Adeept

Adeept Smart Car Kit For Arduino

Warning

Please pay attention to the following issues when purchasing or using the product:

- There are small components included in this kit. Swallowing mistakenly or misoperation can cause serious infection and be even fatal. When an accident occurs, please seek medical assistance immediately.
- Please place the product in a safe place where an under-3-year-old cannot touch, who should not use or approach the product.
- Juveniles should use the product with their parents.
- Do not place the product or the components near any AC socket or other circuits, in case of potential risks of electric shock.
- Do not use the product near any liquid or flame.
- Do not use or store the product in an extreme environment such as extremely cold or hot and heavily humid.
- Please remember to power off when the product is not in use.
- Do not touch the moving or rotating part of the product.
- The product may get heat at some part, which is just normal. But misoperation may cause overheat.
- Misoperation may cause damage to the product. Please take care.
- Do not connect the positive and negative poles of the power inversely, or the devices in the circuit may be damaged.
- Please place and put the product gently. Do not smash or shock it.

About

Adeept is a technical service team of open source software and hardware. Dedicated to applying the Internet and the latest industrial technology in open source area, we strive to provide best hardware support and software service for general makers and electronic enthusiasts around the world. We aim to create infinite possibilities with sharing. No matter what field you are in, we can lead you into the electronic world and bring your ideas into reality.

The code and circuits of our product are open source. You can check on our website:

www.adeept.com

If you have any problems, feel free to send an email for technical support and assistance:

support@adeept.com

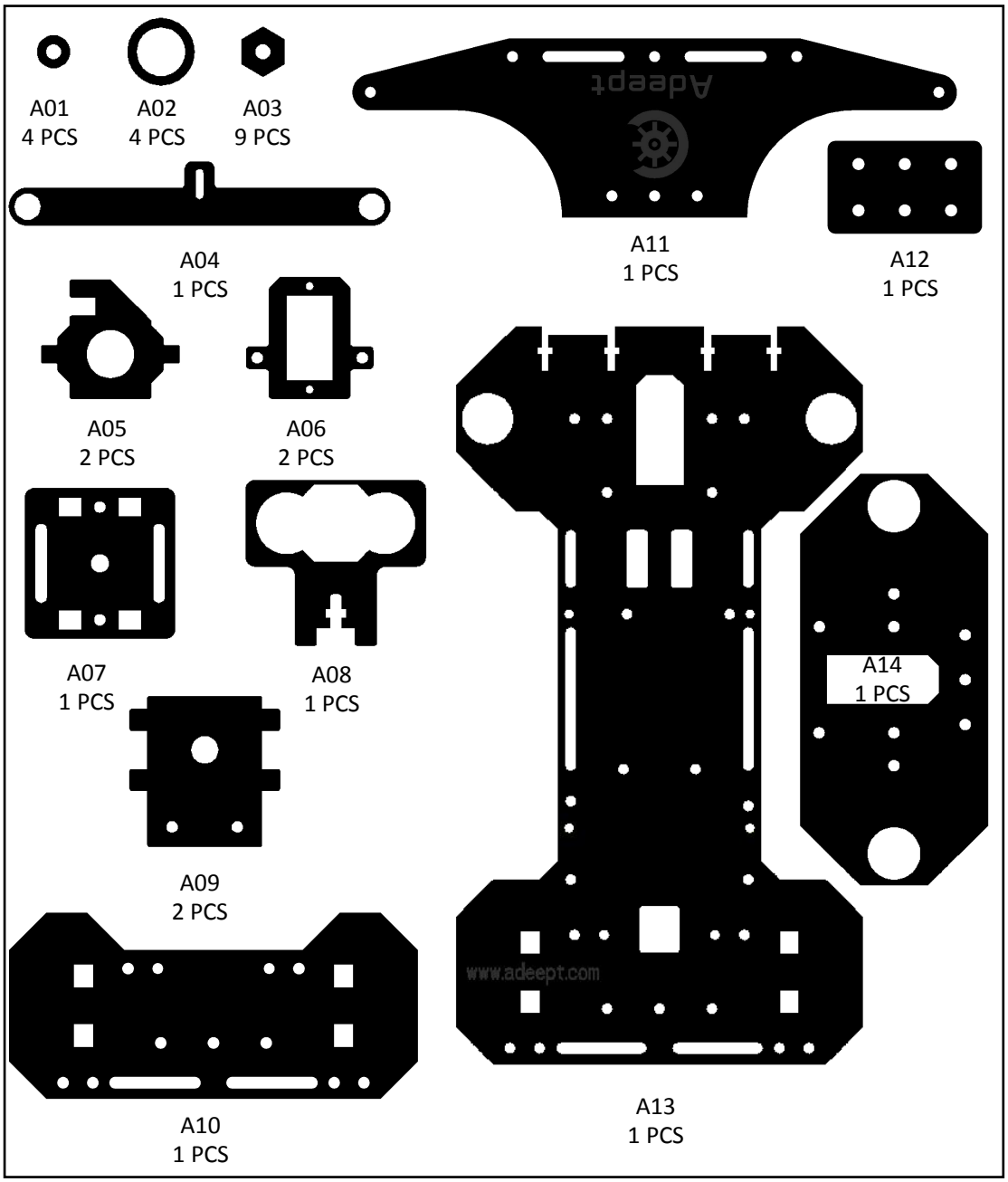
On weekdays, we usually will reply within 24 hours. Also welcome to post forums on our website.

Copyright

contents

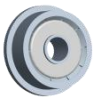
Components List

Acrylic Sheets

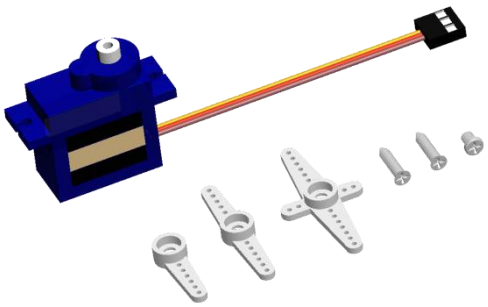
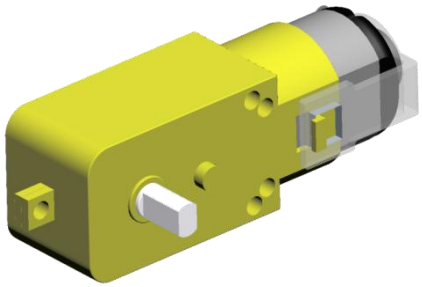


The acrylic sheet is covered eets with a layer of protective film. You need to remove it first. Some holes in the acrylic shmay have residues, so you need to clean them before using it.

Machinery Parts

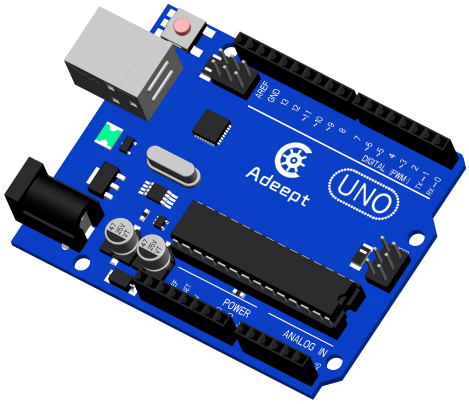
M2 Nut  X10 www.adeept.com	M3 Nut  X15 www.adeept.com	M4 Nut  X2 www.adeept.com	M2*10 Screw  X10 www.adeept.com	M3*4 Screw  X4 www.adeept.com	M3*8 Screw  X28 www.adeept.com
M3*12 Screw  X5 www.adeept.com	M3*30 Screw  X4 www.adeept.com	M4*40 Screw  X2 www.adeept.com	M3*10 Countersunk Head Screw  X4 www.adeept.com	M1.4*6 Self-tapping Screw  X4 www.adeept.com	M3*6 Copper Standoff  X4 www.adeept.com
M3*12 Copper Standoff  X4 www.adeept.com	M3*30 Copper Standoff  X8 www.adeept.com	F624ZZ Bearing  X4 www.adeept.com	F687ZZ Bearing  X4 www.adeept.com	M4 Spring Washer  X8 www.adeept.com	

Transmission Parts

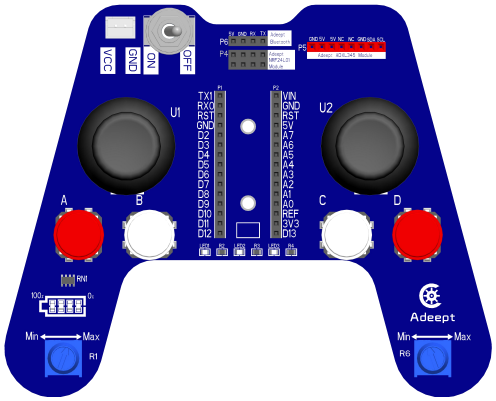
Servo x2 	DC Motor x2 
Front Wheel x2 	Rear Wheel x2 

Electronic Parts

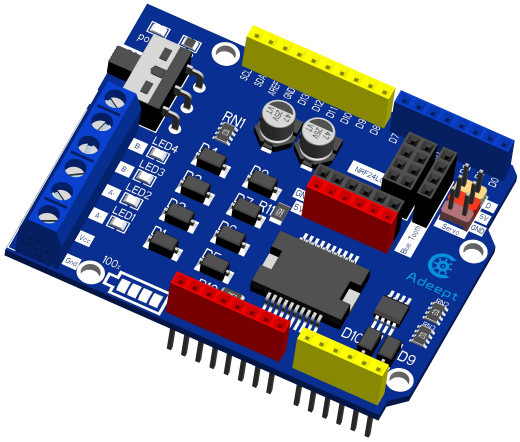
Adeept UNO R3 Board x1



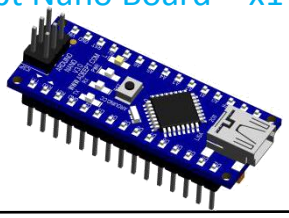
Adeept Remote Control Shield x1



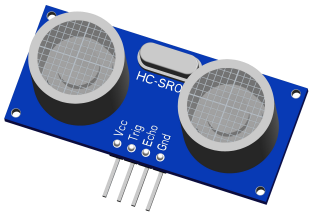
Adeept Motor Shield x1



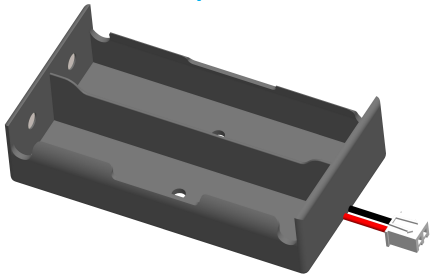
Adeept Nano Board x1



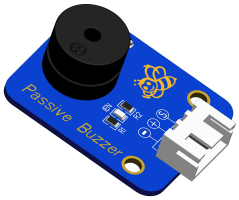
Adeept Ultrasonic Module x1



18650x2 Battery Holder-A x1

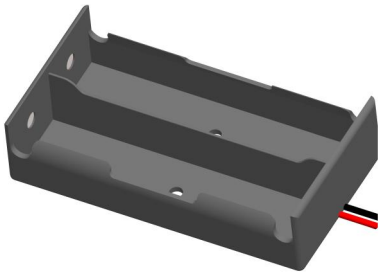


Adeept Passive Buzzer Module x1

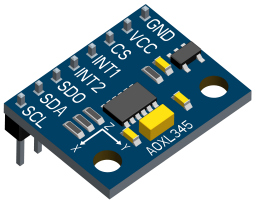


Adeept RGB LED Module x2

18650x2 Battery Holder-B x1



Adeept ADXL345 Module x1

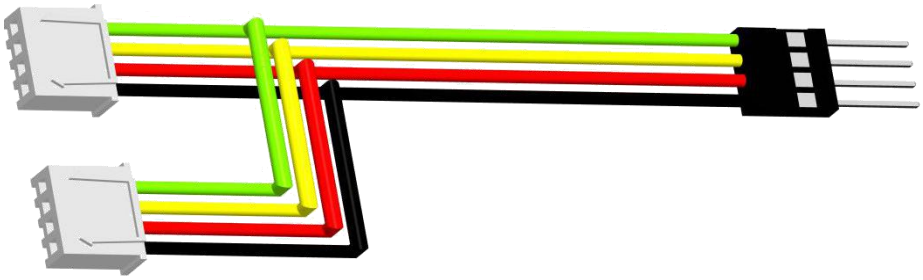


NRF24L01 Module x2

Mini USB Cable x1

USB Cable x1

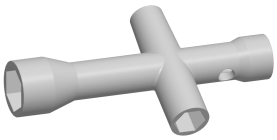
LED Connector x1



Buzzer Connector x1

Jumper Wire M/M x4

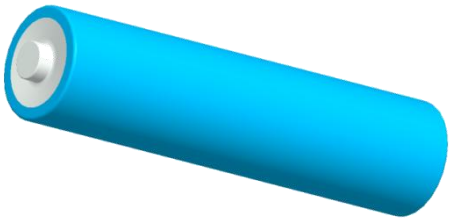
Tools

Cross Screwdriver X1	Slotted Screwdriver X1	Cross Socket Wrench X1
		

Wingding pipe X1

Self-prepared Parts

18650 Battery X4



Introduction

As robots are increasingly widely used in various fields nowadays, and the intelligence evolves rapidly due to deepened innovation in recent years, they have changed greatly, and will continue to do so, our lifestyle and broadened our view of the world. Robots can work in lots of extreme and harsh environments where human beings cannot approach. And they can accomplish tasks easily that we have struggled to do. So is studying robotics more and more popular. To make the smart car robot work under the best status, it is necessary to learn more about it and seek improvements in its speed and direction.

This robot is designed for hobbyists to learn about Arduino and robotics. Smart car robots should first sense an obstacle before avoiding one. The sensor used in this car is an ultrasonic one. The car detects obstacles via the ultrasonic sensor and avoids them automatically.
This smart car is a typical robot. It's composed of three parts: sensor, actuator, and MCU. Also it can track lines – sense the leading trace and move accordingly. So the car can recognize routes automatically, select the right path, and avoid obstacle on the path. The actuator of the car is DC motors, which control the direction and speed of the car moving. As for MCU, an Arduino board is used for the core of the car.

