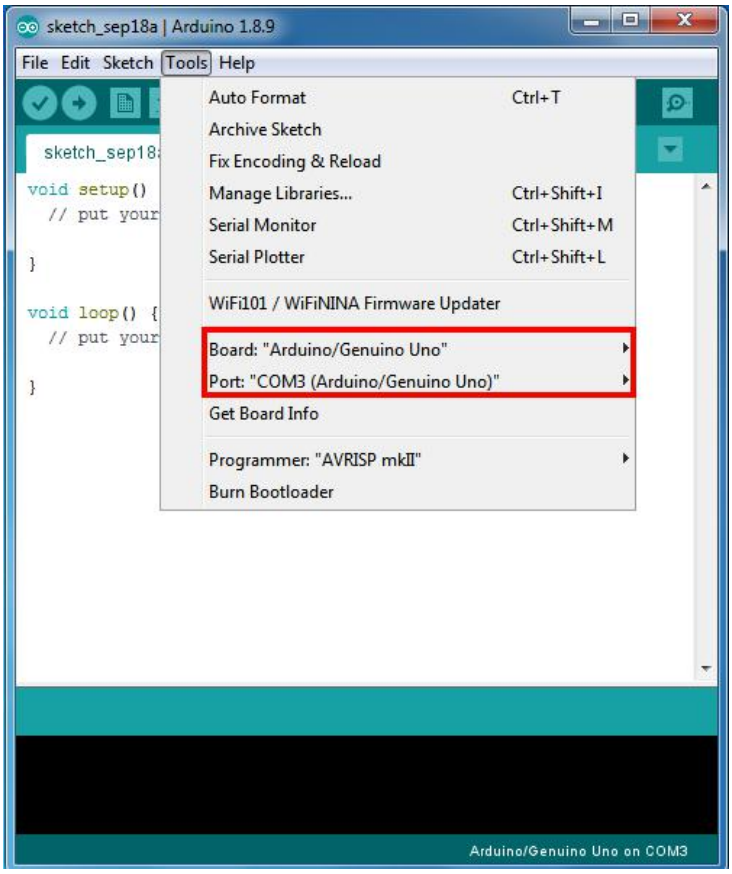
Download Arduino IDE from the follow link, then install the software:
https://www.arduino.cc/en/Main/Software?setlang=en

Step 2:

Download https://osoyoo.com/picture/2WD_Car_V2.0/code/lesson-1.zip and unzip it, you will see a folder called lesson-1.

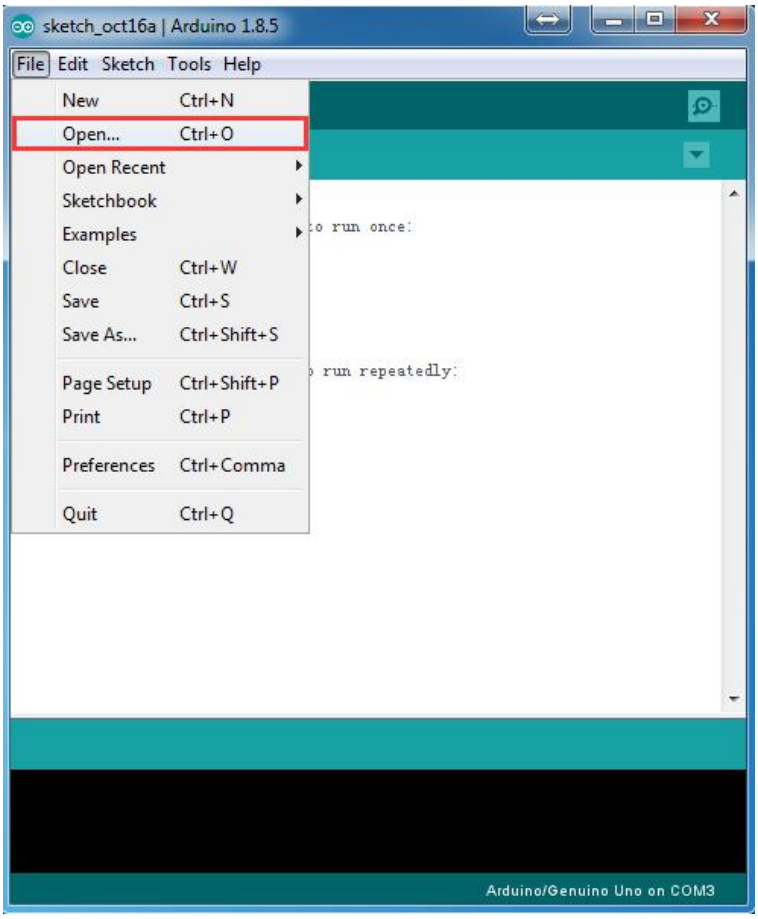
Step3:

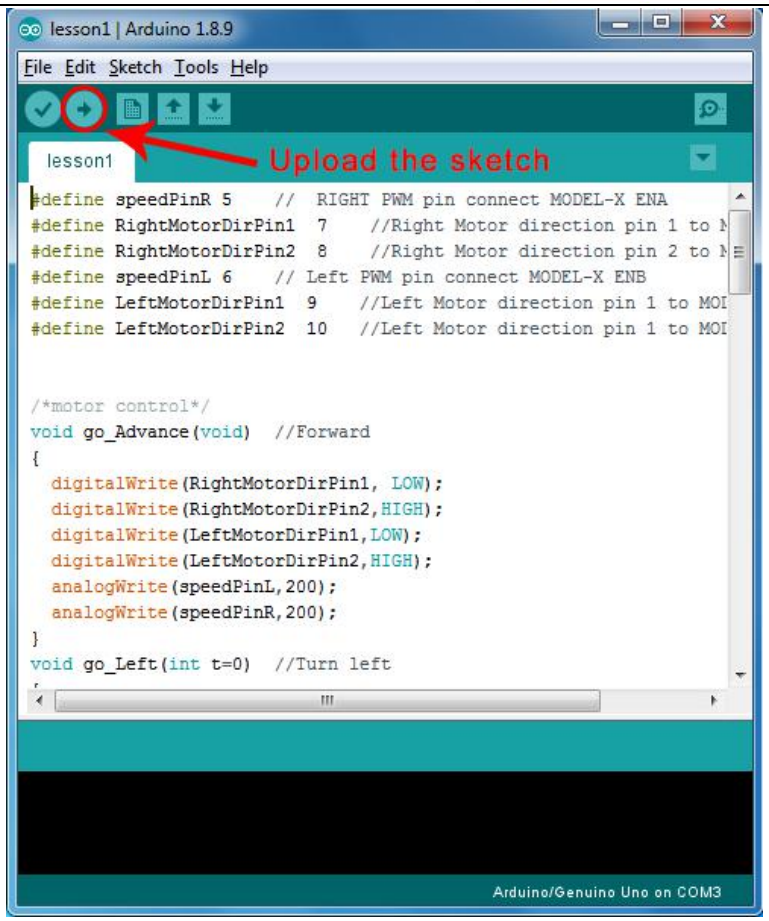
Connect UNO R3 board to PC with USB cable, open Arduino IDE, choose corresponding board/port for your project.
Notice: Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO.

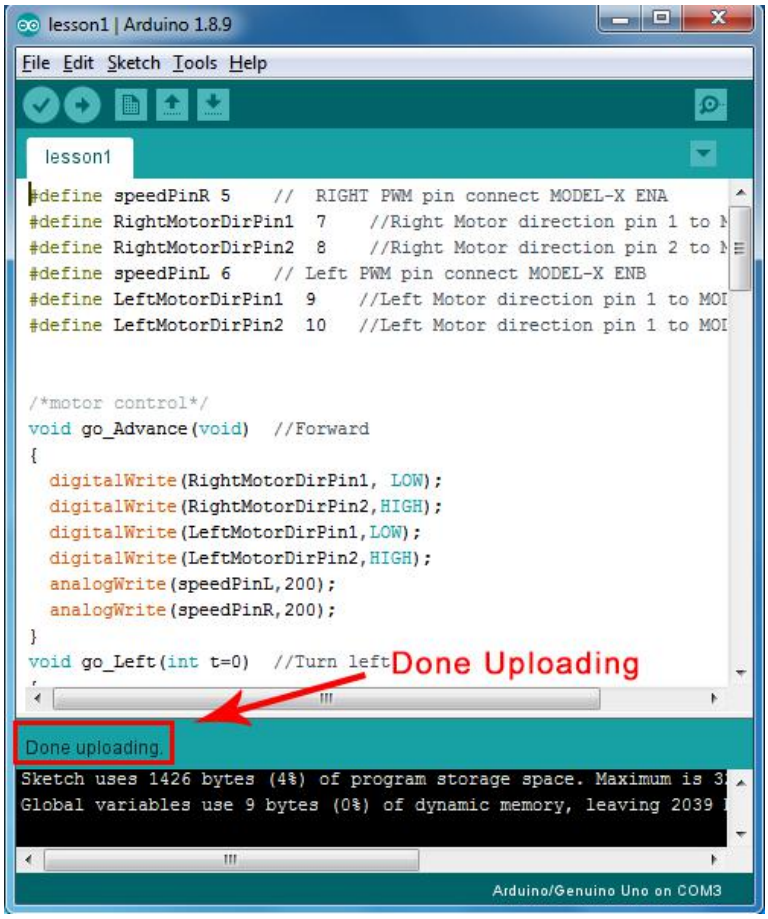


Step 4:

Click file -> click Open -> choose code “lesson-1.ino”, load the code into OSOYOO UNO, and then upload the sketch to the board.



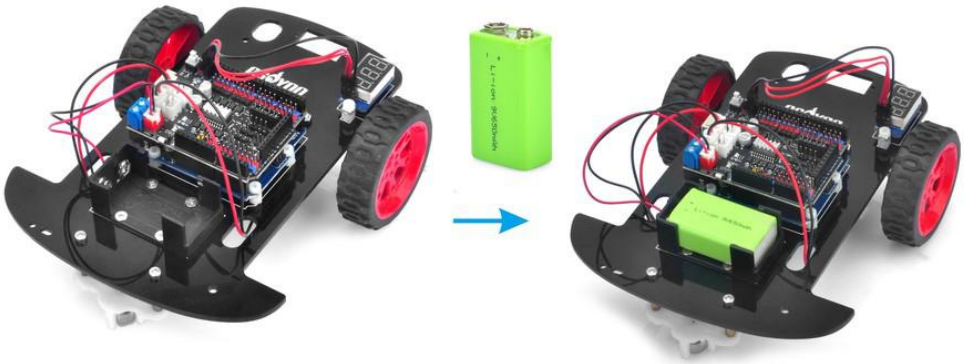

lesson1 | Arduino 1.8.9
File Edit Sketch Tools Help
lesson1
Upload the sketch
#define speedPinR 5 // RIGHT PWM pin connect MODEL-X ENA
#define RightMotorDirPin1 7 //Right Motor direction pin 1 to
#define RightMotorDirPin2 8 //Right Motor direction pin 2 to
#define speedPinL 6 // Left PWM pin connect MODEL-X ENB
#define LeftMotorDirPin1 9 //Left Motor direction pin 1 to MOI
#define LeftMotorDirPin2 10 //Left Motor direction pin 1 to MOI
/*motor control*/
void go_Advance(void) //Forward
{
digitalWrite(RightMotorDirPin1, LOW);
digitalWrite(RightMotorDirPin2,HIGH);
digitalWrite(LeftMotorDirPin1,LOW);
digitalWrite(LeftMotorDirPin2,HIGH);
analogWrite(speedPinL,200);
analogWrite(speedPinR,200);
}
void go_Left(int t=0) //Turn left
Arduino/Genuino Uno on COM3


lesson1 | Arduino 1.8.9
File Edit Sketch Tools Help
lesson1
#define speedPinR 5 // RIGHT PWM pin connect MODEL-X ENA
#define RightMotorDirPin1 7 //Right Motor direction pin 1 to
#define RightMotorDirPin2 8 //Right Motor direction pin 2 to
#define speedPinL 6 // Left PWM pin connect MODEL-X ENB
#define LeftMotorDirPin1 9 //Left Motor direction pin 1 to MOI
#define LeftMotorDirPin2 10 //Left Motor direction pin 1 to MOI
/*motor control*/
void go_Advance(void) //Forward
{
digitalWrite(RightMotorDirPin1, LOW);
digitalWrite(RightMotorDirPin2,HIGH);
digitalWrite(LeftMotorDirPin1,LOW);
digitalWrite(LeftMotorDirPin2,HIGH);
analogWrite(speedPinL,200);
analogWrite(speedPinR,200);
}
void go_Left(int t=0) //Turn left
Done Uploading
Done uploading.
Sketch uses 1426 bytes (4%) of program storage space. Maximum is 3
Global variables use 9 bytes (0%) of dynamic memory, leaving 2039
Arduino/Genuino Uno on COM3

Testing

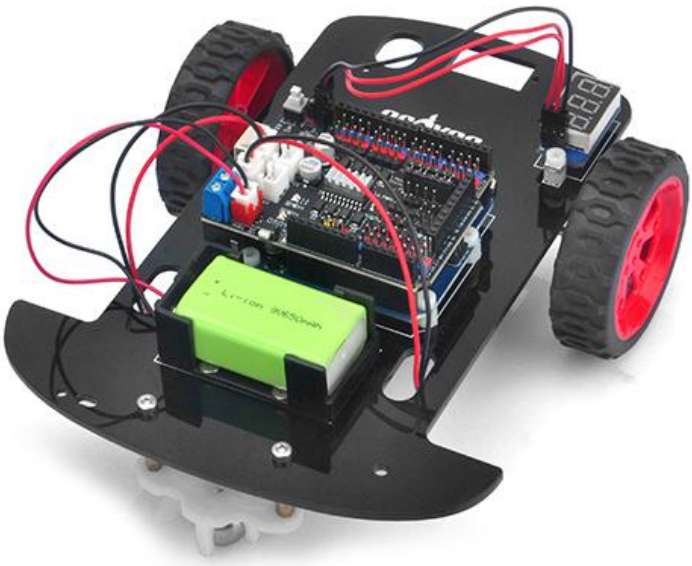
Disconnect OSOYOO UNO from PC, please confirm that the power switch of the OSOYOO Motor Shield is off, put a 9V battery into battery box.