This smart car robot is really smart in moving forward/backward and turning left/right in an unmanned manner by detecting obstacles and determining and controlling the reactions of the car by the MCU.
In Adeept Remote Control we use ADXL345 Acceleration sensor module, just adjust the tilt Angle of the remote control we can control the car to go forward, backward, left and right.
NRF24L01 wireless module is also used to transmit ultrasonic data to display on the computer. On the computer, we wrote an open-source upper computer program using Processing software and make a simulated radar interface

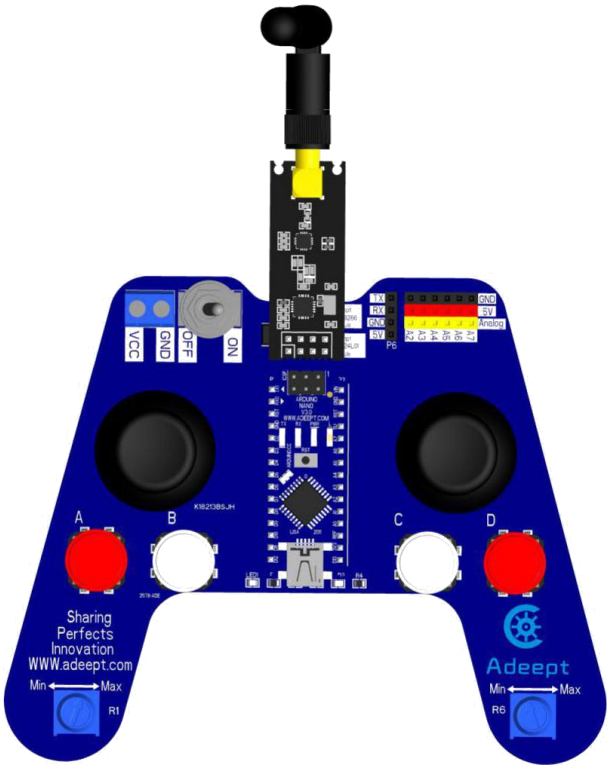
Functions

The smart car has the following functions:

1. Stick mode: press the button A on remote control, then the LED1 on remote control blinks、the LED2 lights up and LED3 goes out. At this time the four-wheel car is in stick mode. Control the two rockers on remote car handle to make the car go forward、 backward and make a turn.
2. Intelligent obstacle avoidance mode: press the button B on remote control, then the LED1 on remote control blinks、 the LED2 goes out and LED3 lights up. At this time the four-wheel car is in intelligent obstacle avoidance mode. When the ultrasonic module on the car detects obstacles in front of it, it will automatically control the car to avoid obstacles.
3. Gesture control mode: press the button C on remote control, then the LED1 on remote control blinks、 the LED2 lights up and LED3 lights up. At this time the four-wheel car is in Gesture control mode, in this model, the ADXL345 acceleration sensor on the remote control converts the collected information of the tilt Angle of the remote control into forward, backward and turning information and sends it to the car to control the movement of the car.
4. Wireless radar scanning mode: the specific operation of this mode is to connect the remote control to the computer, and run Processing program we provide (AdeeptRadarProcessing. Pde). Press button D on the remote control, and the LED1 on the remote control flashes, LED2 goes out and LED3 goes out. The four-wheel car is now in wireless radar scanning mode. Data from distant car can be seen on a computer screen and displayed as a real-time radar scan.

Remote control:

1. Press the button A, the four-wheel car in the stick mode and the LED1 flashes, LED2 lights up and LED3 goes out on the remote control. The four-wheel car is in stick mode. The rocker U1 on the remote control handle pushes the car go forward and backward. The rocker U2 on the remote control handle pushes the car to turn left and right. The rocker U2 on the remote control handle pushes up and down to control the car ultrasonic module to turn left and right.
2. Press the button B on the remote control and the four-wheel car is in intelligent obstacle avoidance mode. LED1 flashes, LED2 goes out and LED3 lights up on the remote control. When the ultrasonic module on the car detects obstacles in front of it, it will automatically control the car to avoid obstacles.
3. Press the button C on the remote control and the four-wheel car is in gesture control mode. LED1 flashes, LED2 lights up and LED3 lights up on the remote control. In this mode, the ADXL345 acceleration sensors on the remote control converts the collected information of the tilt Angle of the remote control into forward, backward and turn instructions and sends them to the car to control the car's movement.
4. Press the button D on the remote control. The four-wheel car is in wireless radar scanning mode, the specific operation of this mode is to connect the remote control to the computer, and run Processing program we provide (AdeeptRadarProcessing. Pde). Press button D on the remote control, and the LED1 on the remote control flashes, LED2 goes out and LED3 goes out. The four-wheel car is now in wireless radar scanning mode. Data from distant car can be seen on a computer screen and displayed as a real-time radar scan.
5. Spin the R1 potentiometer to control the startup speed of the DC motor.
6. Spin the R6 potentiometer to fine tune the direction of the car.
7. The car enters the remote control mode automatically after power on.
8. You can switch the status of the car by the remote control.

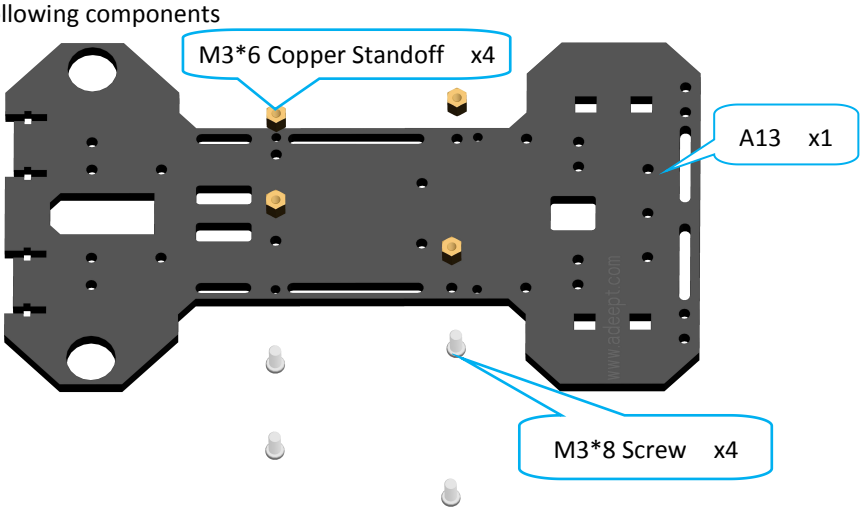


Assembly

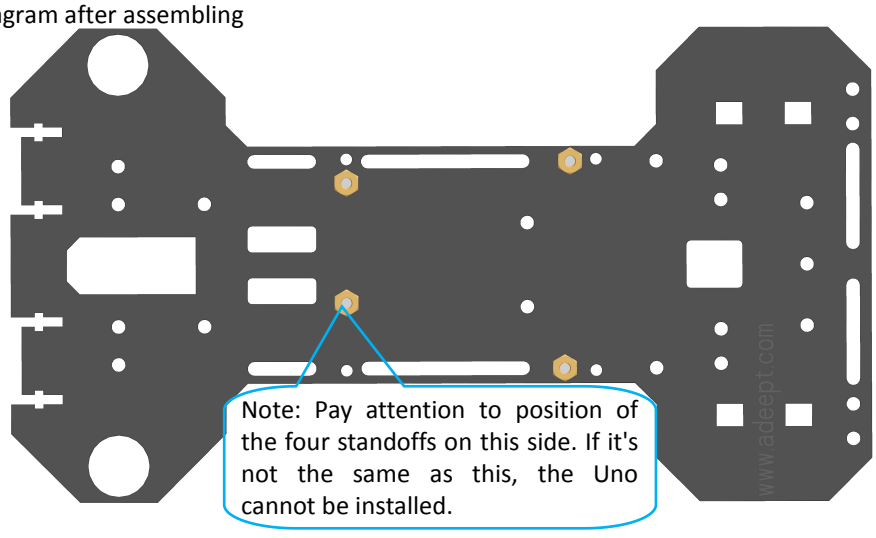
Fix the Position

Place four M3*6 copper standoffs on the holes of the A13 (main plate). Fix them by four M3*8 screws. Determine the orientation of the plate for the subsequent assembly.

Assemble the following components

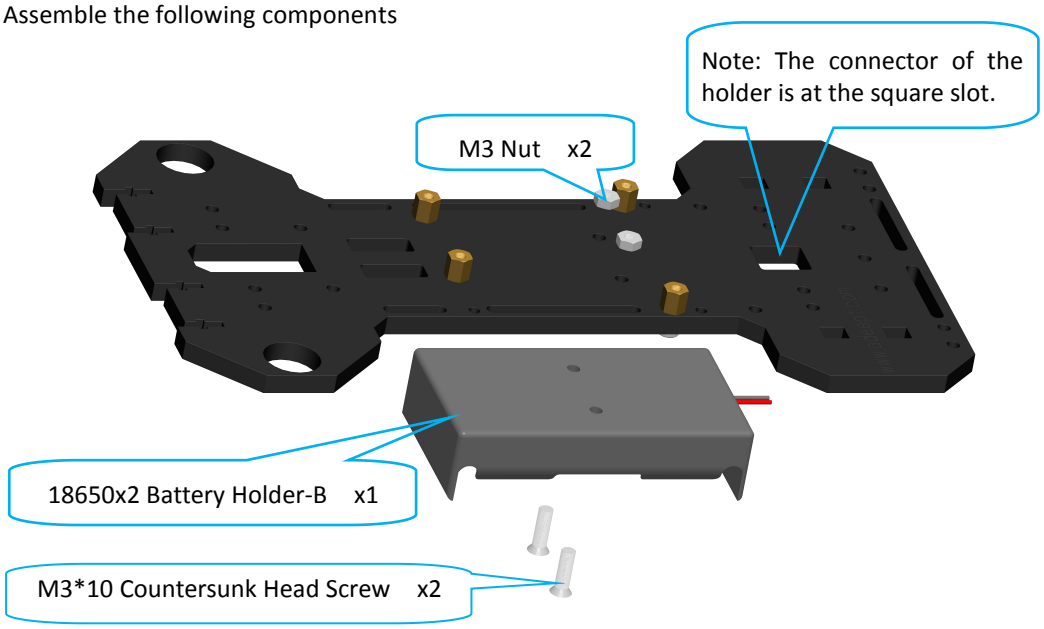


Effect diagram after assembling

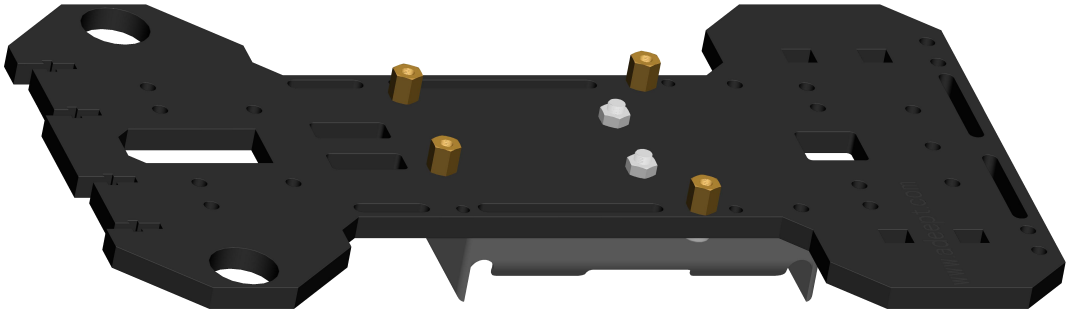


Fix the Battery Holder

Assemble the following components

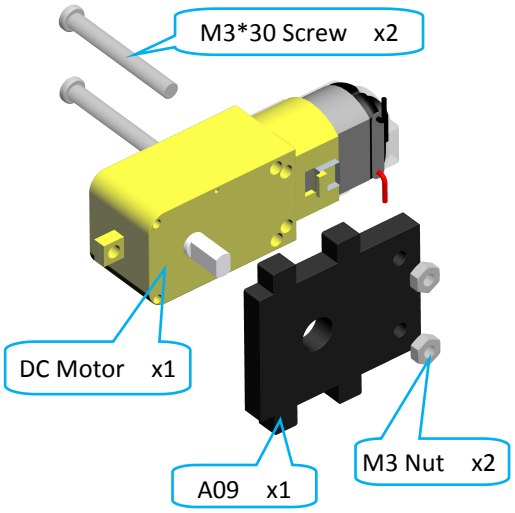
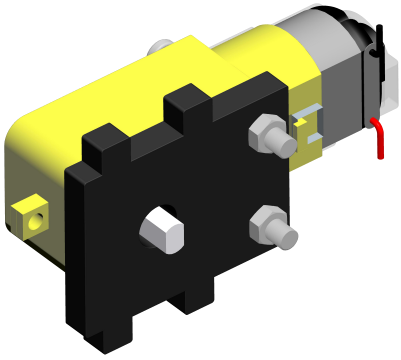


Effect diagram after assembling

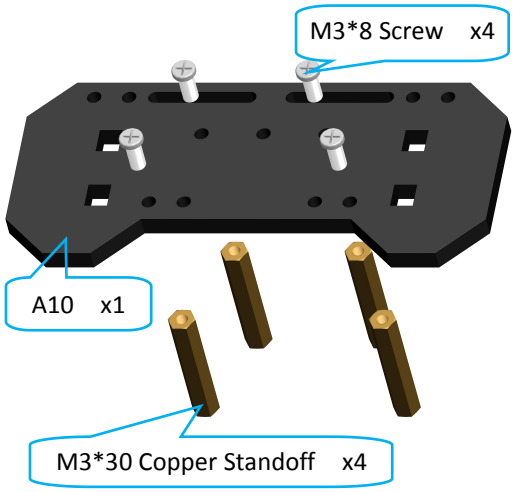
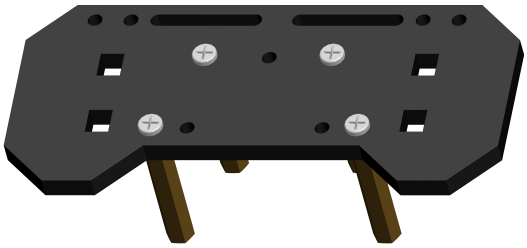


Rear Wheels

3.1 Fix the two DC motors on the A09 plate. Try to place the motor right in the middle position and along the middle axis of the plate.

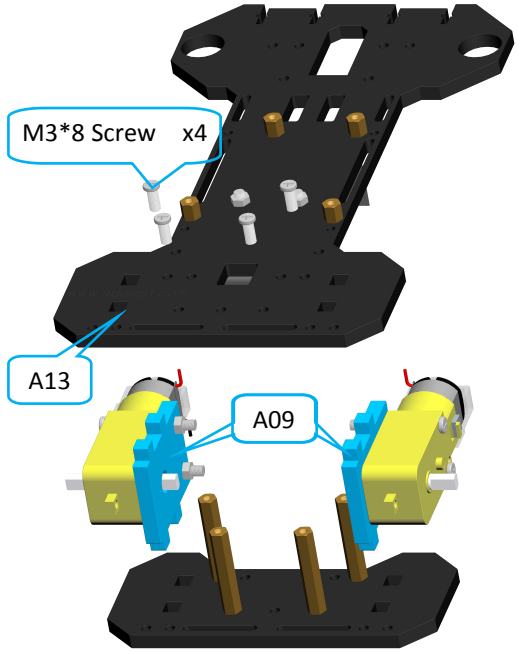
Assemble the following	Effect diagram after assembling
	 Insert 2 M3*30 Screws through the holes on A08 and DC Motor, and slightly tighten with M3 Nuts (nuts inward). Do not tighten them, otherwise the motor cannot rotate smoothly.

3.2 Fix the M3*30 copper standoffs onto the Plate A10.

Assemble the following components	Effect diagram after assembling
	

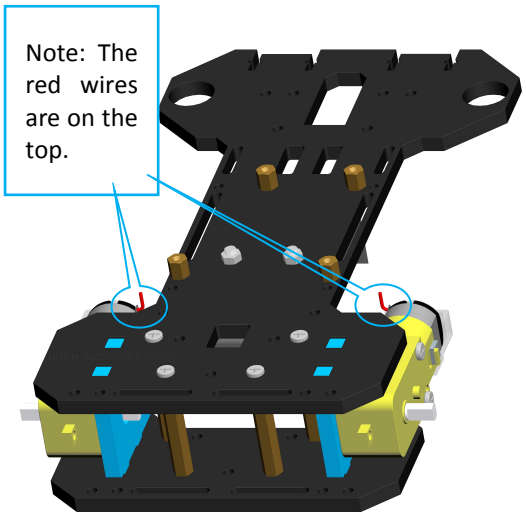
3.3 Fix the part assembled in previous 3.1 and 3.2 under the A13 (main plate).

Assemble the following components



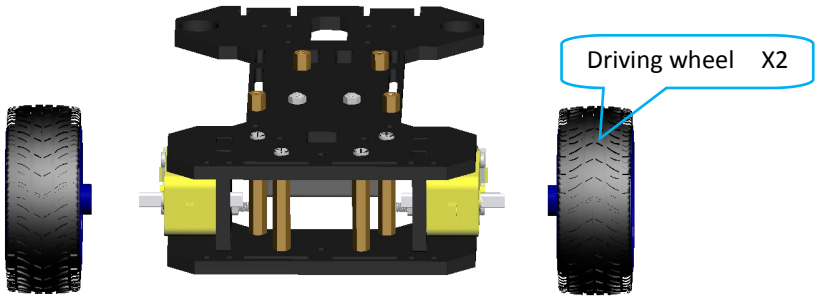
Hold A09 between A13 and A10, and then align the holes, insert and tighten the screws.

Effect diagram after assembling

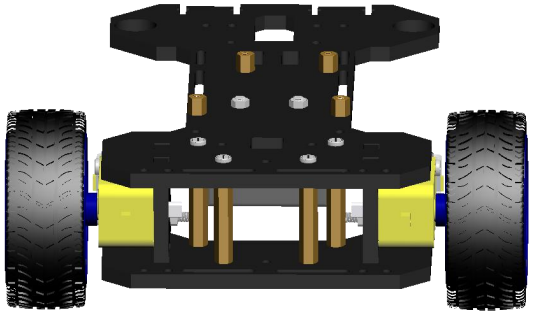


3.4 Press the rear wheels into the shaft of the motors to the farthest.

Assemble the following components

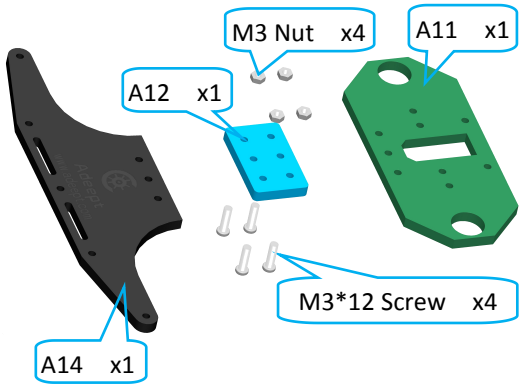
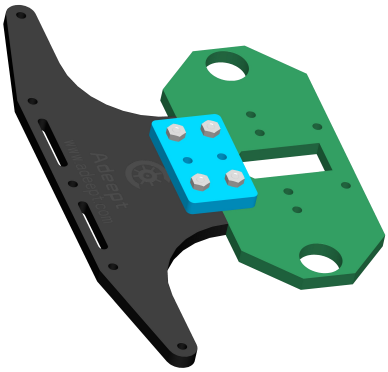


Effect diagram after assembling



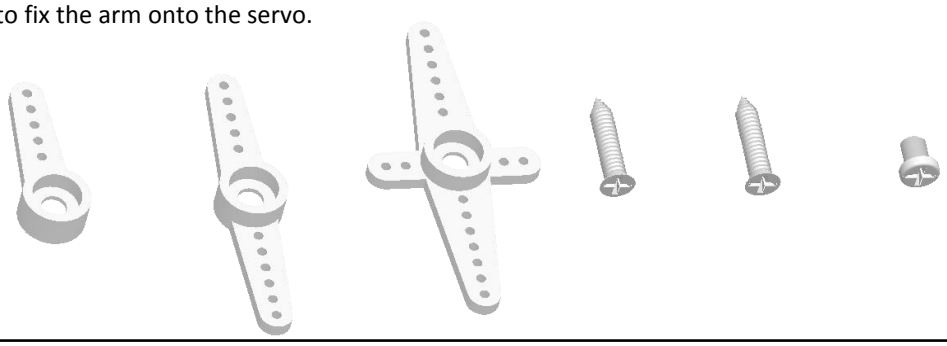
Front Wheels

4.1 Connect Plate A11 and A14 with A12.

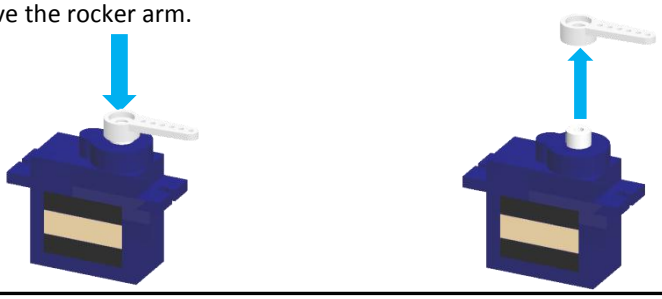
Assemble the following components	Effect diagram after assembling
	

4.2 Adjust the servo with built-in rocker arms.

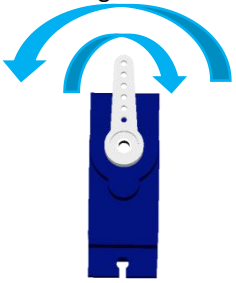
First, learn the structure. The servo can connect the rocker arm and spin to drive components bound with the arm. There are 3 types of rocker arms and 3 screws in the package. The smallest screw is to fix the arm onto the servo.



Mount and remove the rocker arm.

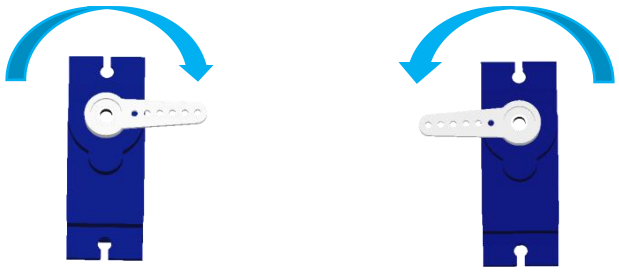


Rotate the rocker arm between 0 and 180 degrees.

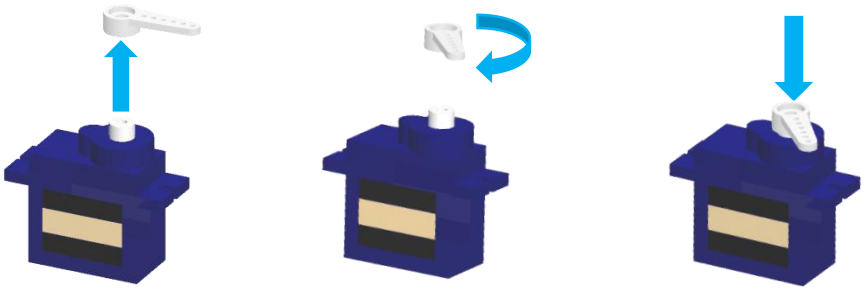


Now adjust the servo. This step is to make the servo shaft in the middle, so the component connected to the servo can be driven to move in a certain scope as needed.

Adjust the rocker arm to make it rotate to an almost equal angle towards left and right.



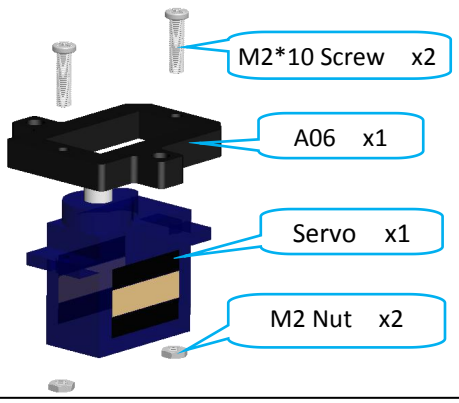
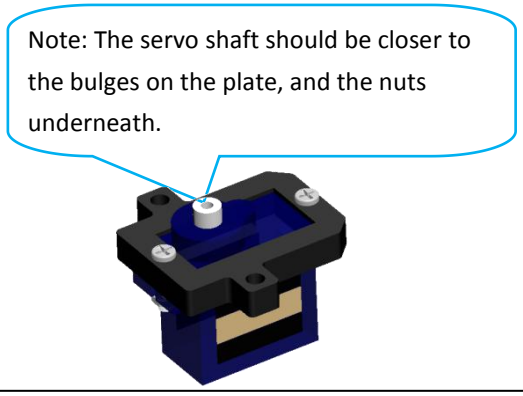
If the angle is not nearly the same, please remove the arm and install it again. Repeat the step until nearly the SAME degree.



After the adjusting, the rocker arm should be in the middle axis. Remove the arm.

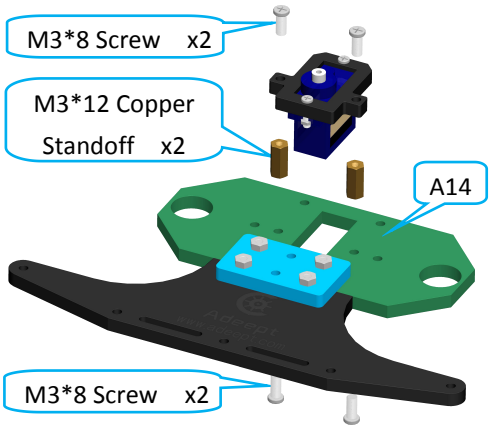
Make sure all servos have been adjusted and DO NOT spin the servo shaft before the whole assembly is done for the car. If you move it accidentally, readjust before the assembly.

4.3 Assemble servo to Plate A06 (2 groups).

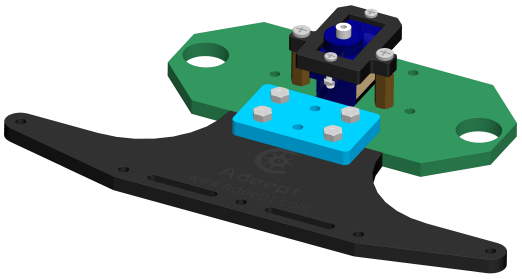
Assemble the following components	Effect diagram after assembling
	

4.4 Fix a servo on Plate A14.

Assemble the following components

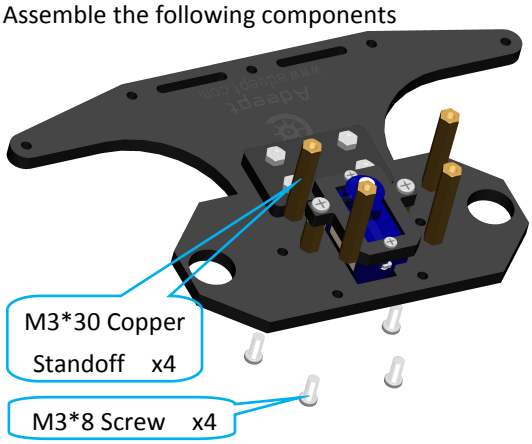


Effect diagram after assembling

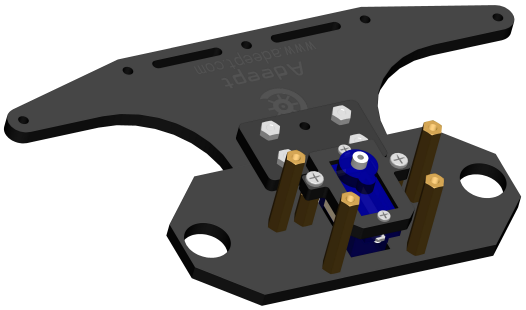


4.5 Fix 4 M3*30 standoffs .

Assemble the following components

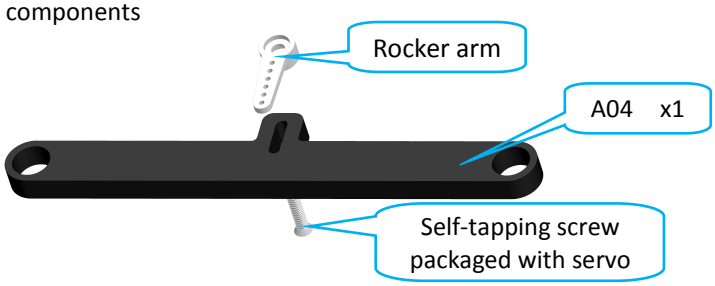


Effect diagram after assembling



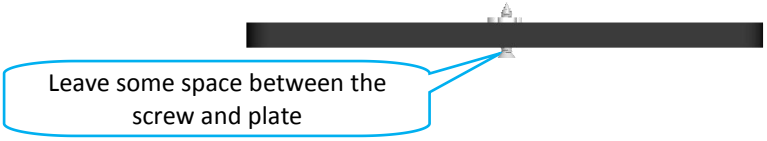
4.6 Connect rocker arm and Plate A04.

Assemble the following components



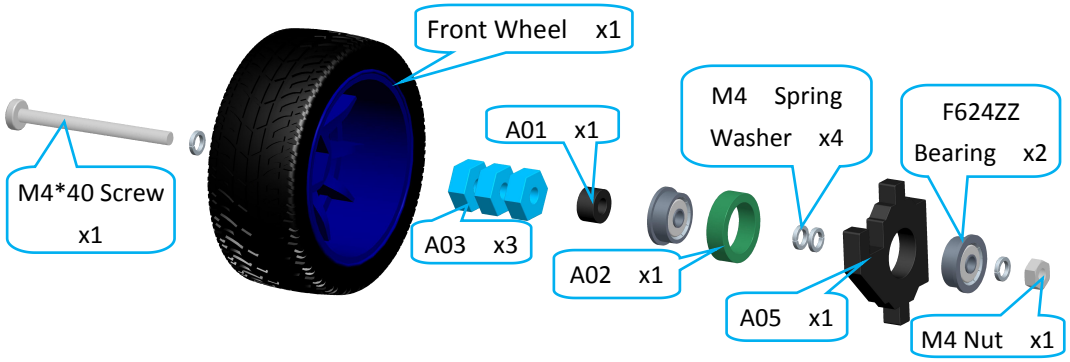
Effect diagram after assembling

Pay attention not to tighten the screw, otherwise the acrylic plate can't move freely.