(make sure polar direction is correct, otherwise it can destroy your device and cause fire hazard).



Put the car on the ground, turn on the switch of OSOYOO Motor Shield, the car should go forward, then go backward, then left turn, then right turn, then stop.

If the car does not move as per above mentioned result, you should check your wire connection, 7 jumper caps on OSOYOO Motor Shield, battery voltage (must over 7.2v).



Lesson 2: IR Remote Controlled

Objective

In this tutorial, we will use Osoyoo Model-3 Robot Learning Kit to make a simple remote controlled smart car. Once the car installation is completed, we will use an Infrared Remote to control the car movements including go forward, go back, left turn and right turn.

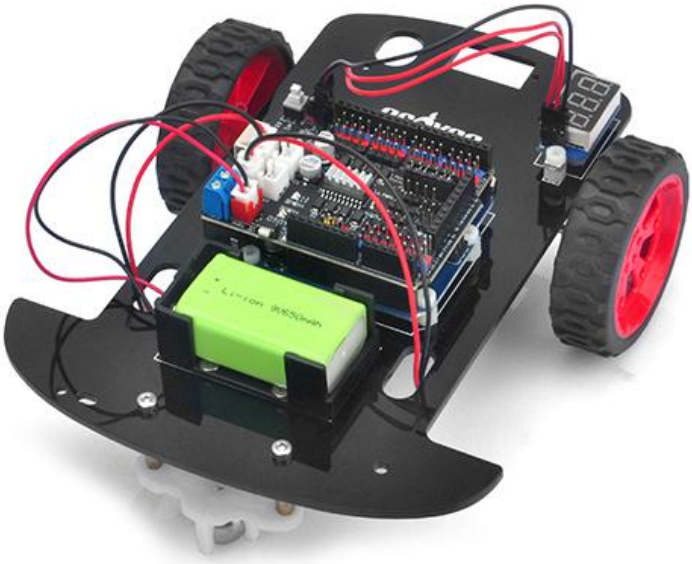
Parts and Devices

No.	Device	Picture	Qty.	Link

1	IR receiver		1	Click here to buy
2	IR remote controller		1	Click here to buy
3	Hex Screwdriver		1	Click here to buy
4	20pin 15cm Female to Female Cable		1	Click here to buy

Hardware Installation

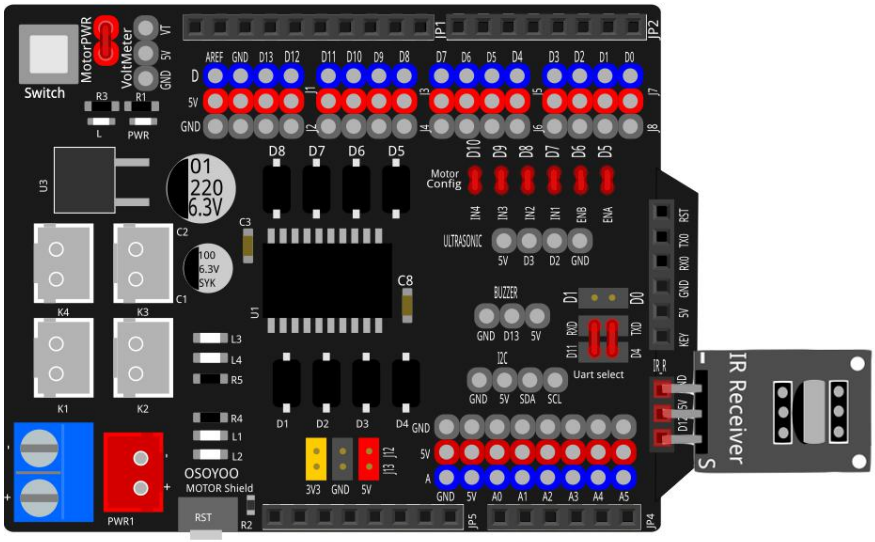
Step 1:
Install the smart car basic frame work as per Lesson 1. If you have already completed installation in Lesson 1, just keep it as is.

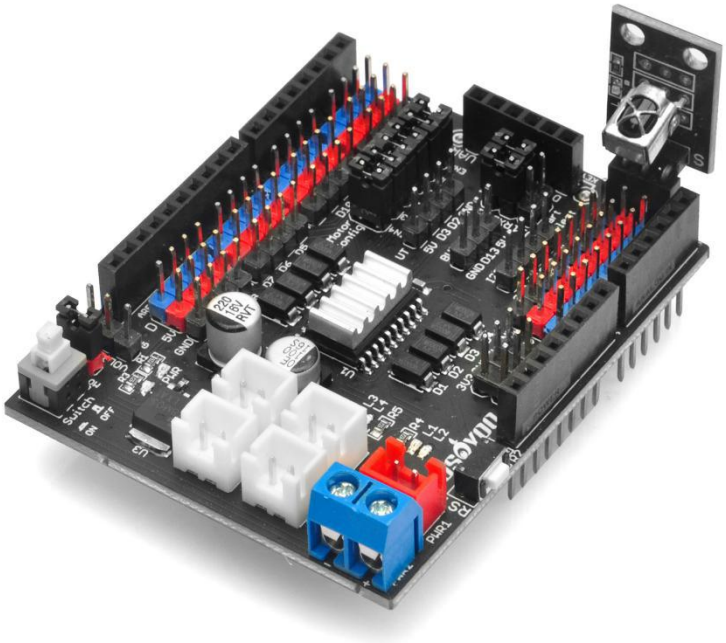


Step 2:

Add an IR receiver module onto the car.

Please install the IR receiver module on OSOYOO motor shield V1.1 as following:(Remember: DO NOT remove any existing wires installed in Lesson 1)





Software Installation

Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7 zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/

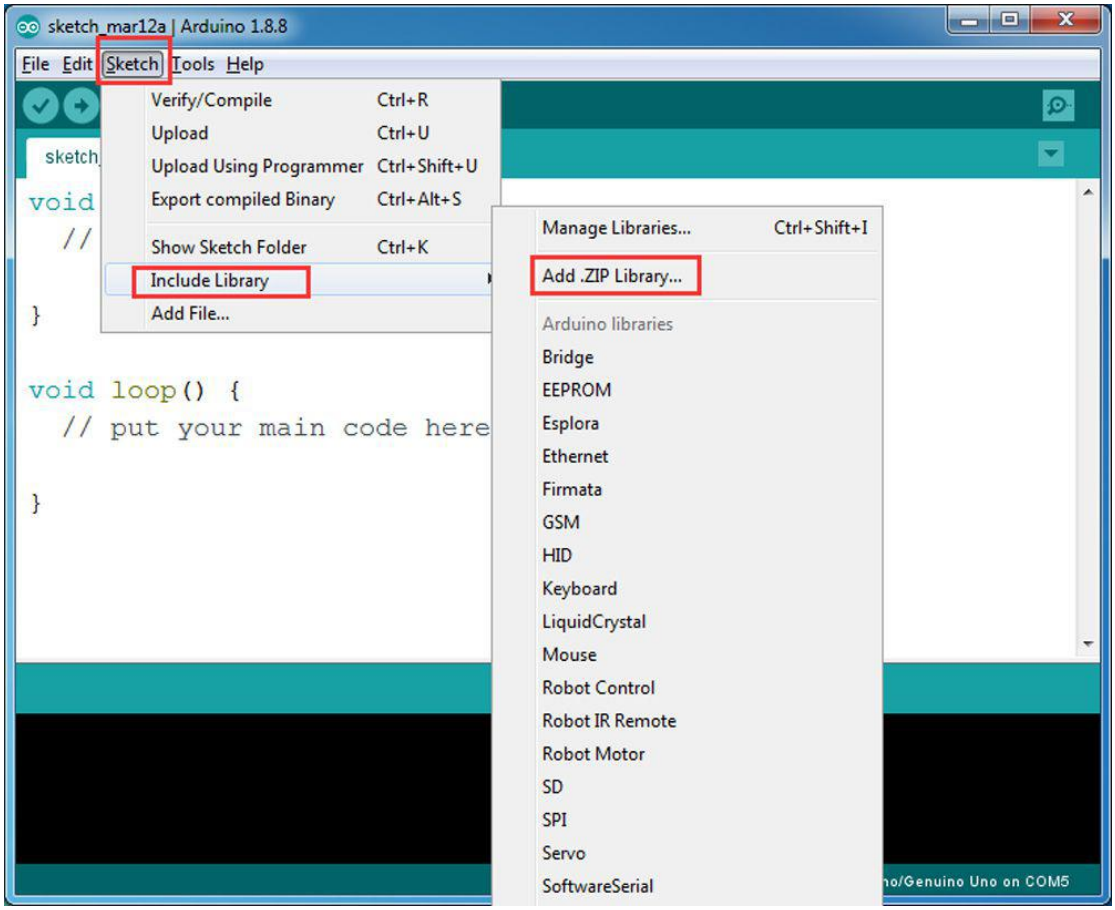
Step 1:
Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step).

Download Arduino IDE from the follow link, then install the software:
https://www.arduino.cc/en/Main/Software?setlang=en

Step 2:
Install IRremote library into Arduino IDE (If you have already installed IRremote library, please skip this step)

Download IRremote library from

https://osoyoo.com/picture/2WD_Car_V2.0/code/IRremote.zip, then import the library into Arduino IDE (Open Arduino IDE-> click Sketch->Include Library->Add .Zip Library)



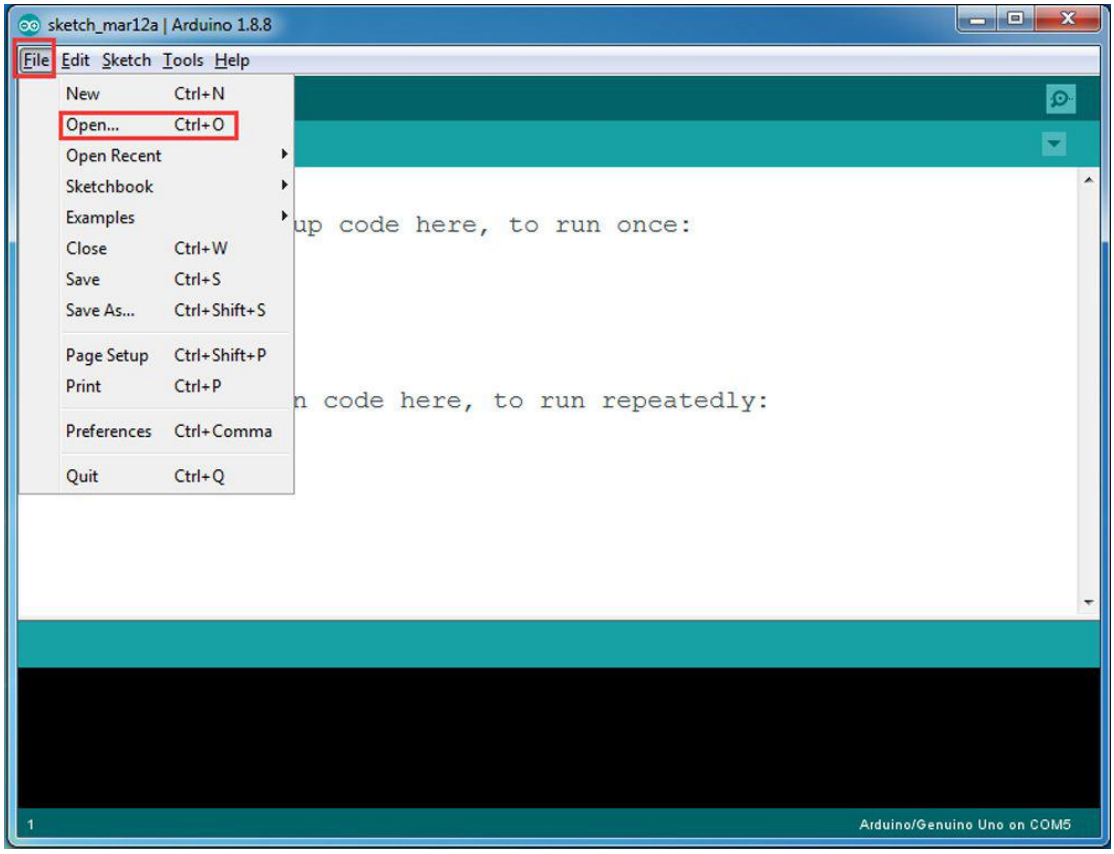
Step 3:

Download https://osoyoo.com/picture/2WD_Car_V2.0/code/lesson2.zip and unzip the download zip file lesson2.zip, you will see a folder called lesson2.