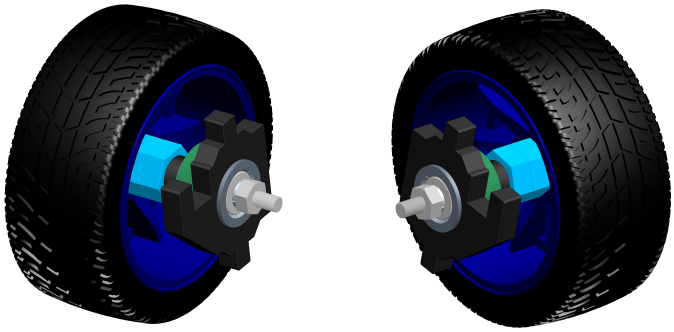


4.7 Install the front wheel (2 groups).

Assemble the following components

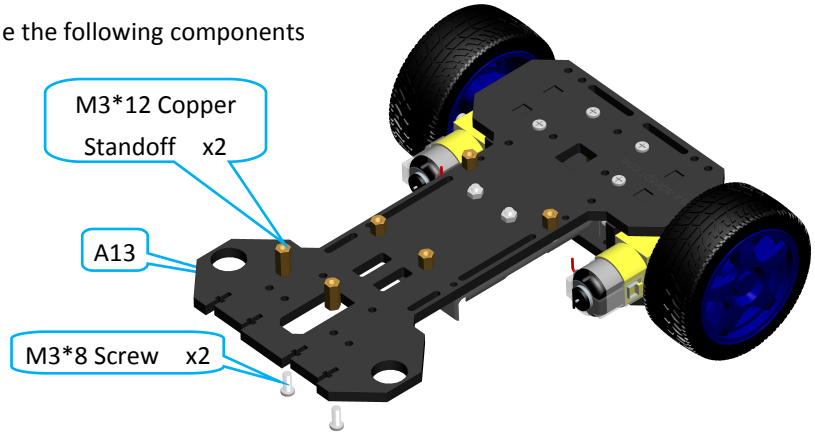


Effect diagram after assembling

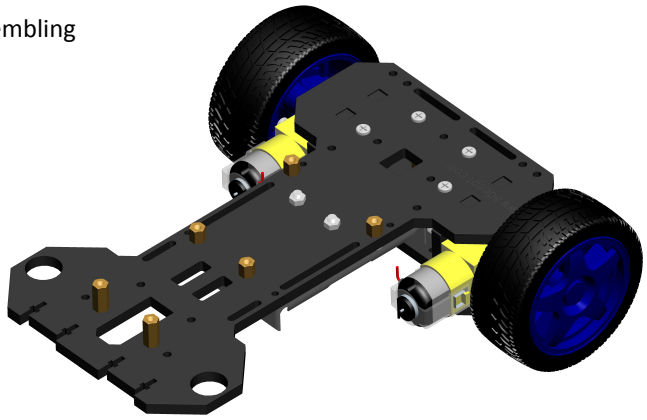


4.8 Fix 2 M3*6 standoffs on Plate A13.

Assemble the following components



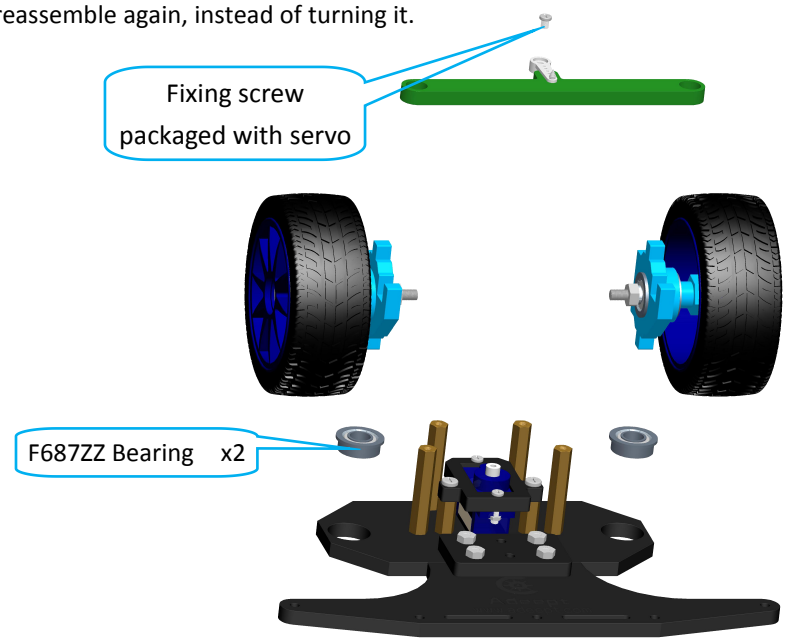
Effect diagram after assembling



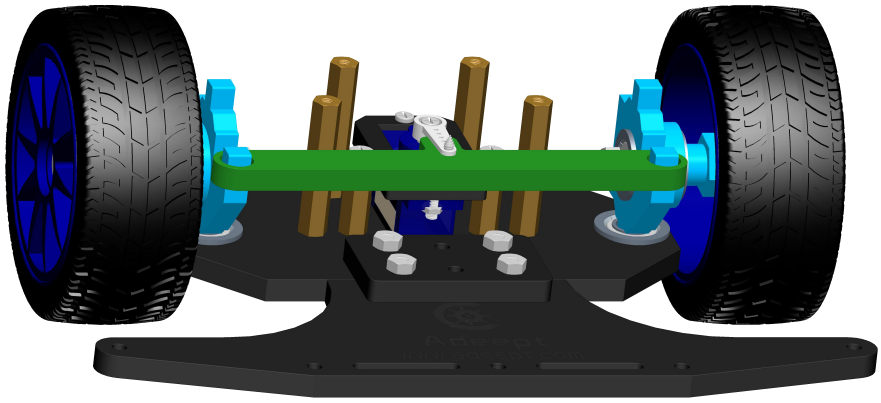
4.9 Assemble front wheels and steering part.

Assemble the following components

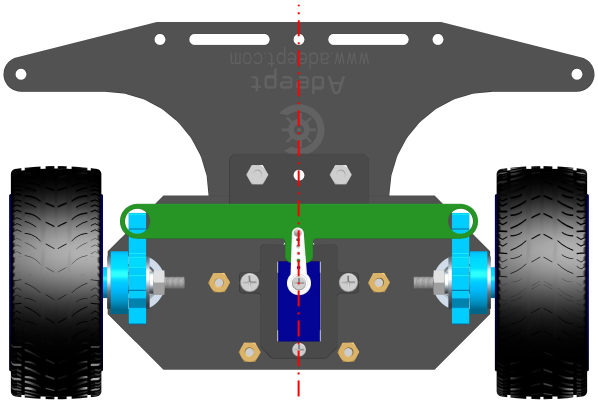
The rocker arm should be mounted almost perpendicular to the steering plate, so it can turn to a nearly equal degree towards left and right. But small deviation is acceptable. If not, remove the arm and reassemble again, instead of turning it.



Effect diagram after assembling

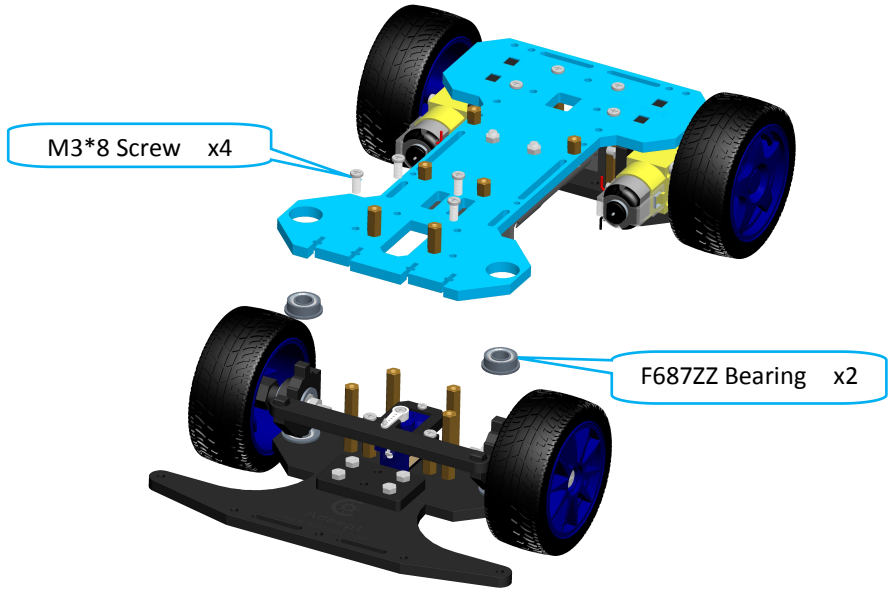


From the top view, the rocker arm should be in the middle of the rotation range, so it can rotate 90 degrees towards left and right. Otherwise, you need to readjust it again based on Step 4.2 above.

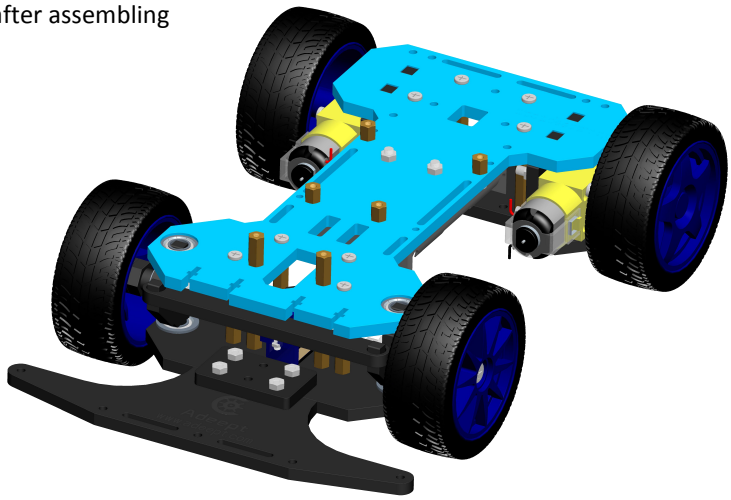


4.10 Fix the front wheels and the steering part.

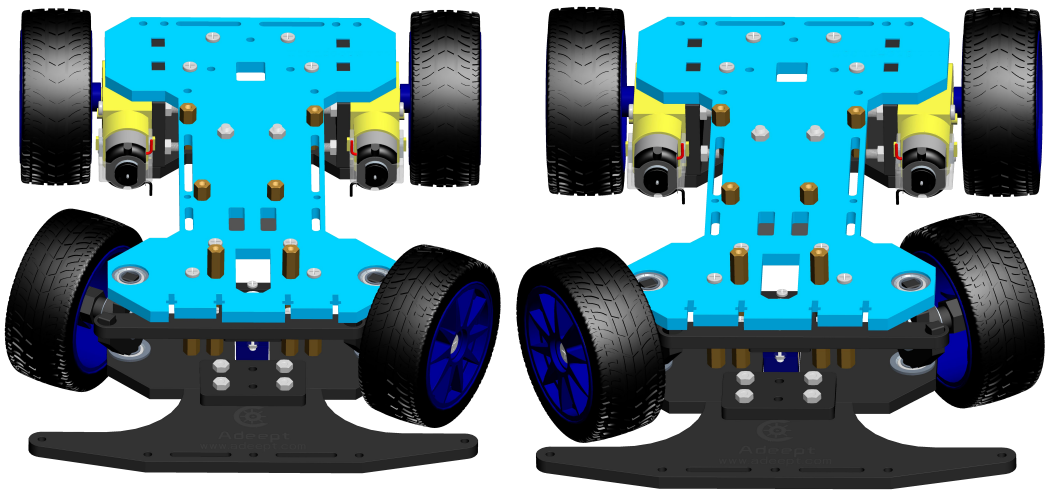
Assemble the following components



Effect diagram after assembling



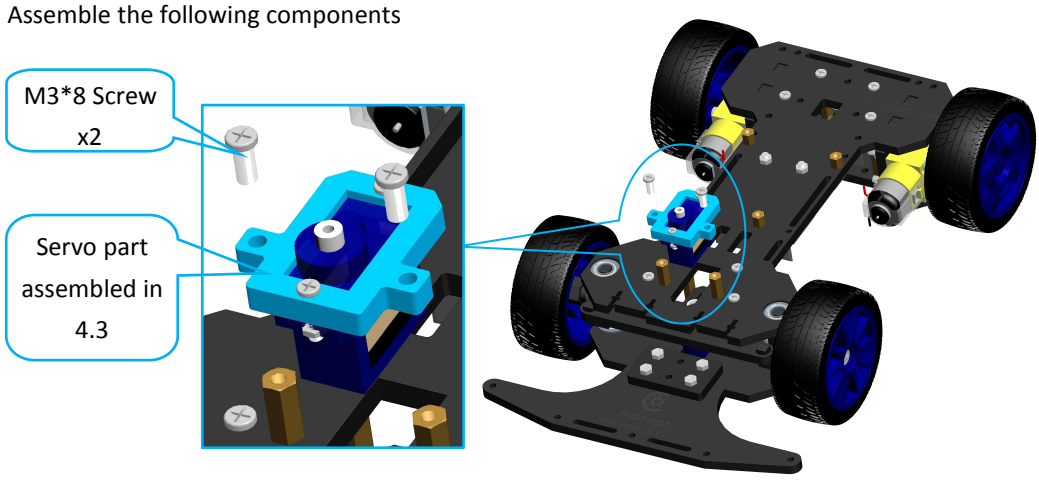
The two wheels can turn left and right.



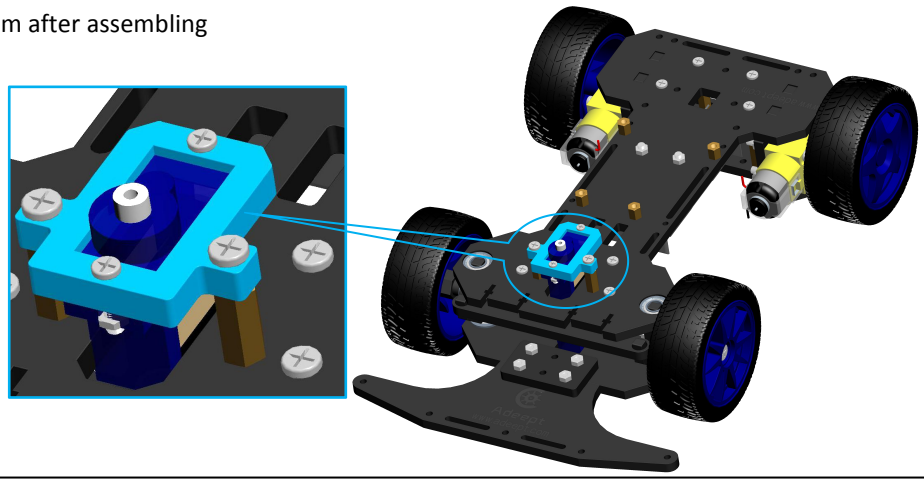
Assemble Ultrasonic Module

5.1 Assemble the servo.

Assemble the following components

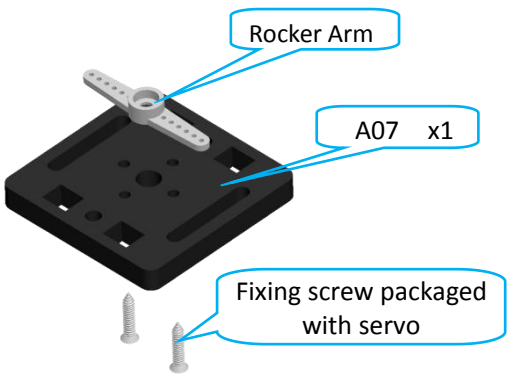


Effect diagram after assembling

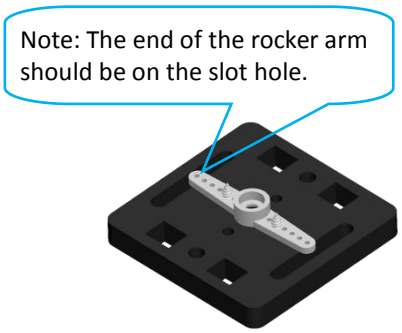


5.2 Assemble the rocker arm and Plate A07.

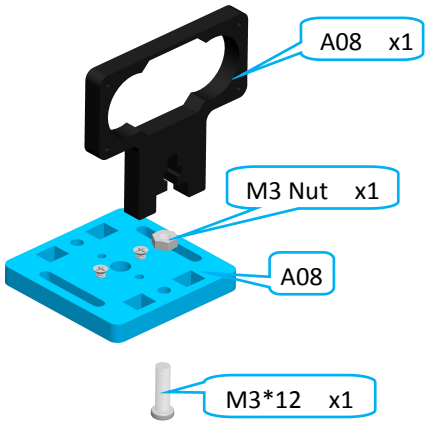
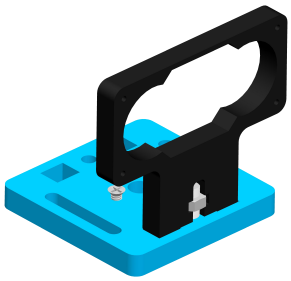
Assemble the following components



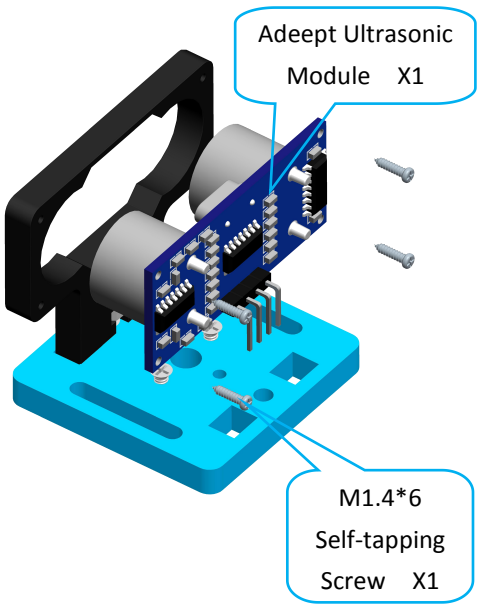
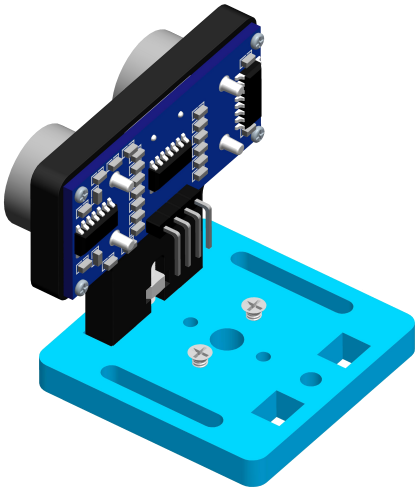
Effect diagram after assembling



5.3 Fix the Plate A08 and A07.

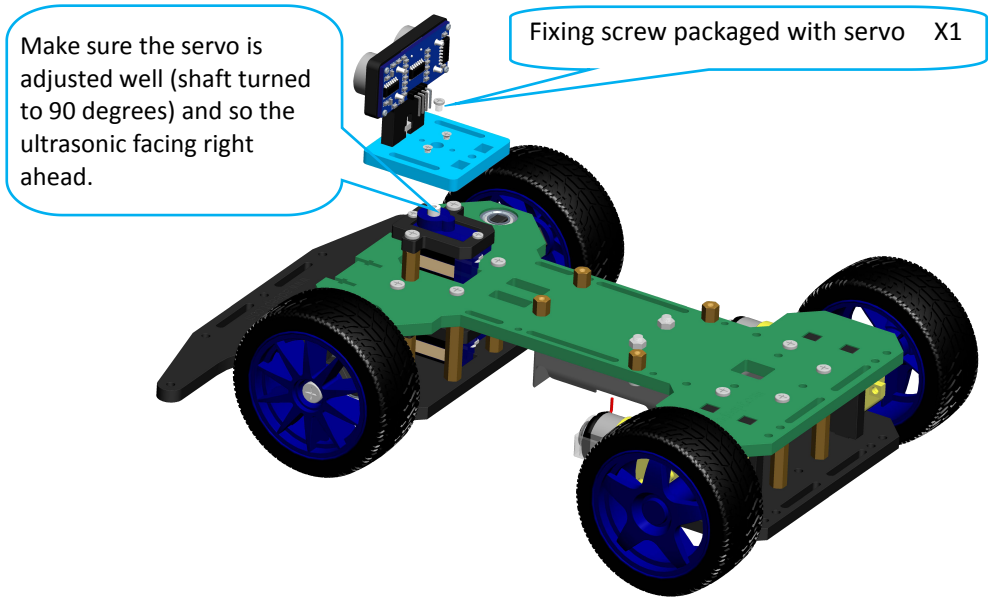
Assemble the following components	Effect diagram after assembling
	

5.4 Fix the Adeept Ultrasonic Module on the part assembled in Step 5.3.

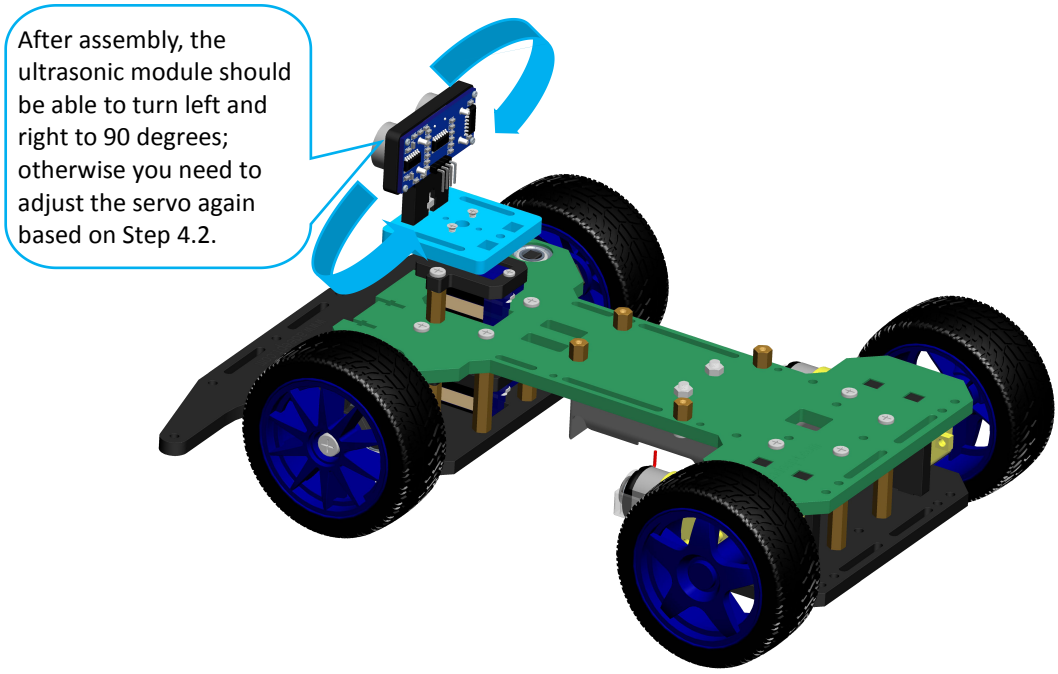
Assemble the following components	Effect diagram after assembling
	

5.5 Mount the part assembled in Step 5.4 to the car body.

Assemble the following components



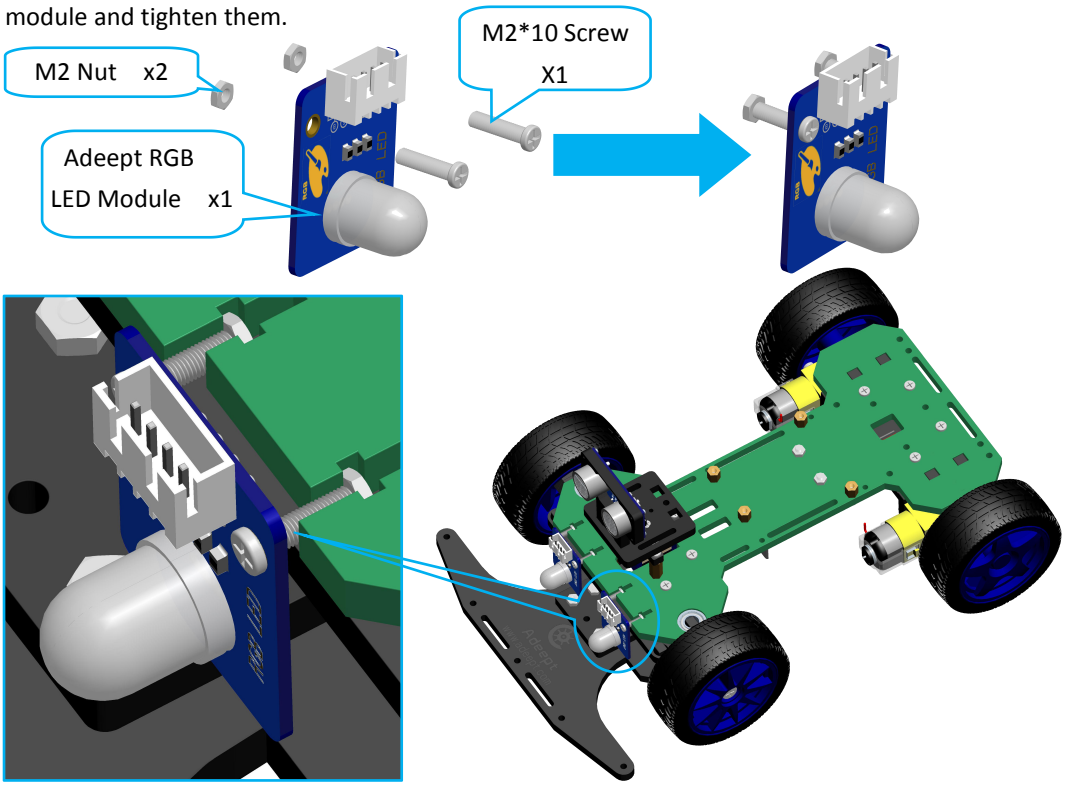
Effect diagram after assembling



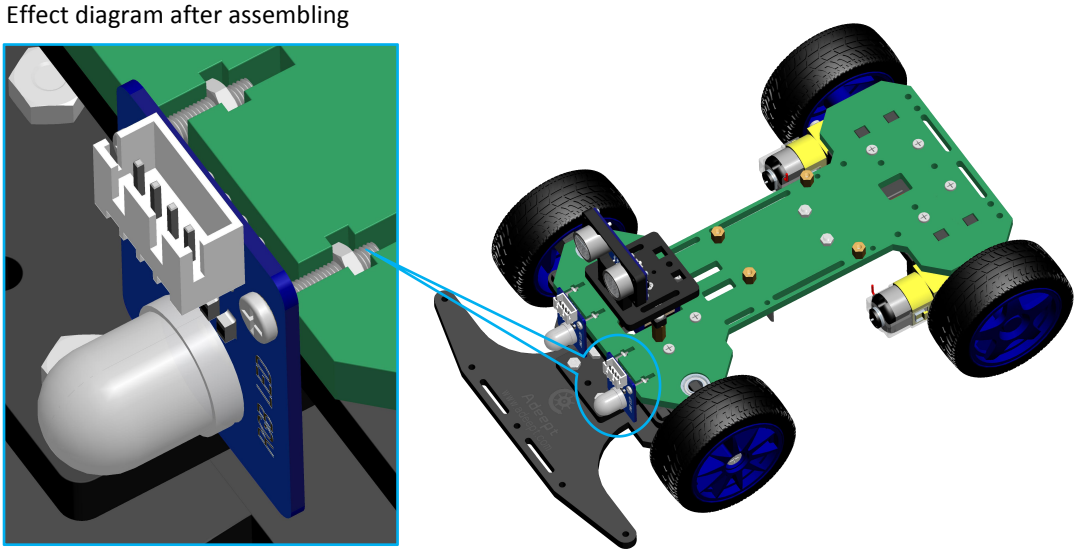
RGB LED Module

Assemble the following components

First assemble the M2*10 screw and M2 nut into the LED module, with the screw just inserted into the nut (as shown in the figure). Then hold the LED, press the nuts into the holes of the module and tighten them.



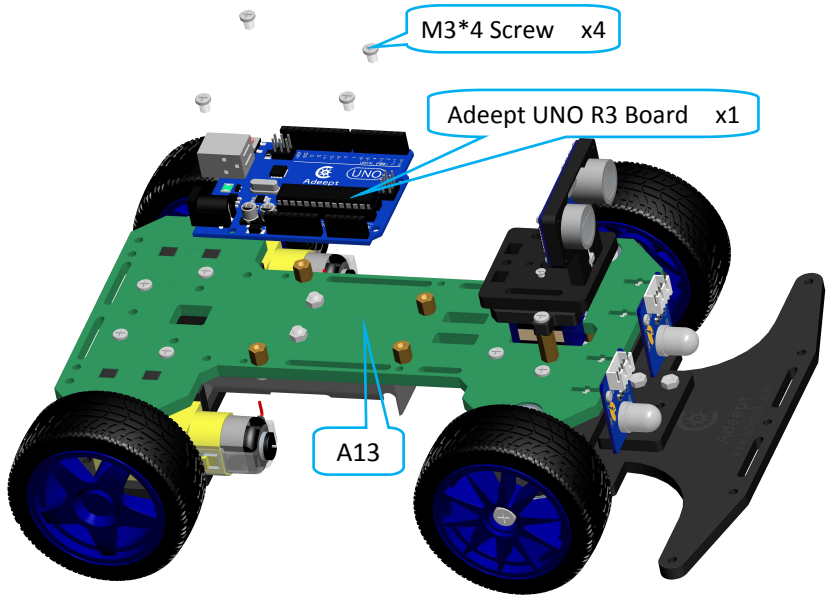
Effect diagram after assembling



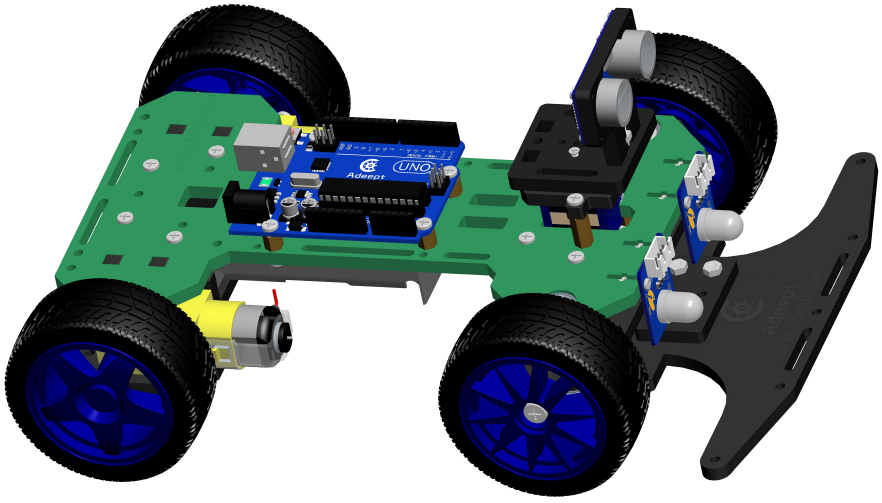
Assemble PCBs

7.1.Mount the Adeept UNO R3 Board to A13.