Step 4:

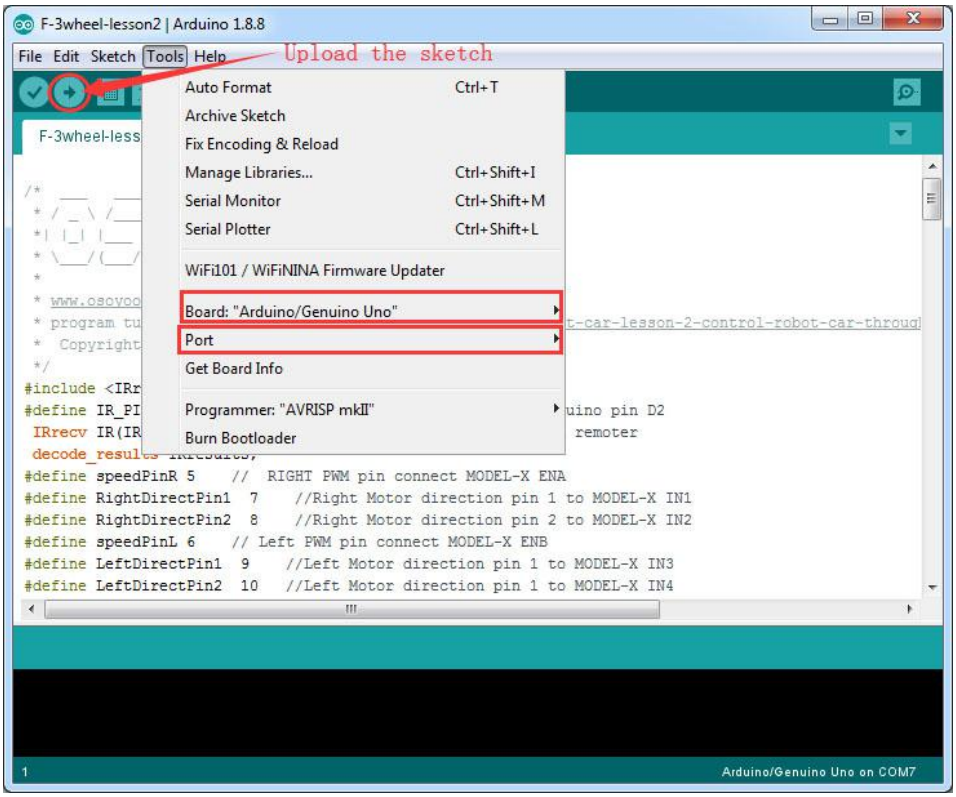
Connect UNO R3 board to PC with USB cable, Open Arduino IDE -> click file -> click Open -> choose code “lesson2.ino” in lesson2 folder, load the code into OSOYOO UNO.

Notice: Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO.



Step 5:

Choose corresponding board and port for your project,upload the sketch to the board.



Testing

Press IR controller keys to control the car movements:

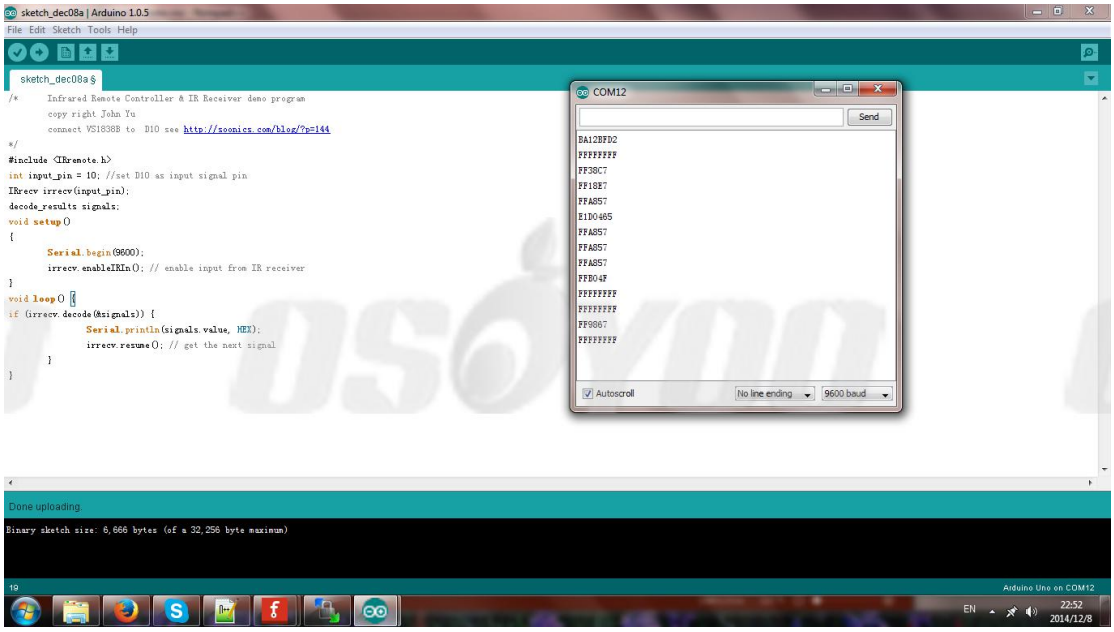
Trouble shooting

Some user found that this IR remote does not work. The reason might be the IR remote sends different button code which does not match our sample code. In order to solve this problem. Please take following steps:

Step A) Get the IR code of each button in your IR remote.
Copy code from following link:
https://osoyoo.com/wp-content/uploads/samplecode/irdemo2.ino

Upload above sketch into your OSOYOO UNO for Arduino and open the serial monitor in your upper-right corner.

Press the “▲” “▼” “>” “<" "OK" button in your remote, you will see their IR code as following picture:



Write down the IR code of your control buttons “▲” “▼” “>” “<” “OK” button.

Step B) Replace the IR code in lesson 2 sketch file:

Open your Lesson 2 code again, then you will see following lines define the IR CODE of each button:

#define IR_ADVANCE 0x00FF18E7 //code from IR controller “▲” button
#define IR_BACK 0x00FF4AB5 //code from IR controller “▼” button
#define IR_RIGHT 0x00FF5AA5 //code from IR controller “>” button
#define IR_LEFT 0x00FF10EF //code from IR controller “<" button
#define IR_STOP 0x00FF38C7 //code from IR controller “OK” button
#define IR_turnsmallleft 0x00FFB04F //code from IR controller “#” button

Please change the value of each button in above lines to match the code from Step A). If you don’t know how to change, just send email to support@osoyoo.info and give us the code of each button from **Step A)**, I can help you to change the code and email new sketch file to you.

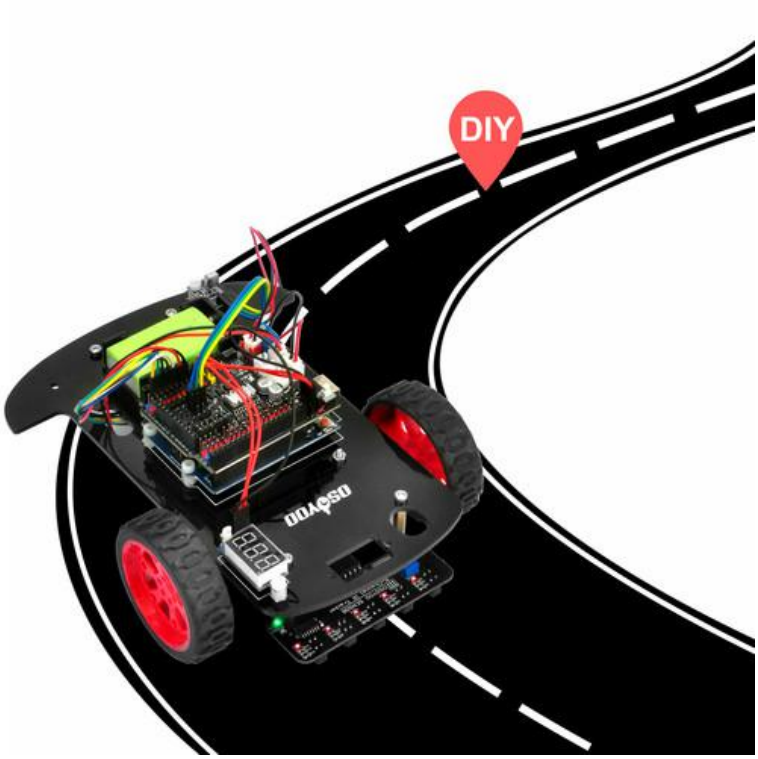
Above method can also allow you to use other IR sending device (i.e TV remote, DVD remote, air conditioner remote etc) to control the car. Just use **Step A)** to get the key code of your remote and change the sketch file in Step B), it will work.

Lesson 3: Line Tracking

Objective

In this lesson, we will add a 5-line tracking sensor to the framework built in Lesson 1. If you have not completed installation in Lesson 1, please review Lesson 1

The software in this lesson will read data from the tracking sensors and automatically guide the car to move along the black track line in the white ground.



Parts and Devices

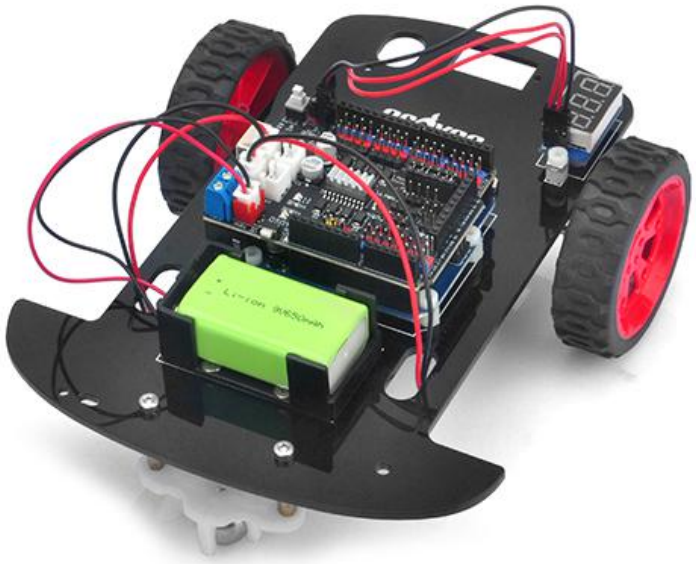
No.	Device	Picture	Qty.	Link

1	Tracking Sensor		1	Click here to buy
2	Hex Screwdriver		1	Click here to buy
3	7pin 25cm Female to Female Cable		1	Click here to buy

Hardware Installation

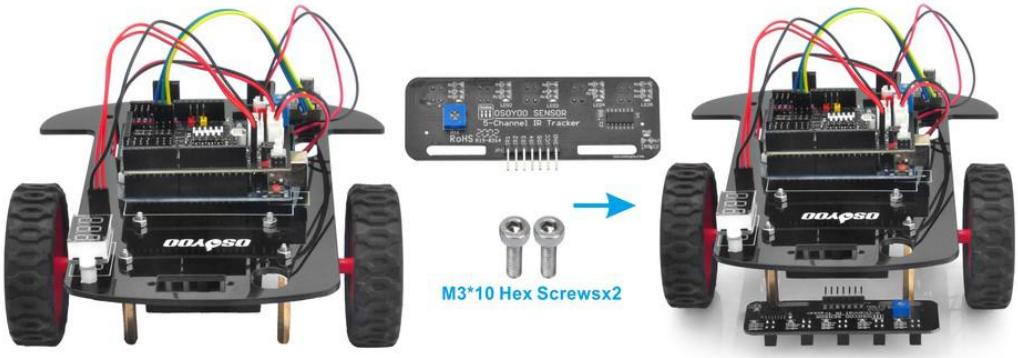
Step 1:

Start the installation from previous status of Lesson 1 . If you have installed Lesson 2, no need change anything, just keep the hardware wire connection as is.



Step 2:

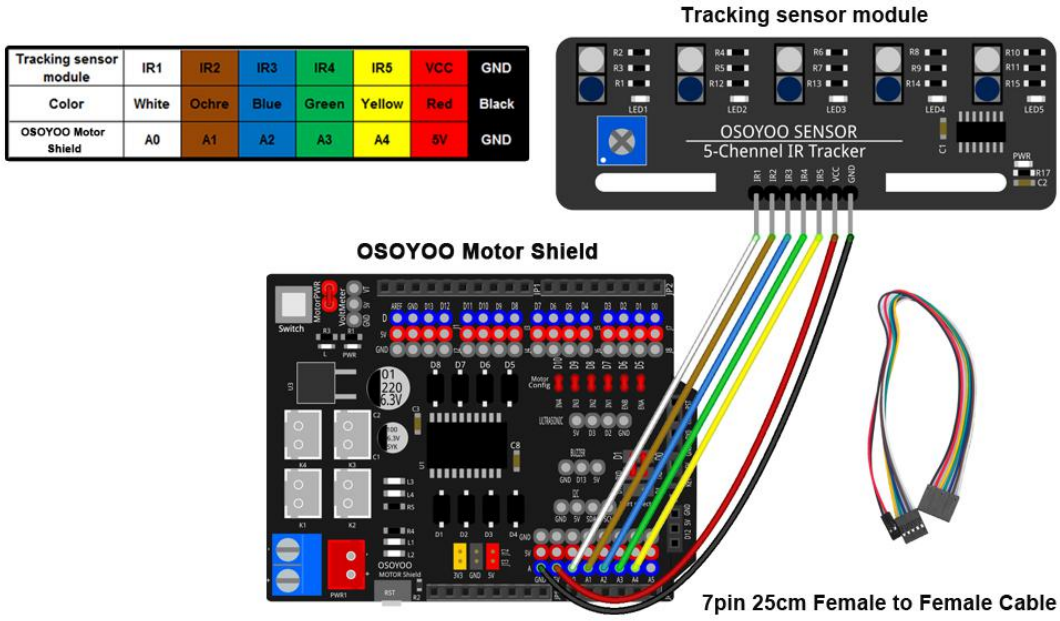
Install the 5-line tracking sensor module under the car chassis with 2pcs M3*10 hex screws, M3*30+6 copper pillars and M3 nuts as following:



Step 3:

Connect GND-VCC pin of tracking sensor module to GND-5V of OSOYOO motor shield; connect IR1, IR2, IR3, IR4, IR5 pins to A0, A1, A2, A3, A4 with 7pin 25cm female to female cable as the following photo shows:

(Remember: DO NOT remove any existing wires installed in Lesson 1)



Software Installation

Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/

Step 1:
Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step).