Assemble the following components

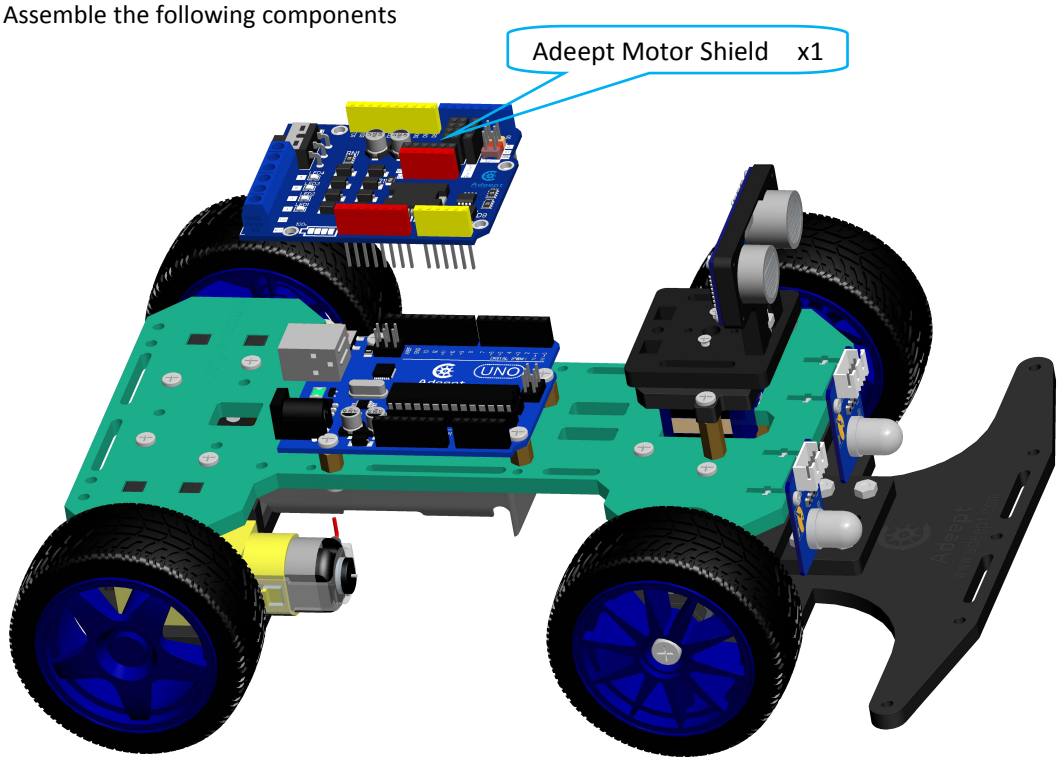


Effect diagram after assembling

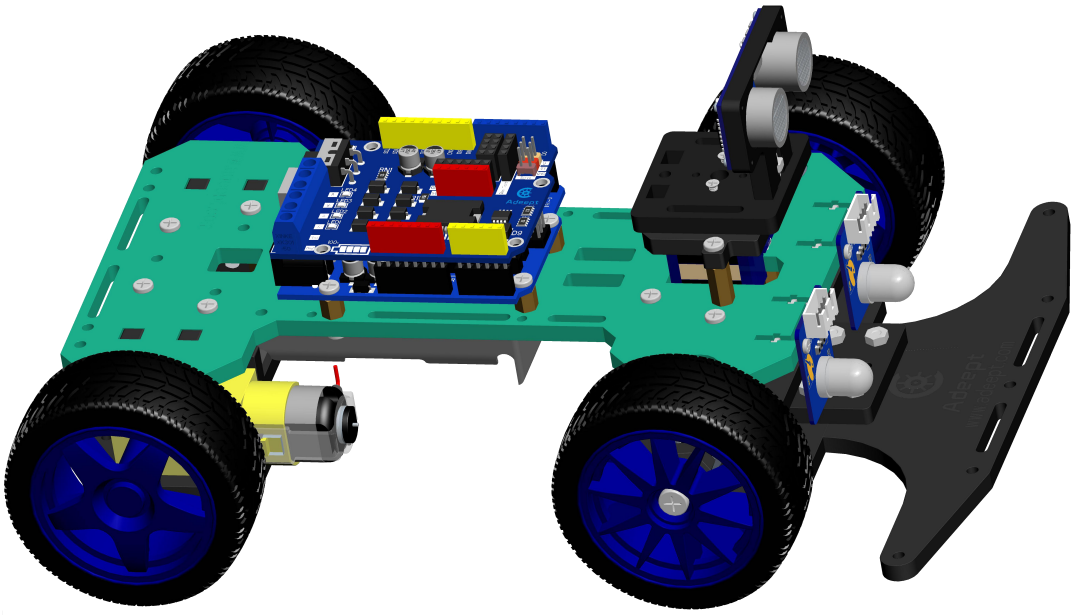


7.2 Insert the Adeept Motor Shield onto the Adeept UNO R3 Board.

Assemble the following components

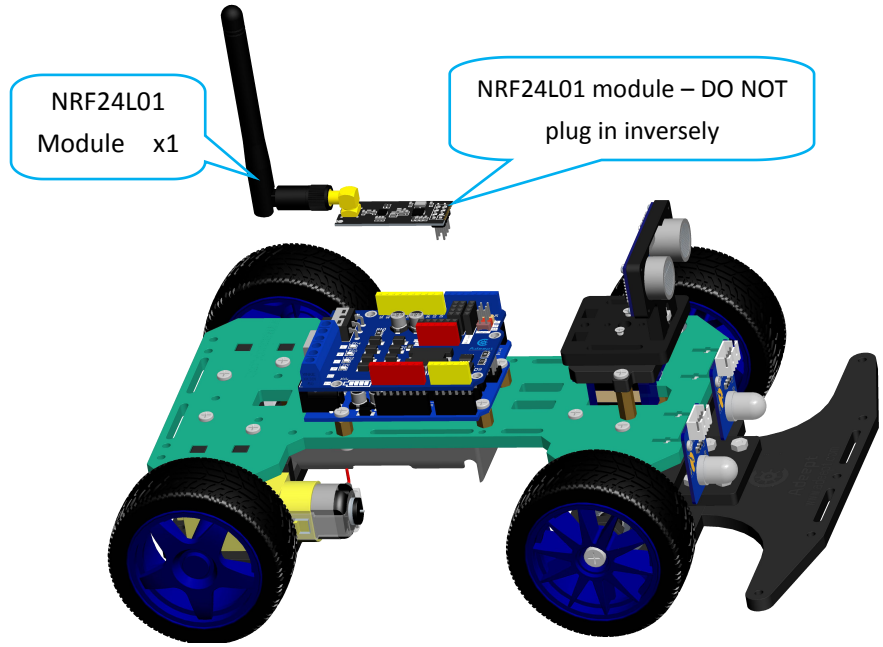


Effect diagram after assembling

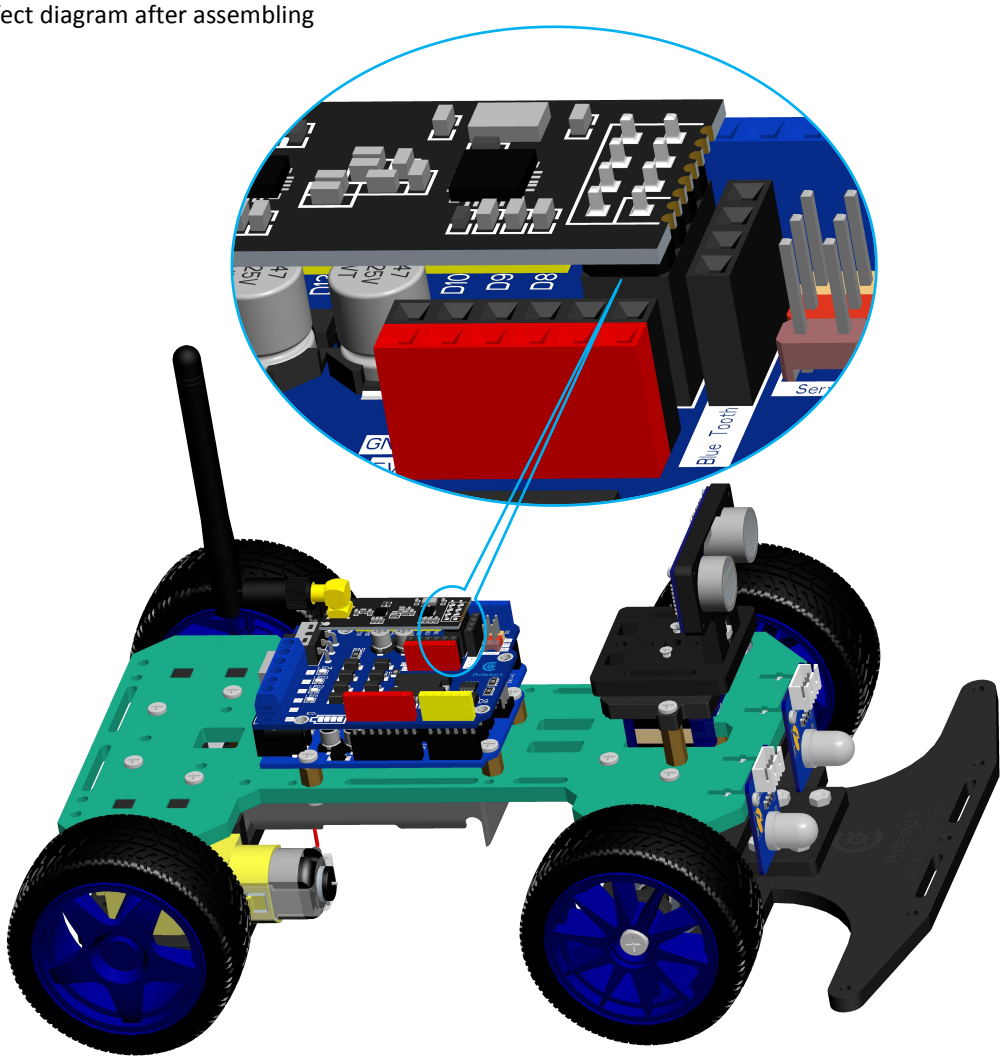


7.3Insert the Adeept Motor Shield onto the Adeept UNO R3 Board.

Assemble the following components



Effect diagram after assembling

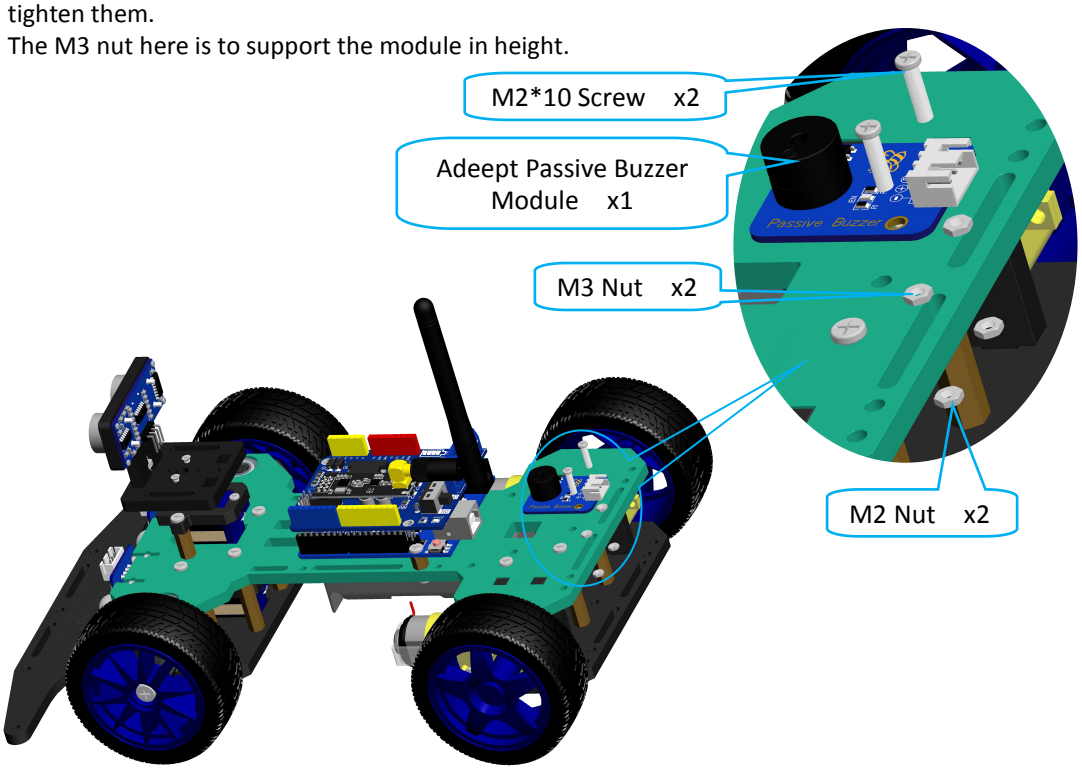


Assemble the Adeept Passive Buzzer Module

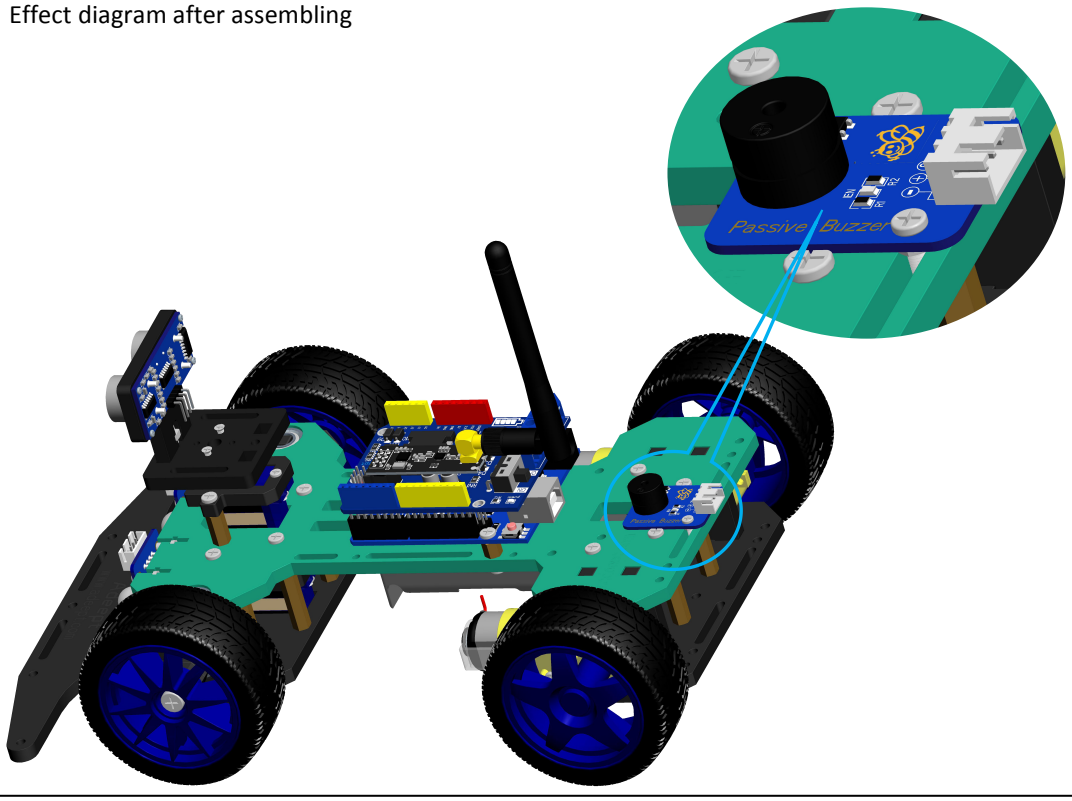
Assemble the following components

Put an M3 nut on the car first, and then insert two M2*10 screws through the buzzer module, M3 nut, the long slot on the plate at the back of the car, and then an M2 nut below the plate in turn. During the course, you can hold the nut underneath, insert the screw through these, and tighten them.