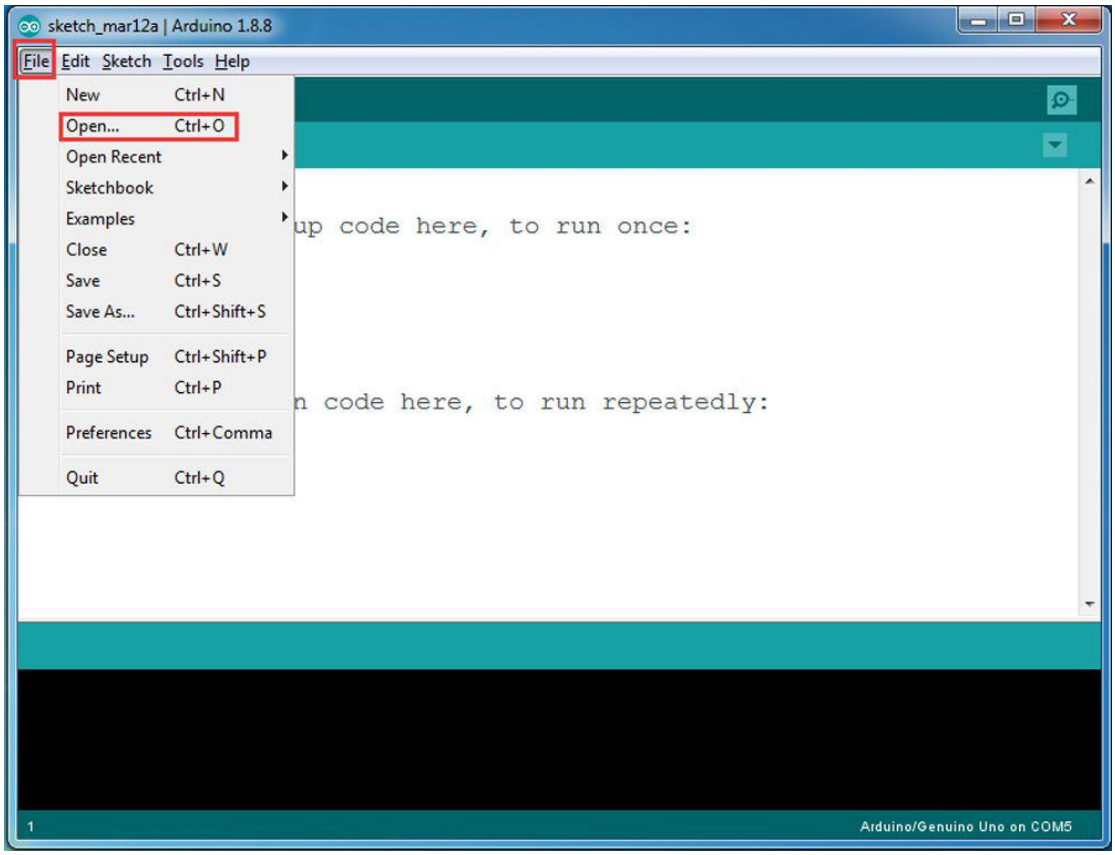
Download Arduino IDE from the follow link, then install the software:
https://www.arduino.cc/en/Main/Software?setlang=en

Step 2:
Download http://osoyoo.com/picture/V2.0_Model_3_Robot/code/lesson3.zip, unzip the download zip file lesson3.zip, you will see a folder called lesson3 .

Step 3:

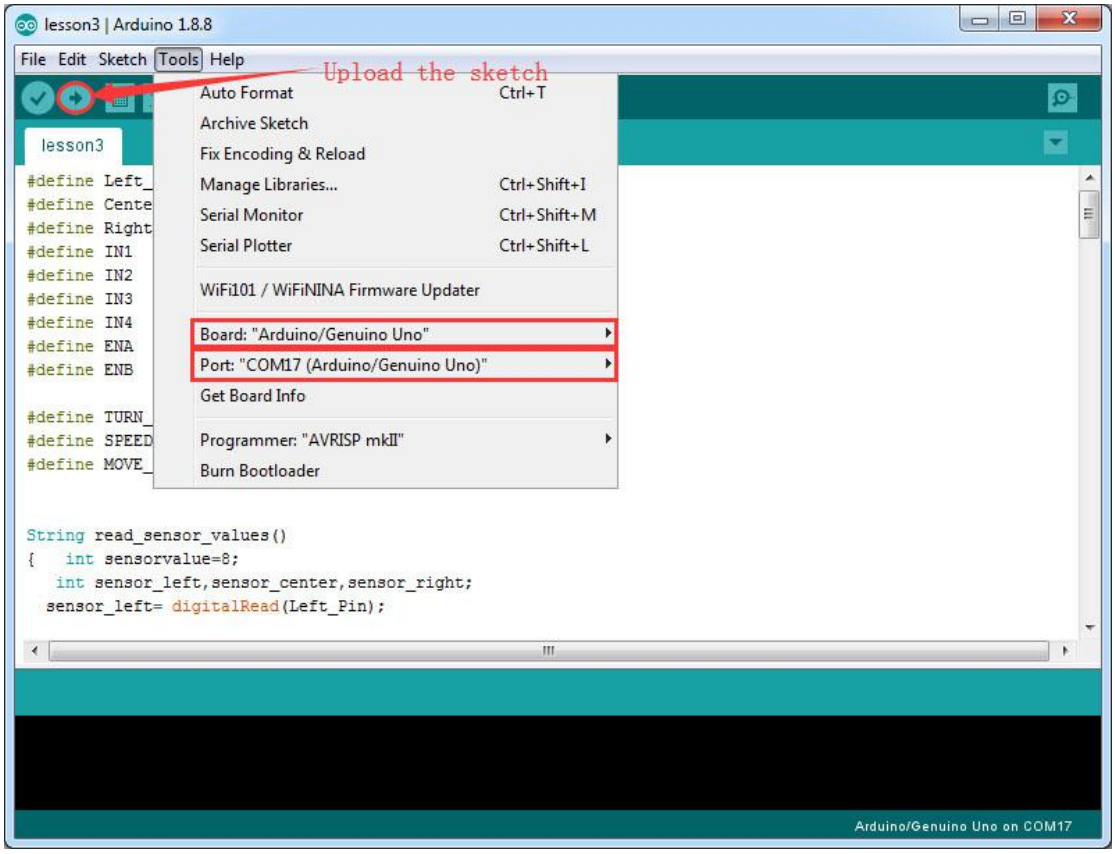
Connect UNO R3 board to PC with USB cable, Open Arduino IDE -> click file -> click Open -> choose code “lesson3.ino” in lesson3 folder, load the code into arduino.

Notice: Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO for Arduino.



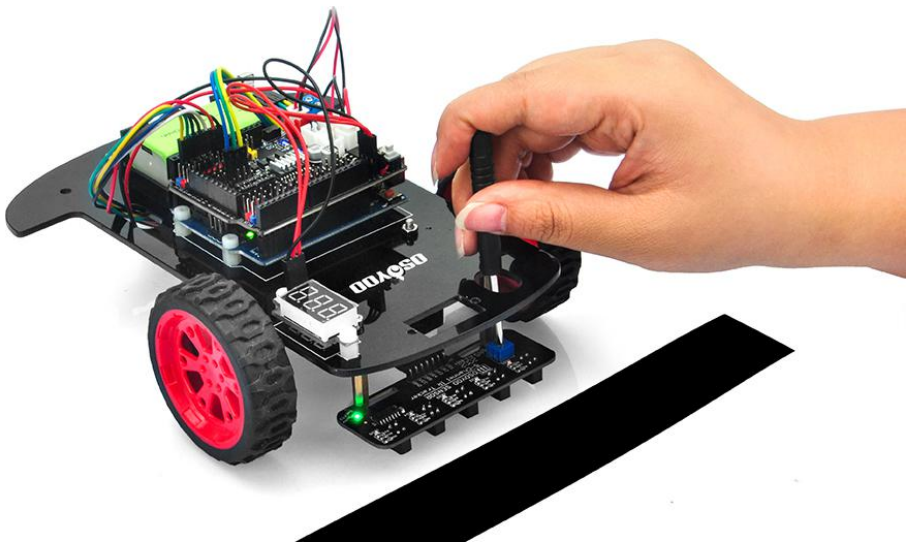
Step 4:

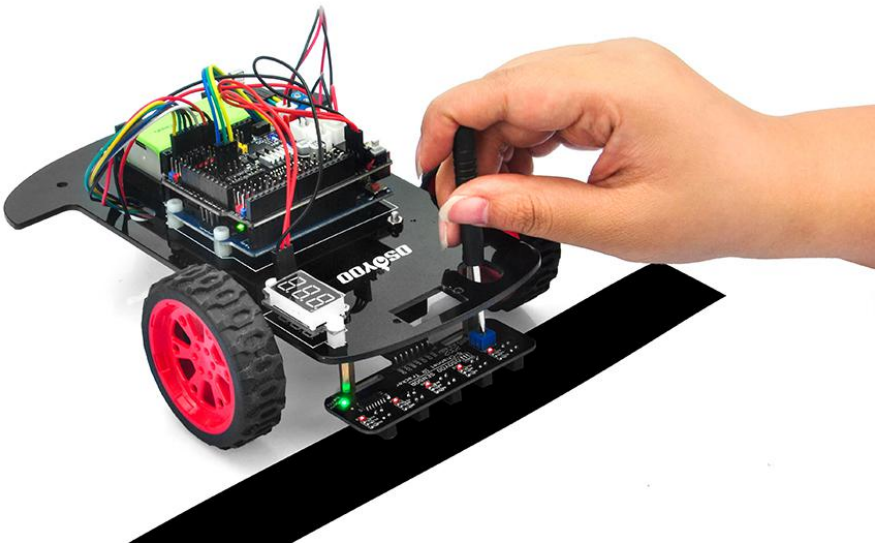
Choose corresponding board/port for your project,upload the sketch to the board.



Step 5:

Adjust the sensitivity of tracking sensor modules. Turn on and hold the car and adjust the potentiometer on the tracking sensor with cross screwdriver until you get the best sensitivity status: the signal indicate LED light will turn off when sensor is above white ground, and the signal LED will turn on when the sensor is above black track.

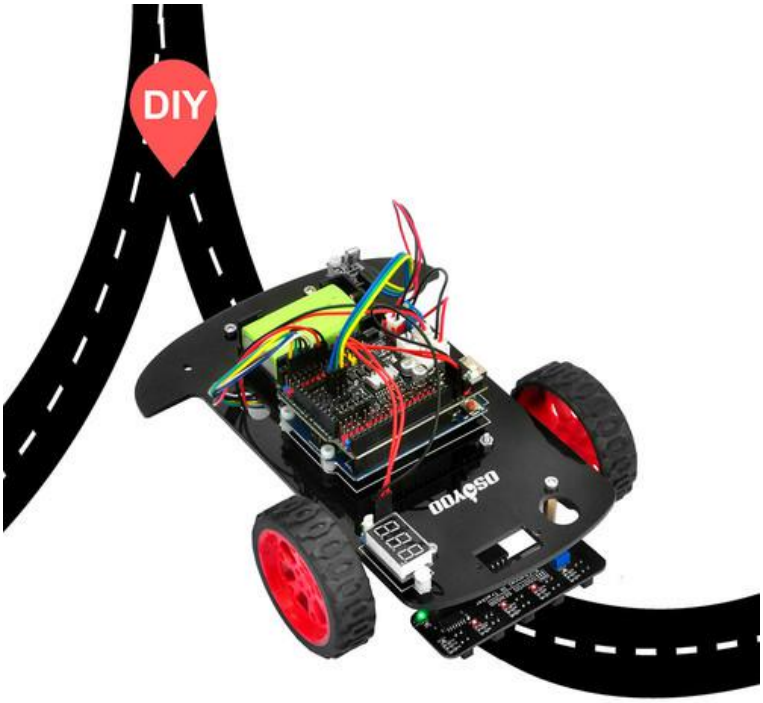




Testing

Prepare a black track (the width of the black track is more than 20mm and less than 30mm) in white ground. Please note, the bend angle of track can't be larger than 90 degree. If the angle is too large, the car will move out of the track.

Turn on the car and put the middle of tracking sensor module facing over black track, and then the car will move along the black track.

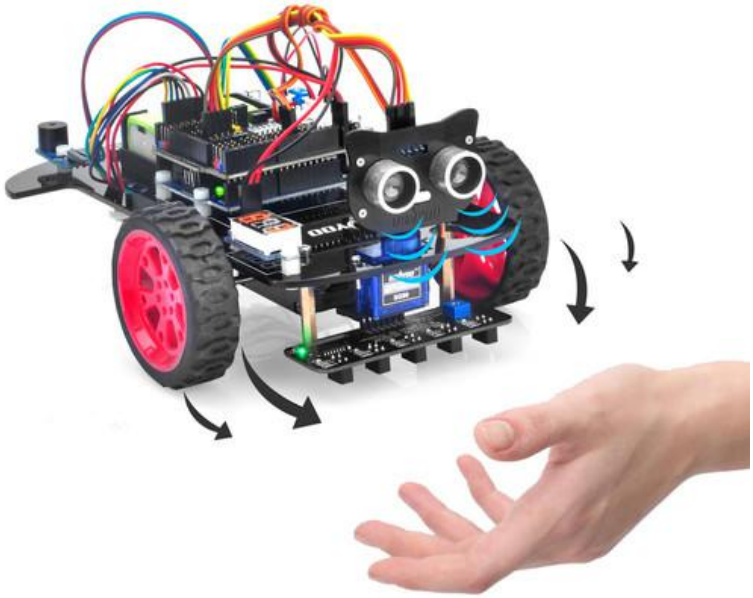


Lesson 4: Don’t Touch Me

Objective

In this lesson, we will install an ultrasonic sensor on the robot car and program the car to keep some distance of object to move.