The M3 nut here is to support the module in height.



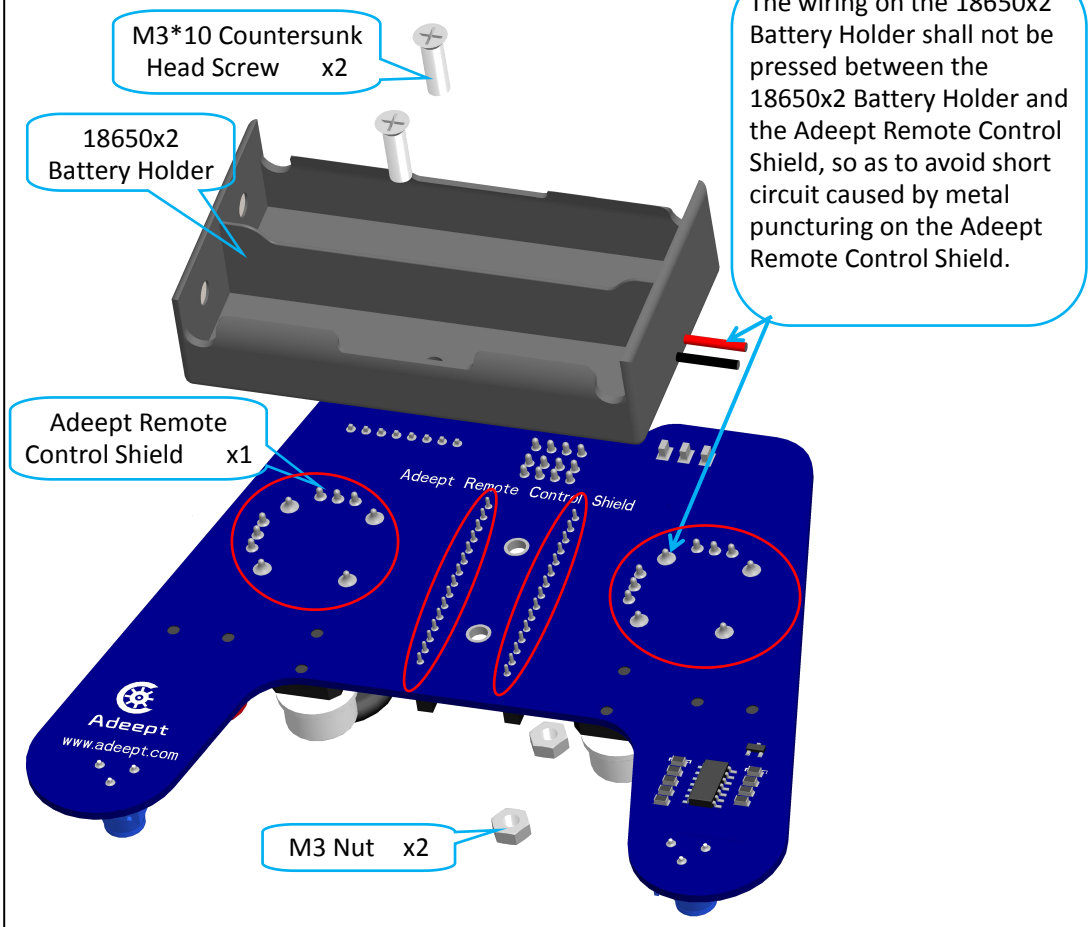
Effect diagram after assembling



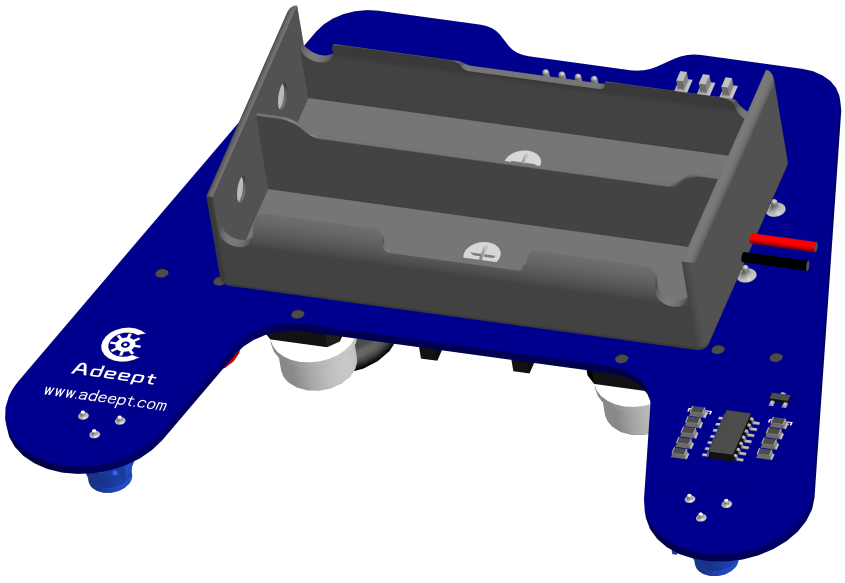
Remote Control

A. Fix the 18650x2 Battery Holder and Adeept Remote Control Shield.

Assemble the following components

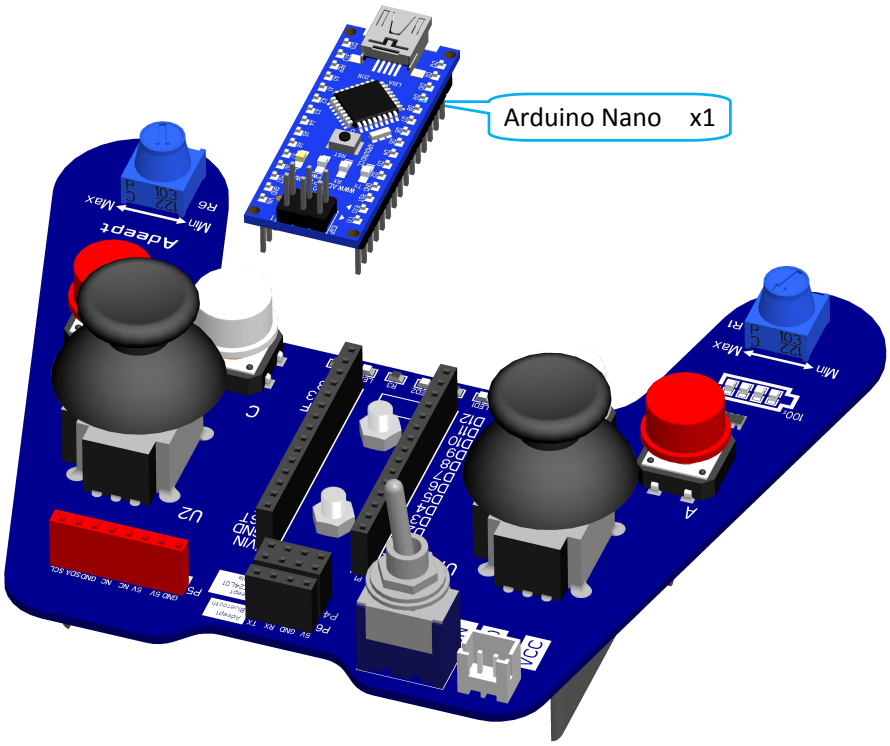


Effect diagram after assembling

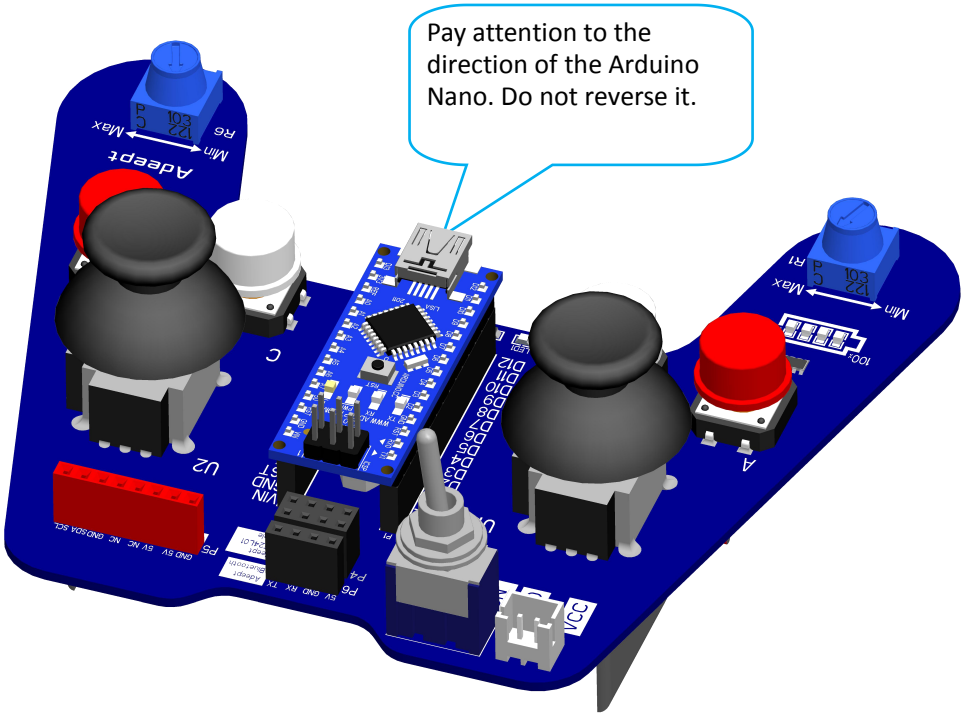


B. plug Arduino Nano in Adeept Remote Control Shield.

Assemble the following components

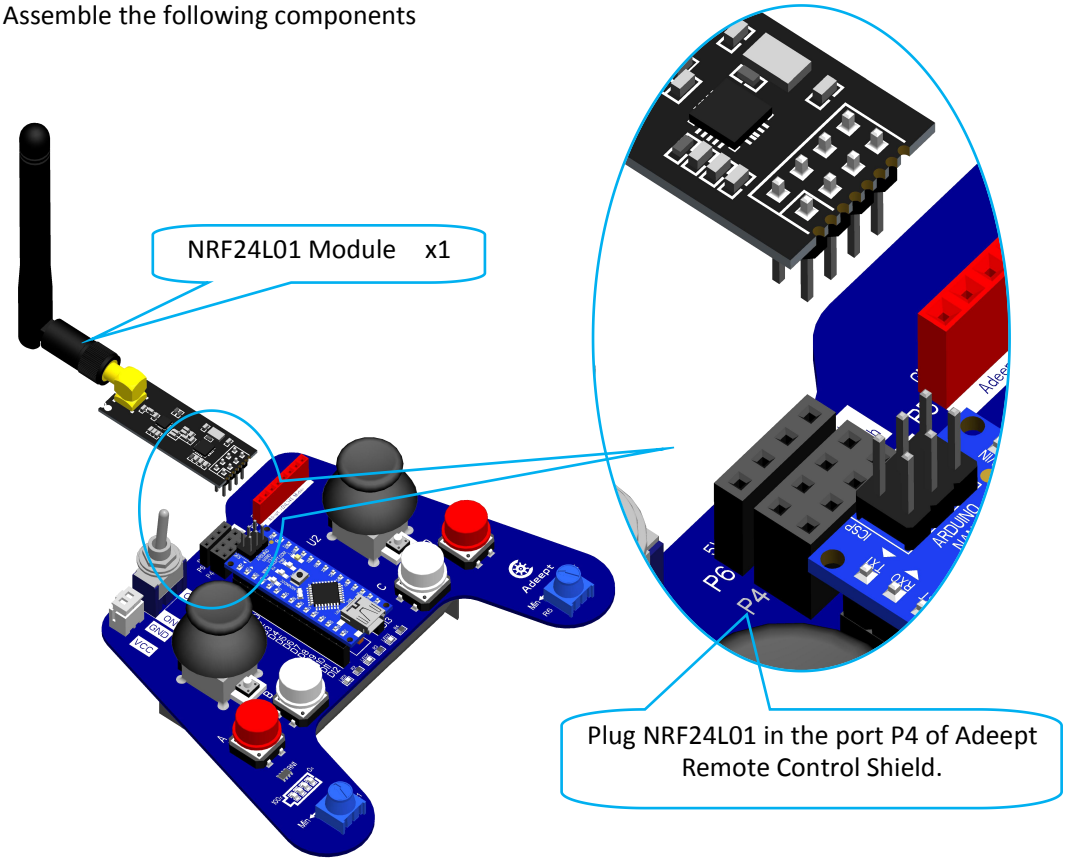


Effect diagram after assembling

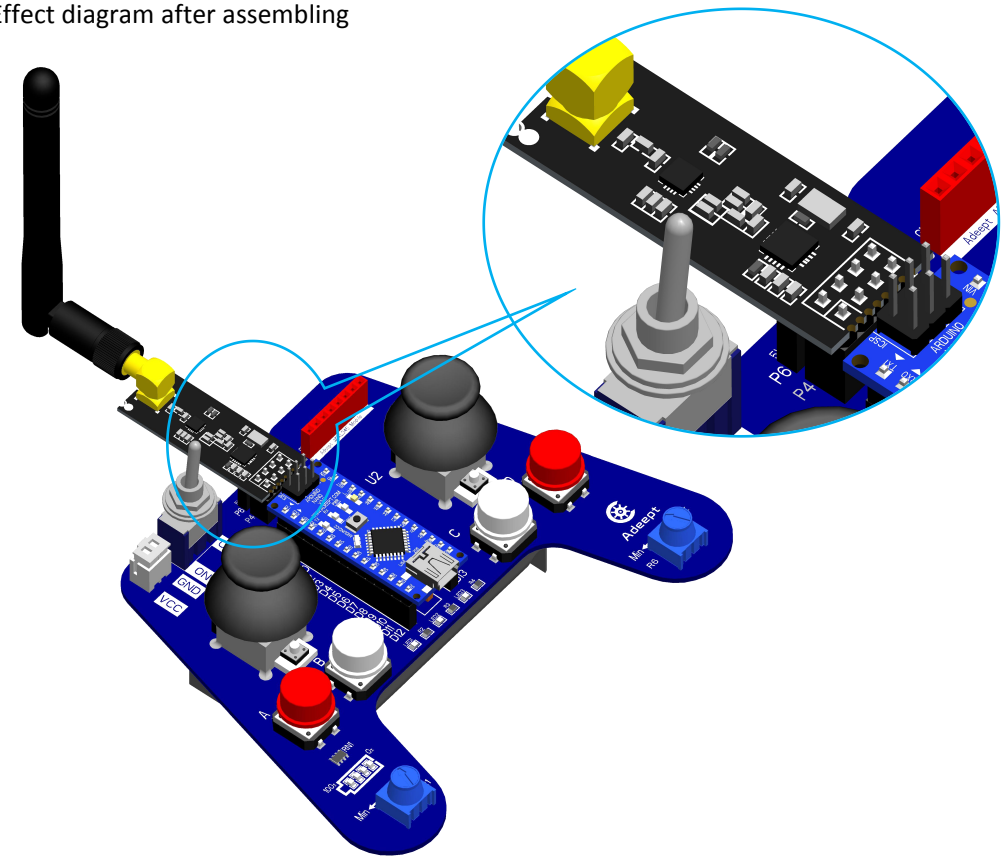


C.Plug NRF24L01 in Adeept Remote Control Shield.