You must complete Lesson 1 (assembling the car) before you continue on with this lesson.



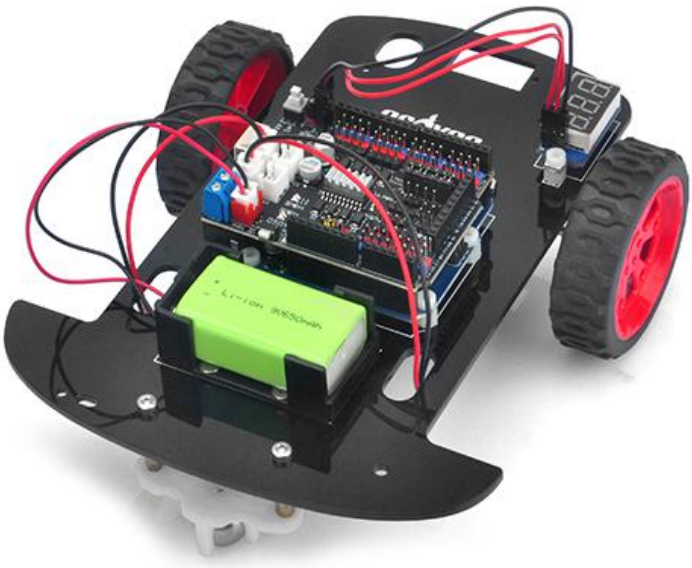
Parts and Devices

No.	Device	Picture	Qty.	Link
1	Ultrosonic Sensor		1	Click here to buy

2	Servo Motor		1	Click here to buy
3	Mount Holder for Ultrasonic Sensor		1	Click here to buy
4	Buzzer Sensor Module		1	Click here to buy
5	20pin 15cm Female to Female Cable		1	Click here to buy

Hardware Installation

Step 1:
Install the smart car basic frame work as per Lesson 1. If you have already completed installation in Lesson 1, just keep it as is.



Step 2:

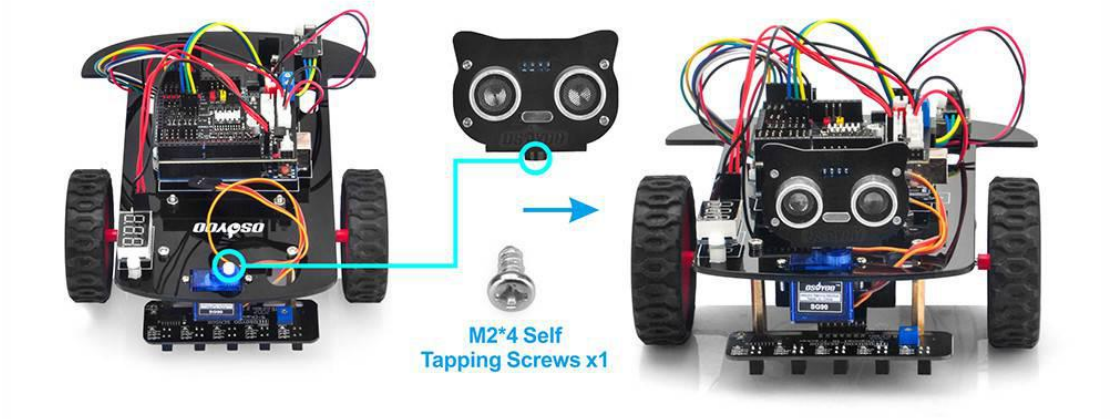
Install servo motor at the front of car chassis with 2pcs M2.2*8 Self Tapping Screws as following:

Step 3:

Install ultrasonic module to mount holder with 4pcs M1.5*8 screw and M1.5 nuts

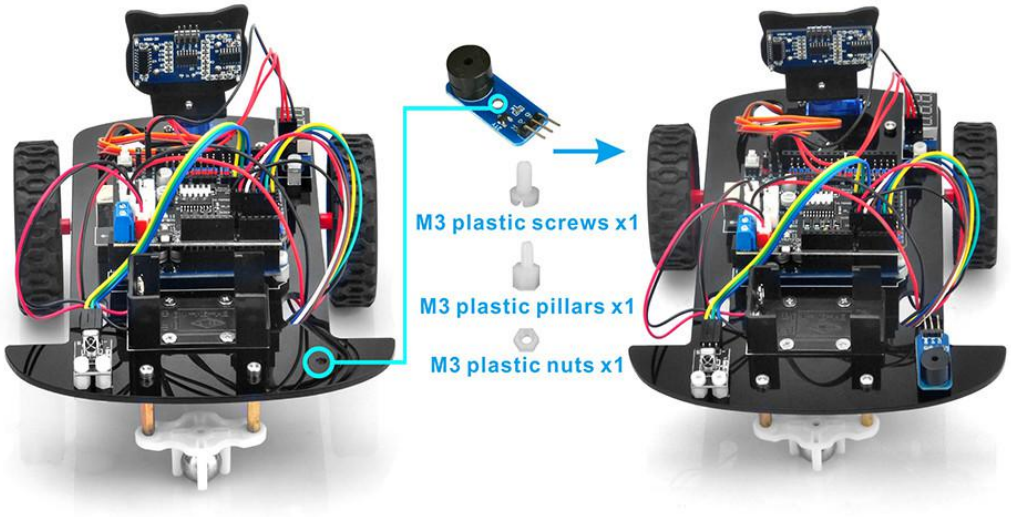
Step 4:

Install mount holder for Ultrasonic Module on servo motor with M2*4 Self Tapping Screw.



Step 5:

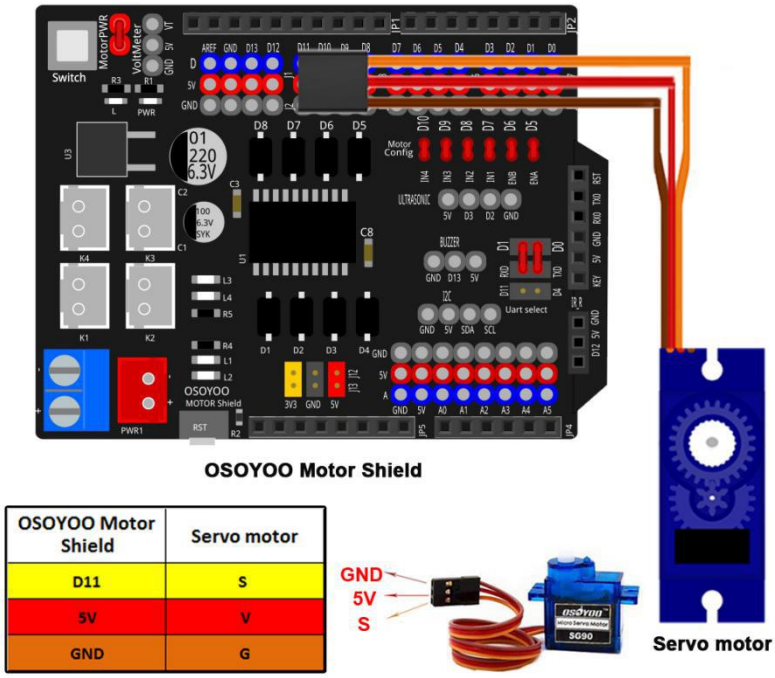
Install buzzer module on car chassis with 1pc M3 plastic screw, M3 plastic pillar and M3 plastic nut.



Step 6:

Connect SG90 servo motor to OSOYOO motor shield as following graph:

(Remember: DO NOT remove any existing wires installed in Lesson 1)

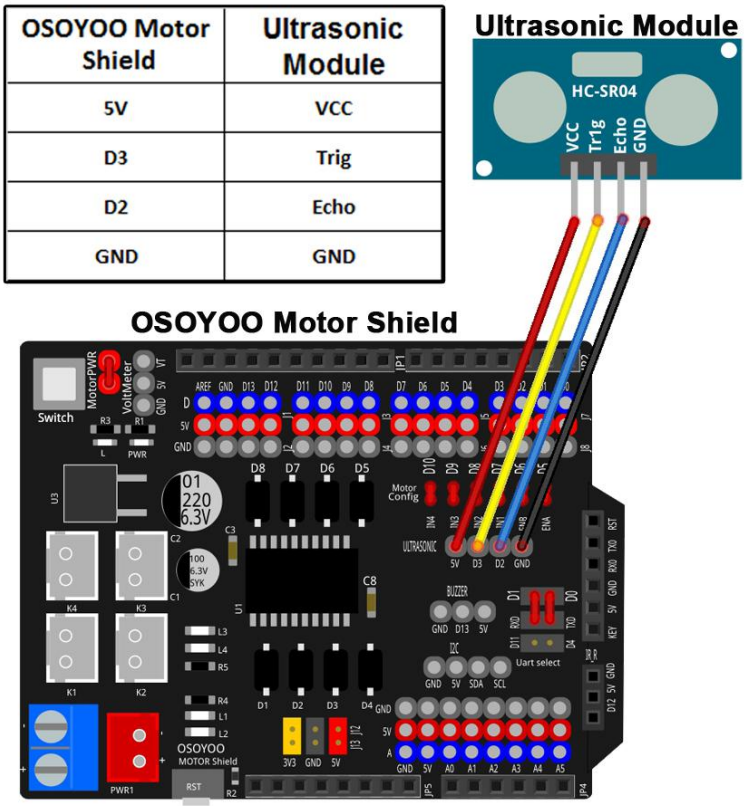


OSOYOO Motor Shield	Servo motor
D11	S
5V	V
GND	G

Step 7:

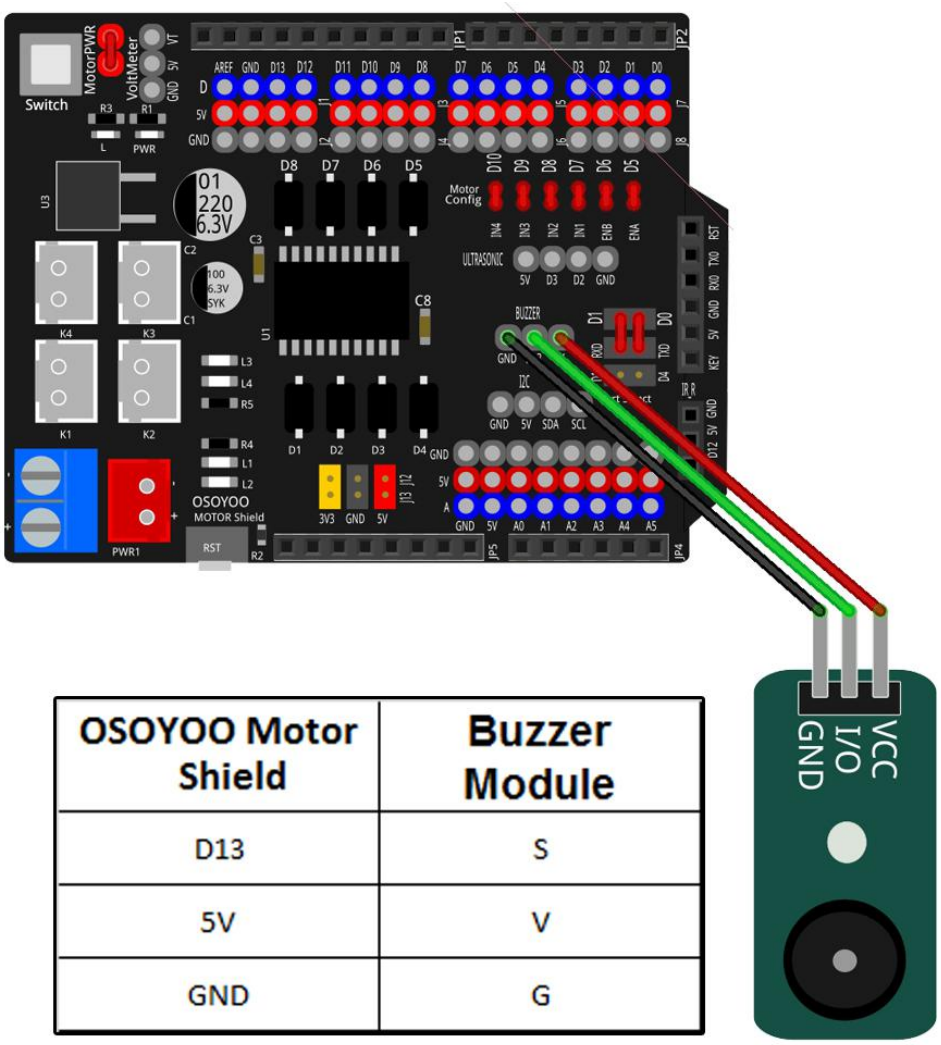
Connect ultrasonic module with OSOYOO motor shield as below connection diagram:

OSOYOO Motor Shield	Ultrasonic Module
5V	VCC
D3	Trig
D2	Echo
GND	GND



Step 8:

Connect buzzer module with OSOYOO motor shield as below connection diagram.



OSOYOO Motor Shield	Buzzer Module
D13	S
5V	V
GND	G

Software Installation

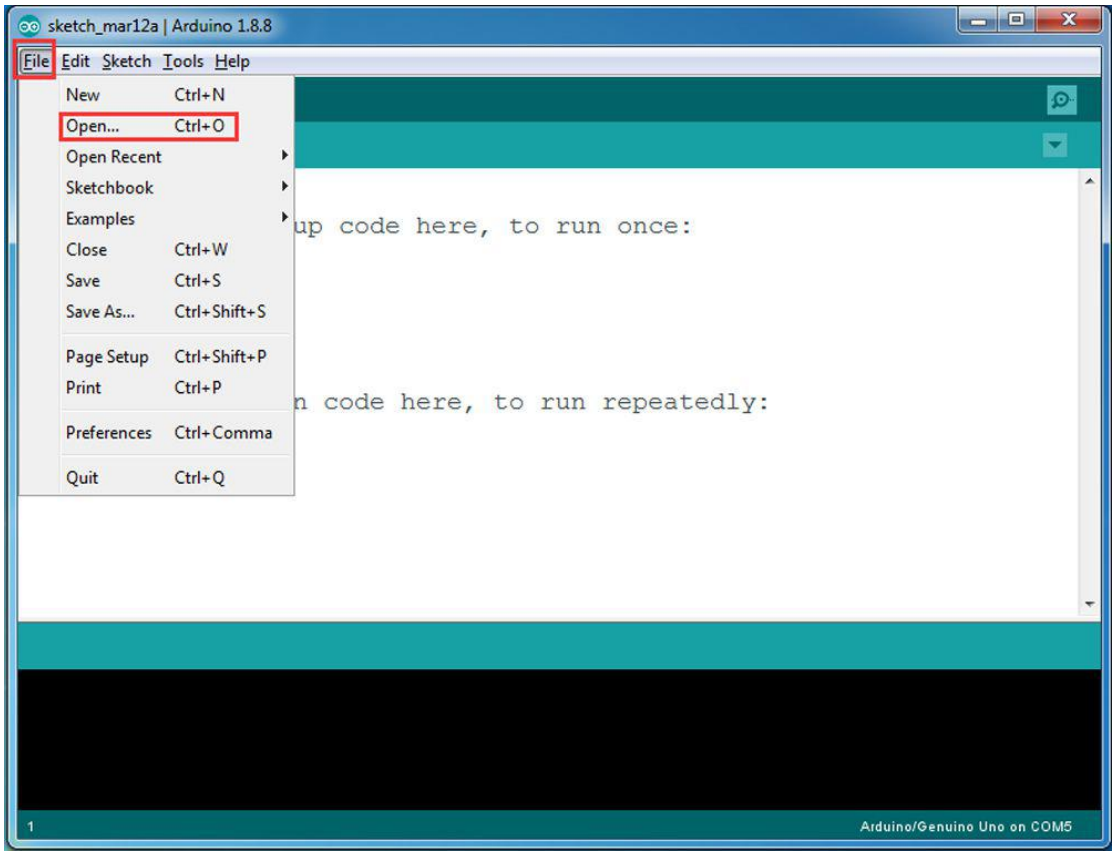
Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/

Step 1:
Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step).

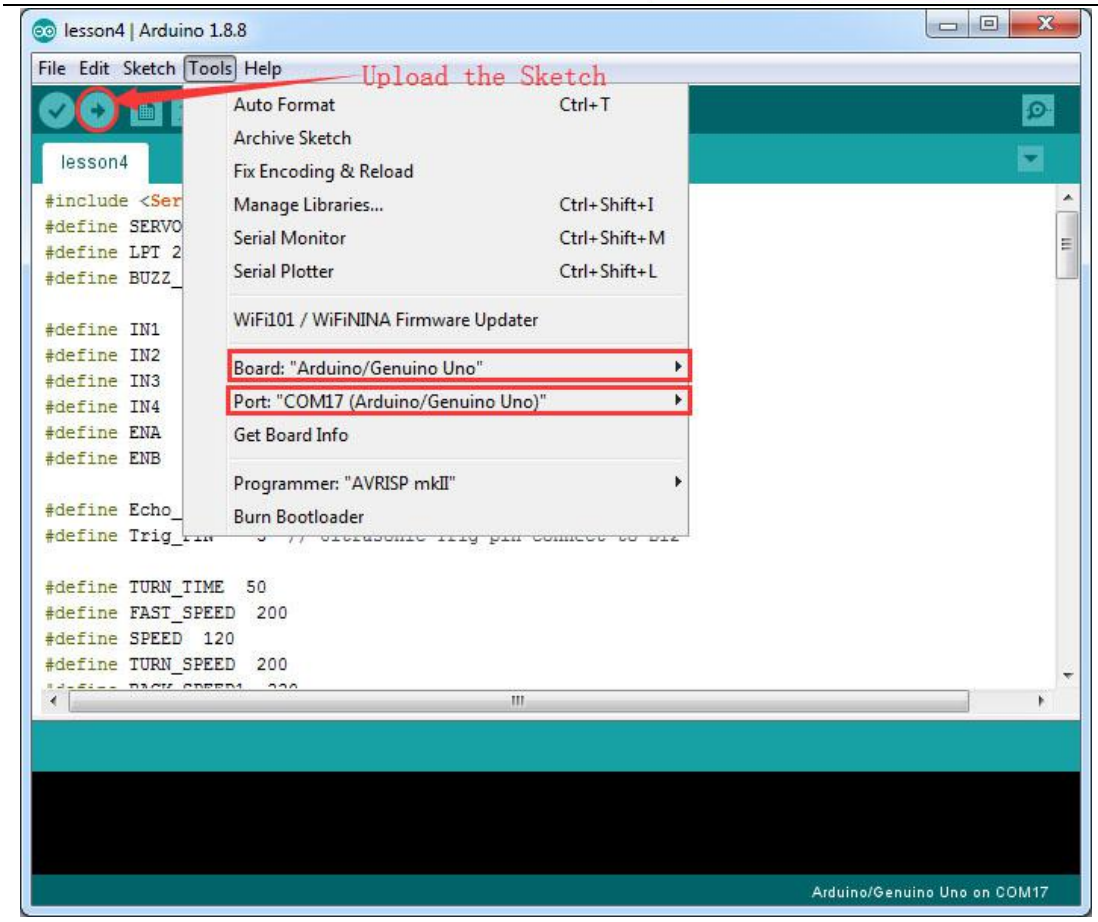
Download Arduino IDE from the follow link, then install the software:
https://www.arduino.cc/en/Main/Software?setlang=en

Step 2:
Download https://osoyoo.com/picture/2WD_Car_V2.0/code/lesson4.zip,
unzip the download zip file lesson4.zip, you will see a folder called lesson4.

Step 3:
Connect OSOYOO UNO to PC with USB cable, Open Arduino IDE -> click file -> click Open -> choose code “lesson4.ino” in lesson4 folder, load the code into OSOYOO UNO. (Notice: Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO for Arduino.)



Step 4:
Choose corresponding board/port for your project,upload the sketch to the board.

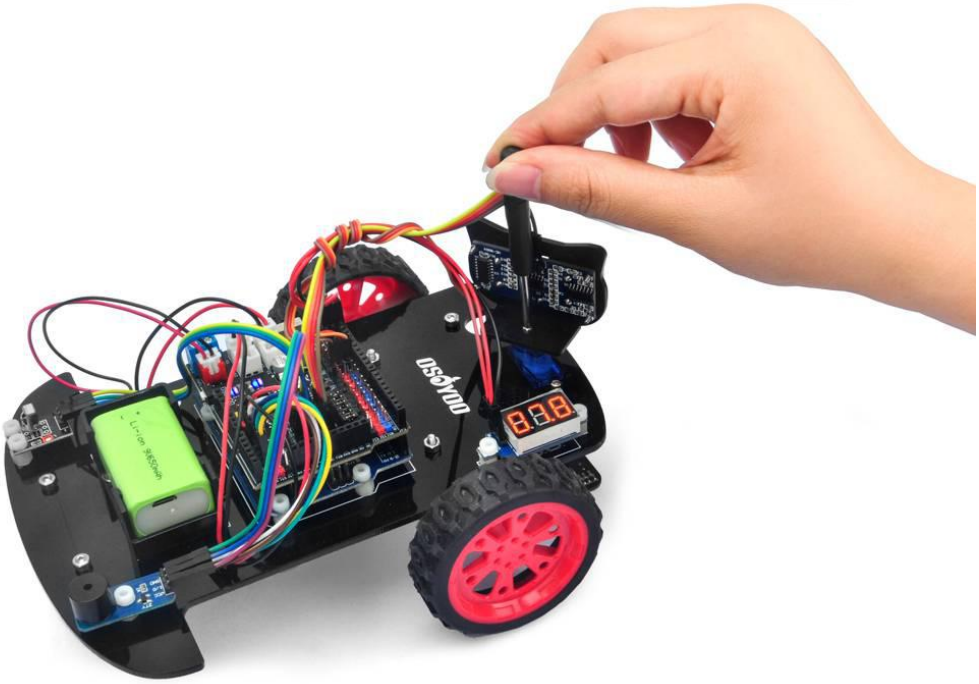


Step 5: Ultrasonic sensor servo initial direction alignment
After power on the car, you will hear a long beep sound, then the servo will make some movement and finally stops at a direction for 2 seconds.

During this first 2 seconds, you must make sure the Ultrasonic sensor(two eyes) is facing straight forward.

If it is not straight forward, you should turn off the car immediately and remove the sensor from servo, reinstall it and make it facing straight forward direction as following picture. Otherwise the obstacle avoidance program will not work properly.After adjusting sensor direction, power on the car again.

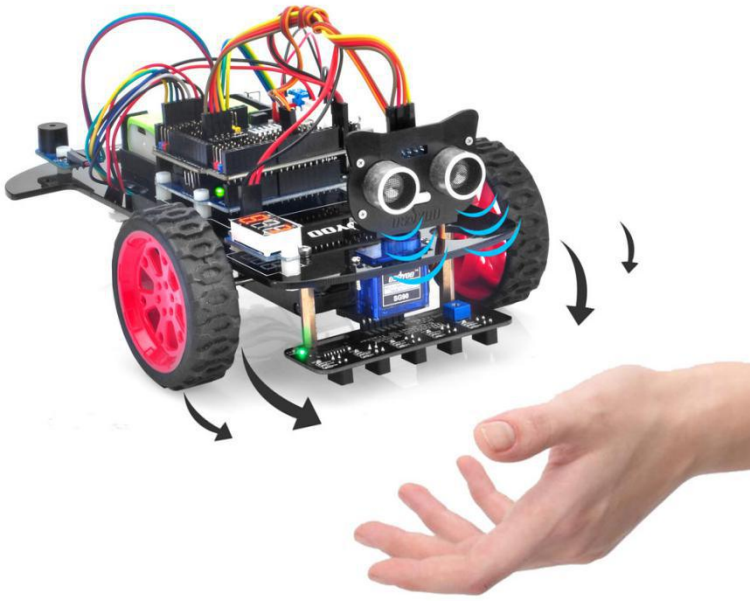
After hearing the long beep, the sensor should face front same as following picture. If its direction is not straight forward, turn off the car and do direction alignment again.



Testing

Turn on the car, move object or your hand before ultrasonic module, and then the car will move in some distance of object or your hand. when you close the car, the car will move back, just as it says don't touch me.

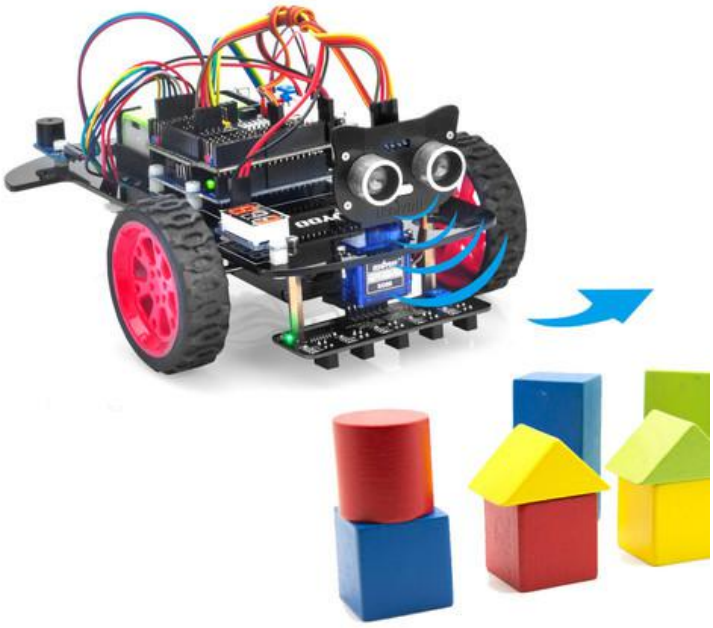
when object or your hand leave the ultrasonic module, the car will stop moving.



Lesson 5: Obstacle Avoidance

Objective

In this lesson, you must complete lesson 4 before you continue on with this lesson. we use the ultrasonic module to “see” obstacle and measure the distance. If the distance is less than predefined threshold value, the buzzer will beep and the car will turn around from the obstacle automatically.



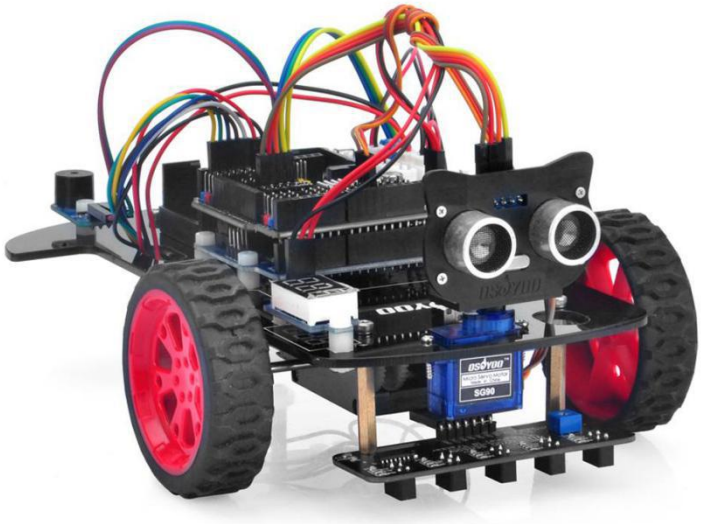
Parts and Devices

No.	Device	Picture	Qty.	Link
1	Ultrosonic Sensor		1	Click here to buy

2	Servo Motor		1	Click here to buy
3	Mount Holder for Ultrasonic Sensor		1	Click here to buy
4	Buzzer Sensor Module		1	Click here to buy
5	20pin 15cm Female to Female Cable		1	Click here to buy

Hardware Installation

Install the smart car basic frame work as per Lesson 4 .If you have already completed installation in Lesson 4, just keep it as is.



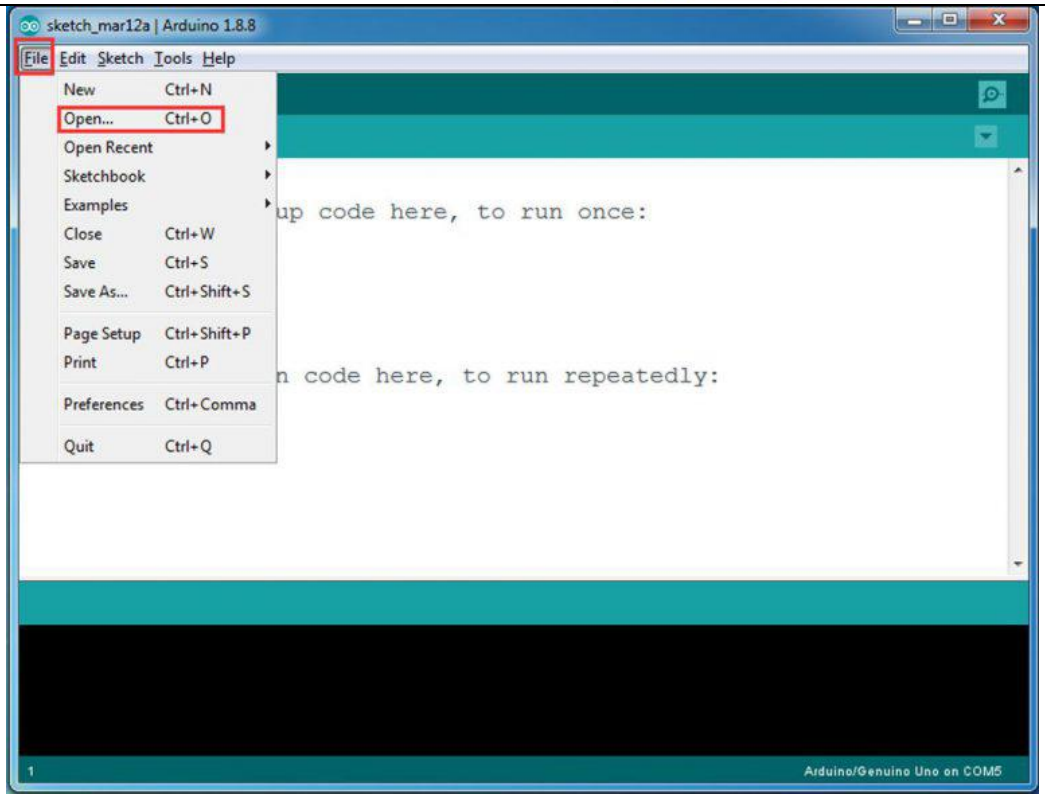
Software Installation

Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/

Step 1:
Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step).
Download Arduino IDE from https://www.arduino.cc/en/Main/Software?setlang=en,then install the software.

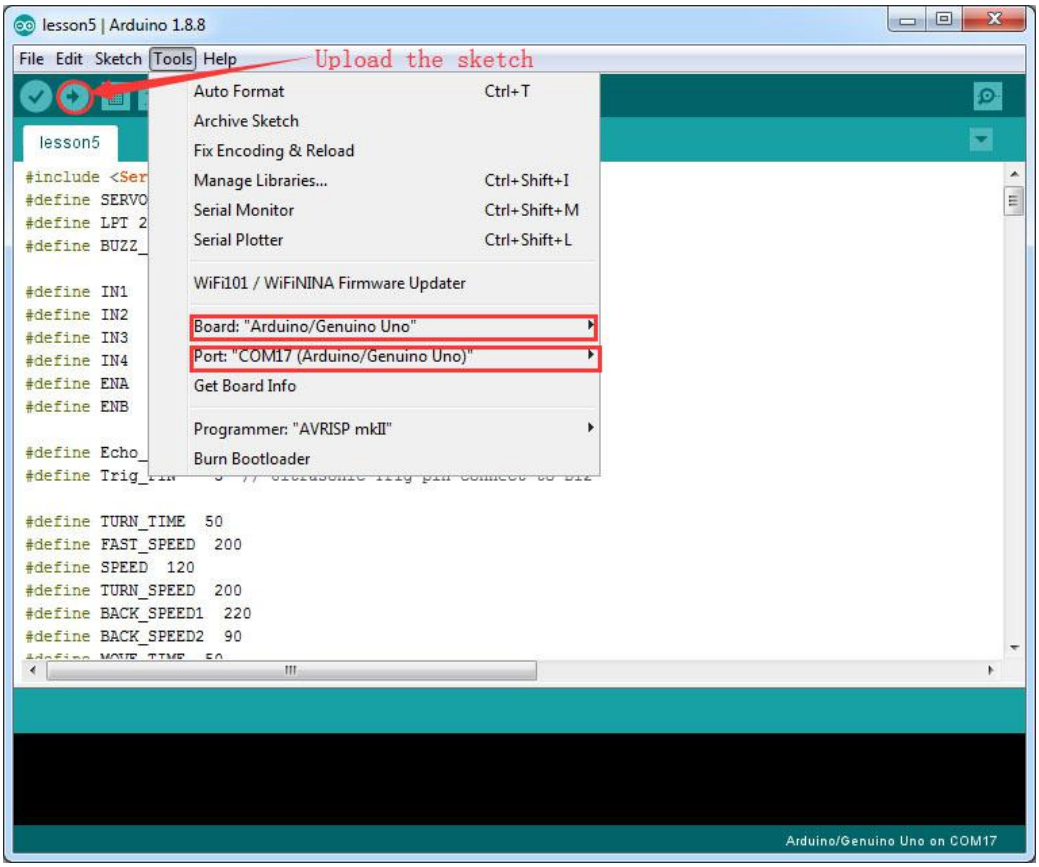
Step 2:
Download https://osoyoo.com/picture/2WD_Car_V2.0/code/lesson5.zip and unzip the download zip file lesson5.zip, you will see a folder called lesson5.

Step 3:
Connect OSOYOO UNO to PC with USB cable, Open Arduino IDE -> click file -> click Open -> choose code “lesson5.ino” in lesson5 folder, load the code into OSOYOO UNO. (Notice: Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO for Arduino.)



Step 4:

Choose corresponding board/port for your project,upload the sketch to the board.



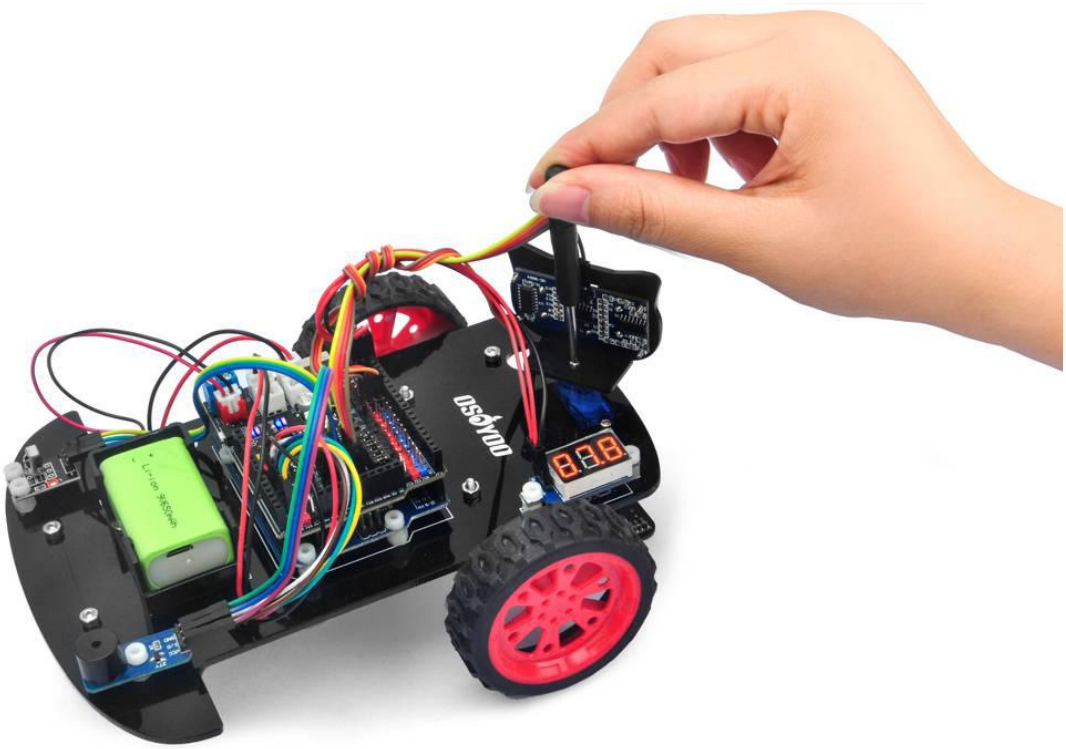
Step 5: Ultrasonic sensor servo initial direction alignment

After power on the car, you will hear a long beep sound, then the servo will make some movement and finally stops at a direction for 5 seconds.

During this first 5 seconds, you must make sure the Ultrasonic sensor(two eyes) is facing straight forward.

If it is not straight forward, you should turn off the car immediately and remove the sensor from servo, reinstall it and make it facing straight forward direction as following picture. Otherwise the obstacle avoidance program will not work properly.

After adjusting sensor direction, power on the car again. After hearing the long beep, the sensor should face front same as following picture. If its direction is not straight forward, turn off the car and do direction alignment again.



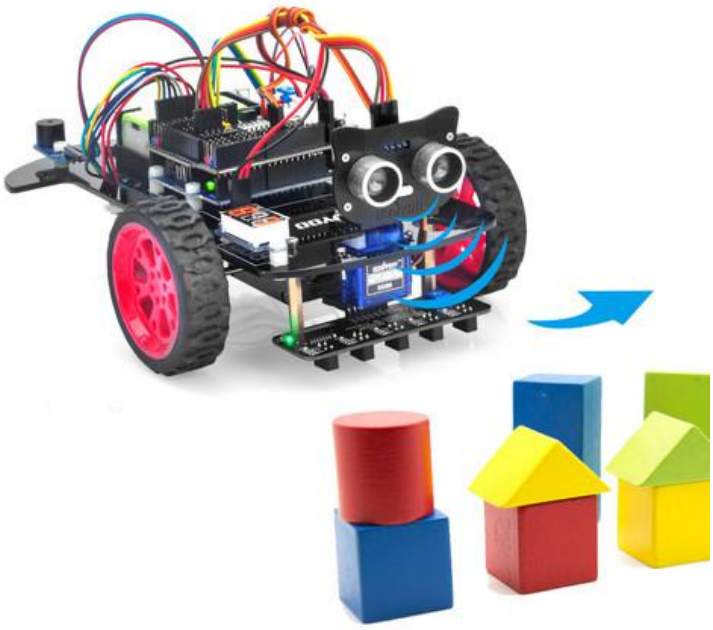
Testing

Power on the car, if the ultrasonic module turn to front view position, that means you no need adjust sensor position anymore. Just wait 5 seconds. If no

obstacle is detected, the car will go forward.

If any obstacles is detected, the car will stop, the ultrasonic module will turn from right to left to detect surrounding obstacle. The robot car will decide to make left turn, right turn or backward according to obstacle sensor data and our obstacle avoidance algorithm.

Sometimes your car might have collision and make your Ultrasonic sensor position change, you must remember to do sensor direction alignment again as **Step 5: Ultrasonic sensor servo initial direction alignment**.



Lesson 6: Imitation Driving with Bluetooth

Objective

In this lesson, we will use Mobile to control our robot car and make an imitation driving. Since is a mock driving, we will use a virtual steering wheel and gear in our APP to imitate their counterparts in real car.

You must complete Lesson 1 (assembling the car) before you continue on with this lesson.

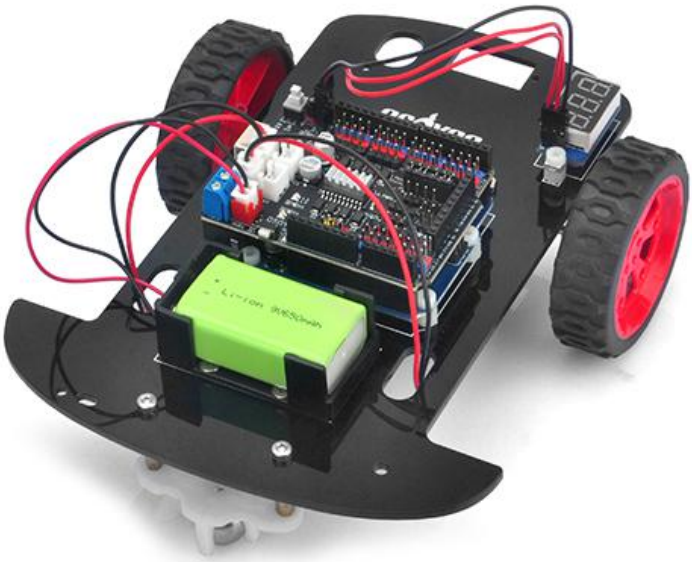
Parts and Devices

No.	Device	Picture	Qty.	Link
1	HC module		1	Click here to buy

Hardware Installation

Step 1:

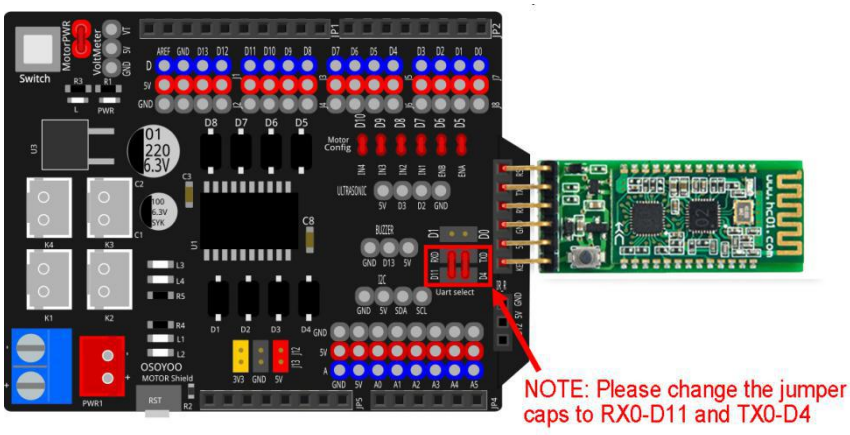
Install the smart car basic frame work as per Lesson 1. If you have already completed installation in Lesson 1, just keep it as is.



Step 2:

Insert Bluetooth Module into OSOYOO motor shield V1.1 Bluetooth slot as following graph (Remember: DO NOT remove any existing wires installed in Lesson 1):

Also make sure the two jump caps in following red square are connected D11, D4(if they are connected to D1,D0, move the caps to D11, D4).



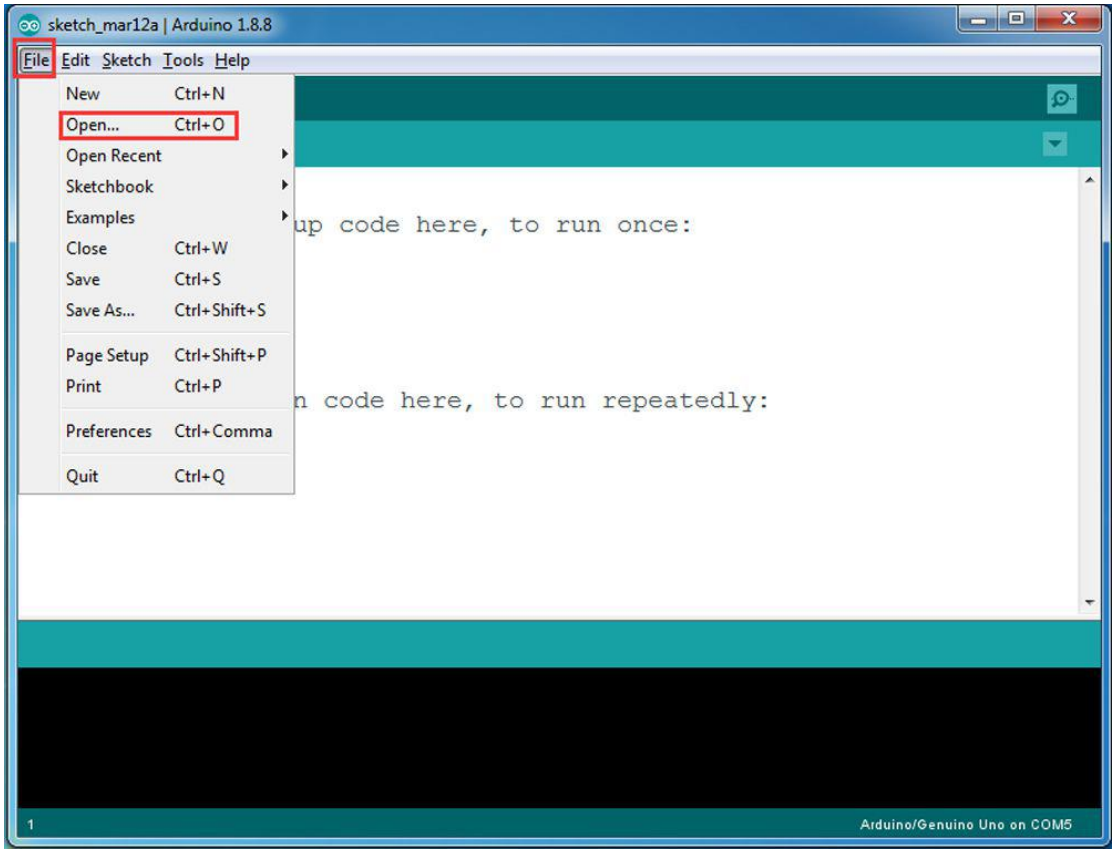
Software Installation

Open-source Arduino Software(IDE)		Download Arduino IDE here: https://www.arduino.cc/en/Main/Software?setlang=en
7 zip is a free zip utility that un-zips zip files		Download 7zip here for free https://www.7-zip.org/
OSOYOO imitation driving Robot APP		Search “OSOYOO imitation driving” in Google Play or Apple APP store

Step 1:
Install latest Arduino IDE (If you have Arduino IDE version after 1.1.16, please skip this step). Download Arduino IDE from the follow link, then install the software.
https://www.arduino.cc/en/Main/Software?setlang=en

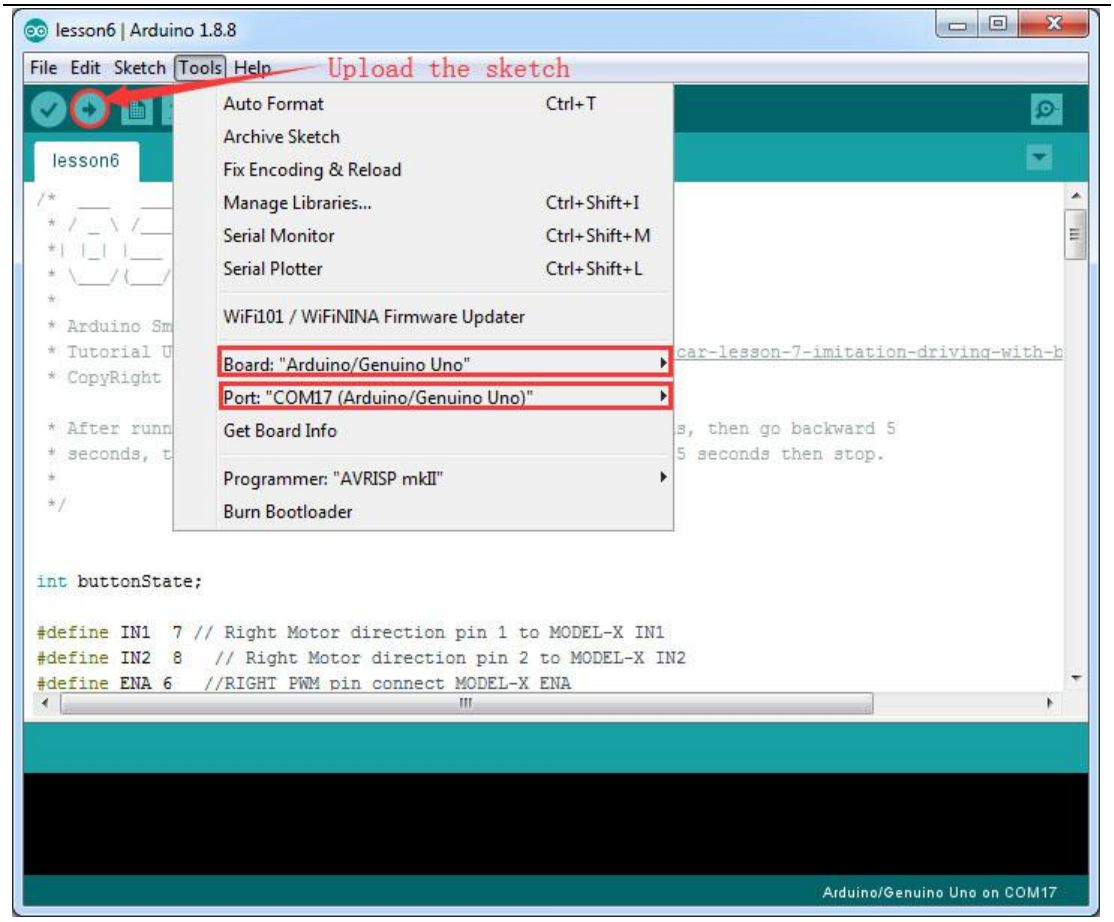
Step 2:
Download the following code, unzip the file lesson6.zip, you will see a folder called lesson6.
https://osoyoo.com/picture/2WD_Car_V2.0/code/lesson6.zip

Step 3:
Connect OSOYOO UNO to PC with USB cable, Open Arduino IDE -> click file -> click Open -> choose code in the folder, load the code into OSOYOO UNO. (Notice: Remove the bluetooth module and Shut off your battery or Unplug your power adapter when upload sketch code to OSOYOO UNO for Arduino.)



Step 4:

Choose corresponding board/port for your project,upload the sketch to the board.



Step 5: Install APP into your mobile phone:

1) Install APP on Android device as following

In Google Play store search APP name "OSOYOO imitation driving", download the APP as following and install it in your smart phone

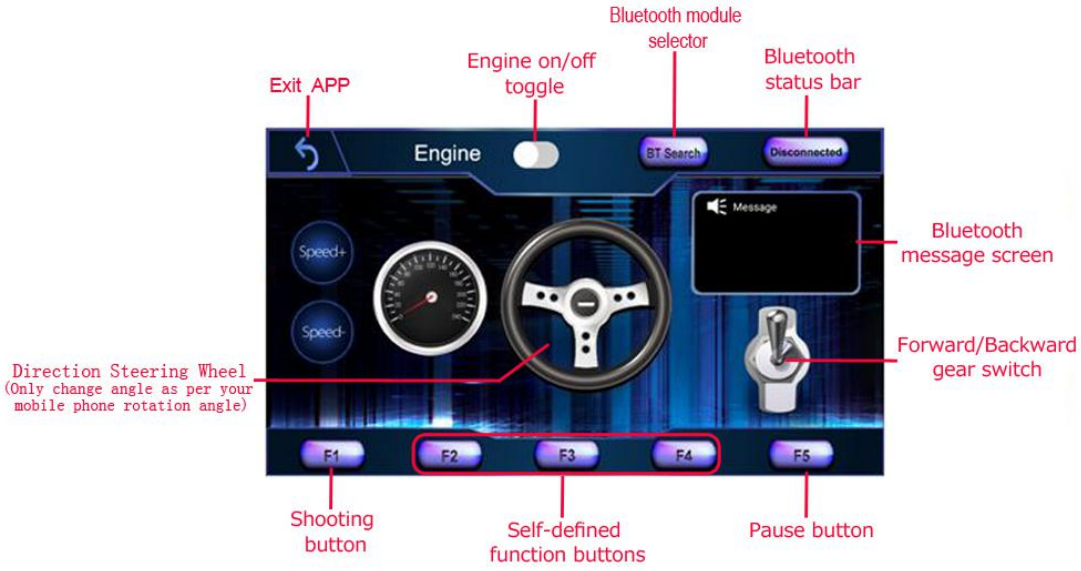
If you can not use Google Play to find the APP, please Download the APP from following link: https://osoyoo.com/driver/v1car.apk

2) Install APP on Apple IOS device as following

In Apple APP store search APP name “OSOYOO imitation driving”, download the APP as following and install it in your smart phone

Explanation of APP UI

(UI is different between Android and IOS)



- **BT Search button:** When click this button, you will see a Bluetooth device list which has been paired with your APP. Select HC-02 device to connect the car. Once HC-02 is connected, Bluetooth Status will

change from Disconnected to Connected. You can only control your car when Bluetooth is connected.

- **Engine toggle :** When Engine toggle is set to OFF(white), car will stop and all buttons in the APP will be disabled. When Engine toggle is set to ON(red), car will start to move. All other movement control buttons will active.

- **Forward/Backward gear switch:** This gear switch can control the car is moving ahead or reverse like real car gear.

- **F1,F2,F3,F4,F5 customized button:** In this lesson, we only use F5 which pause the the car movement. The difference between F5 and Engine OFF button is that Engine OFF button when touched, all other buttons will be disabled. You should toggle Engine button again to enable other button. On the other hand, when F5 is clicked, the car will stop but all other buttons is still active. Even you do not touch any button just change your cell phone angle position(like you move the steering wheel), the car will move again.

- **Direction Steering Wheel:** When you rotate your mobile phone angle, the steering wheel will change angle as per your mobile phone rotation angle. This will make your car change direction. For example, when steering wheel make clockwise rotation, car will move to left. Remember, the steering and Forward/Backward gear should work together same as you are driving a real car. For example, when you want back your car to a right side packing lot, you need set Gear to R position and rotate your steer to count-clockwise direction.

- **Speed+:** Make the robot car speed up
- **Speed-:** Make the robot car slow down

Testing

Now you have installed your hardware and software for this lesson, let's drive our car!

Step 1) Put your robot car onto the ground and turn on the battery switch.

Step 2) Go to your mobile phone ->Setting ->Bluetooth setting and search a Bluetooth device called HC-02, pair it with code 1234

Step 3) Open OSOYOO imitation driving Robot APP, Click BT Search button and find the bluetooth you have paired

Step 4) Turn on Engine toggle, click Speed+ to make the robot speed up as the robot car is very slow at first. And When you rotate your mobile phone angle, your car will change direction.

Enjoy your driving!