Assemble the following components

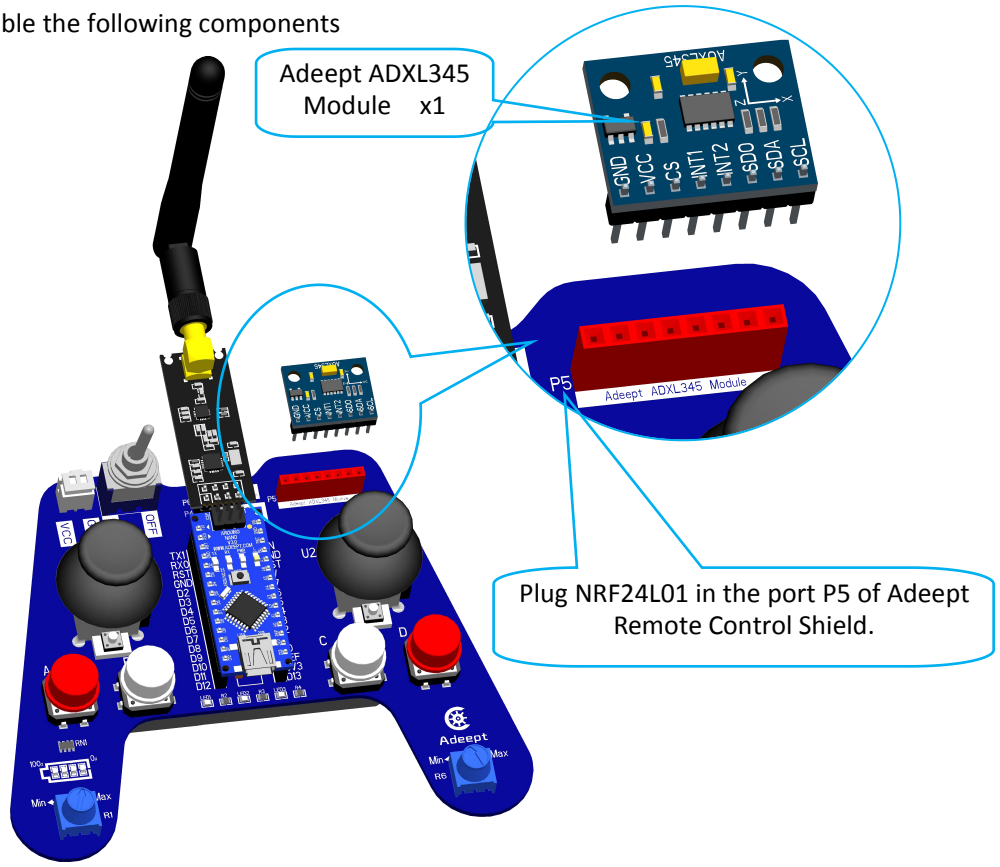


Effect diagram after assembling

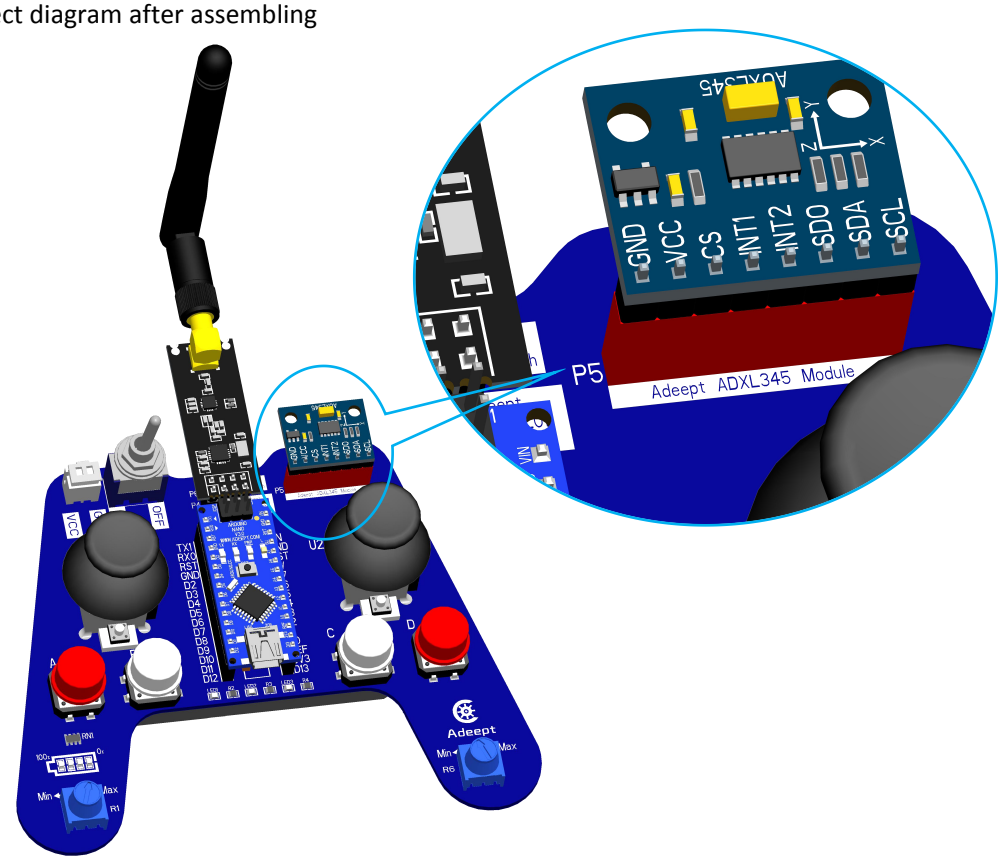


D.Plug Adeept ADXL345 Module in Adeept Remote Control Shield.

Assemble the following components

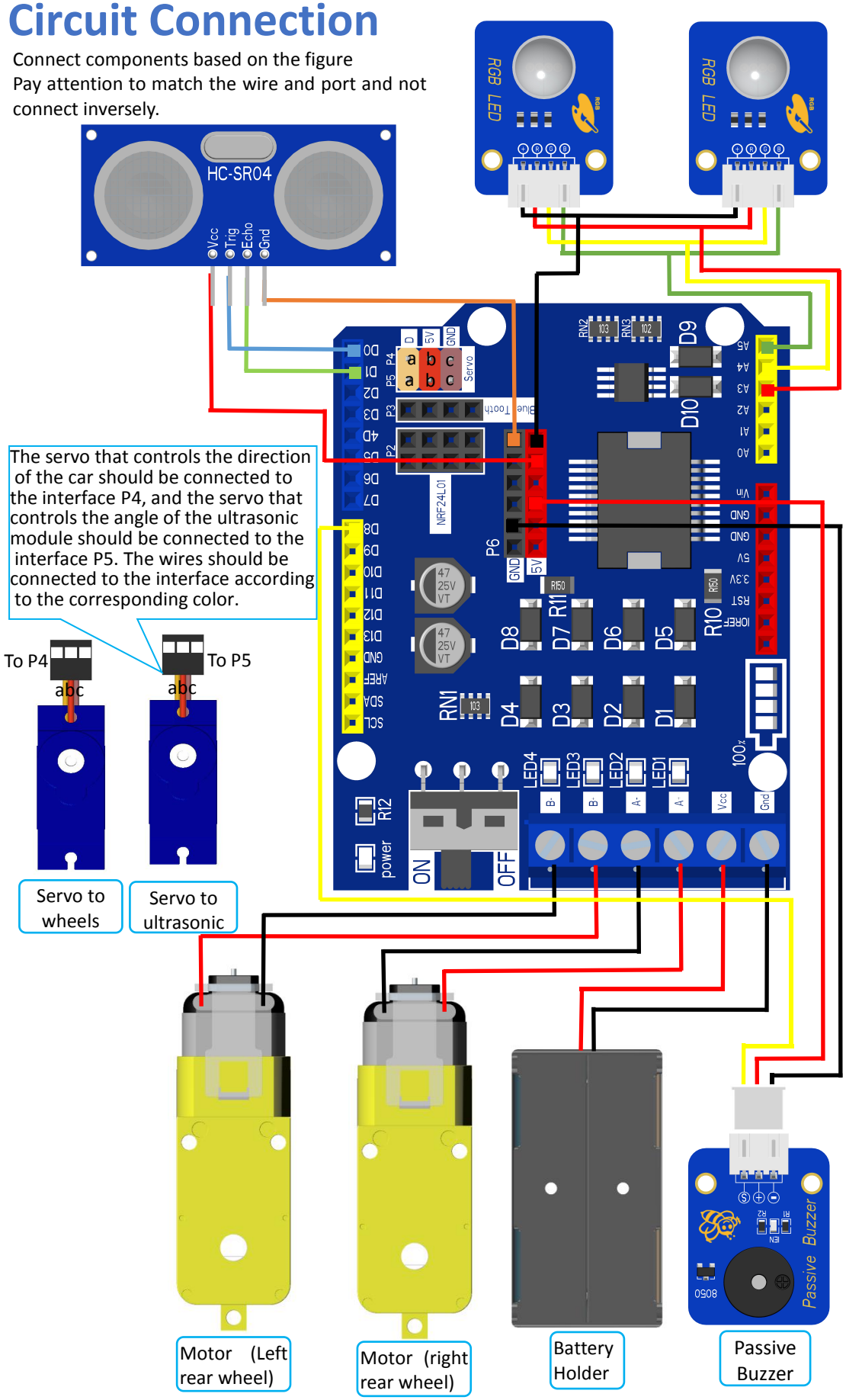


Effect diagram after assembling

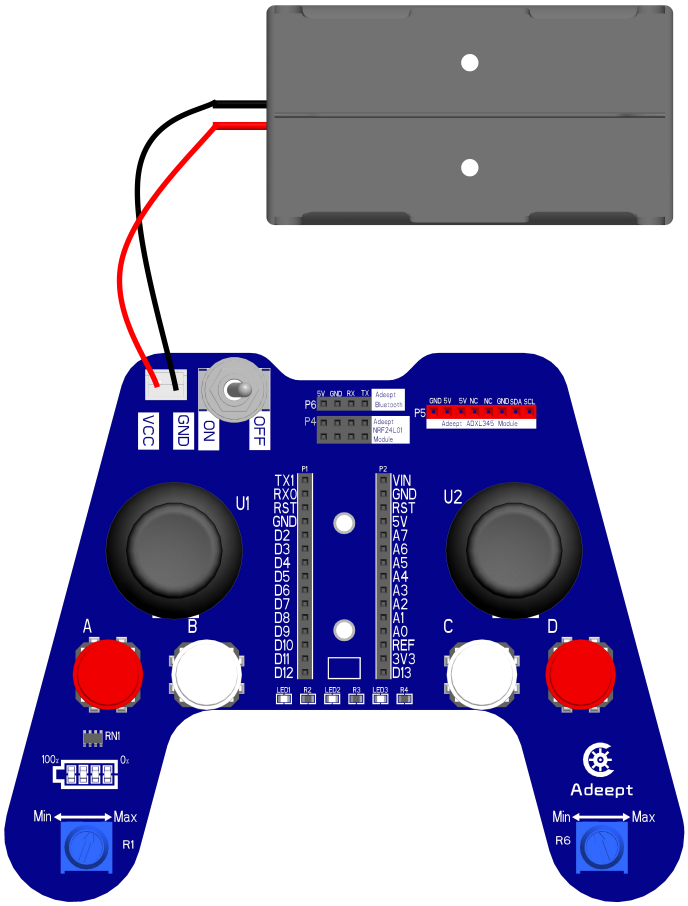


Circuit Connection

Connect components based on the figure
Pay attention to match the wire and port and not connect inversely.



Circuit Connection of the Remote Control：



Software & Hardware

What is Arduino?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers - students, hobbyists, artists, programmers, and professionals - has gathered around this open-source platform, their contributions have added up to an incredible amount of accessible knowledge that can be of great help to novices and experts alike.

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open-source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.

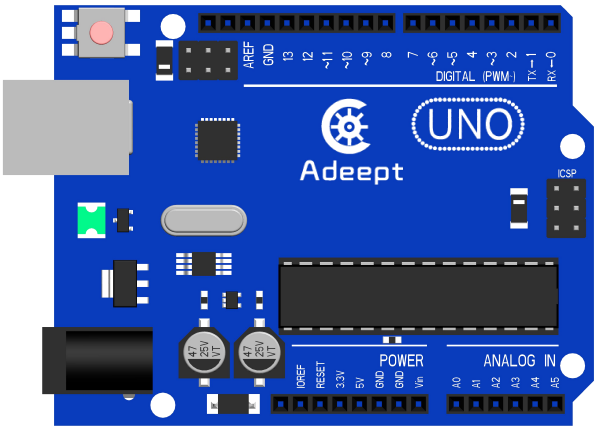
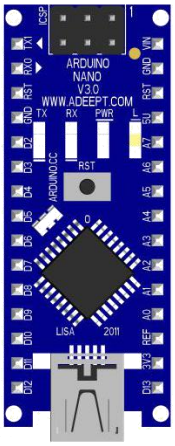
Why Arduino?

Thanks to its simple and accessible user experience, Arduino has been used in thousands of different projects and applications. The Arduino software is easy-to-use for beginners, yet flexible enough for advanced users. It runs on Mac, Windows, and Linux. Teachers and students use it to build low cost scientific instruments, to prove chemistry and physics principles, or to get started with programming and robotics. Designers and architects build interactive prototypes, musicians and artists use it for installations and to experiment with new musical instruments. Makers, of course, use it to build many of the projects exhibited at the Maker Faire, for example. Arduino is a key tool to learn new things. Anyone - children, hobbyists, artists, programmers - can start tinkering just following the step by step instructions of a kit, or sharing ideas online with other members of the Arduino community.

How Should I Use Arduino?

If you are a beginner with Arduino, Arduino learning kits on our website www.adeept.com would be a prefect step into this fantastic field!

Two types of Arduino board are used in this car kit: Adeept UNO R3 Board and Arduino Nano Board.

Adeept UNO R3 Board	Arduino Nano Board
	

Power

The Arduino/Genuino Uno board can be powered via the USB connection or with an external power supply. The power source is selected automatically.

External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the GND and Vin pin headers of the POWER connector.

The board can operate on an external supply from 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may become unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

The power pins are as follows:

Vin. The input voltage to the Arduino/Genuino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.

5V. This pin outputs a regulated 5V from the regulator on the board. The board can be supplied with power either from the DC power jack (7 - 12V), the USB connector (5V), or the VIN pin of the board (7-12V). Supplying voltage via the 5V or 3.3V pins bypasses the regulator, and can damage your board. We don't advise it.

3V3. A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50 mA.

GND. Ground pins.

IOREF. This pin on the Arduino/Genuino board provides the voltage reference with which the

microcontroller operates. A properly configured shield can read the IOREF pin voltage and select the appropriate power source or enable voltage translators on the outputs to work with the 5V or 3.3V.

Input and Output

Each of the 14 digital pins on the Uno can be used as an input or output, using pinMode(), digitalWrite(), and digitalRead() functions. They operate at 5 volts. Each pin can provide or receive 20 mA as recommended operating condition and has an internal pull-up resistor (disconnected by default) of 20-50k ohm. A maximum of 40mA is the value that must not be exceeded on any I/O pin to avoid permanent damage to the microcontroller.

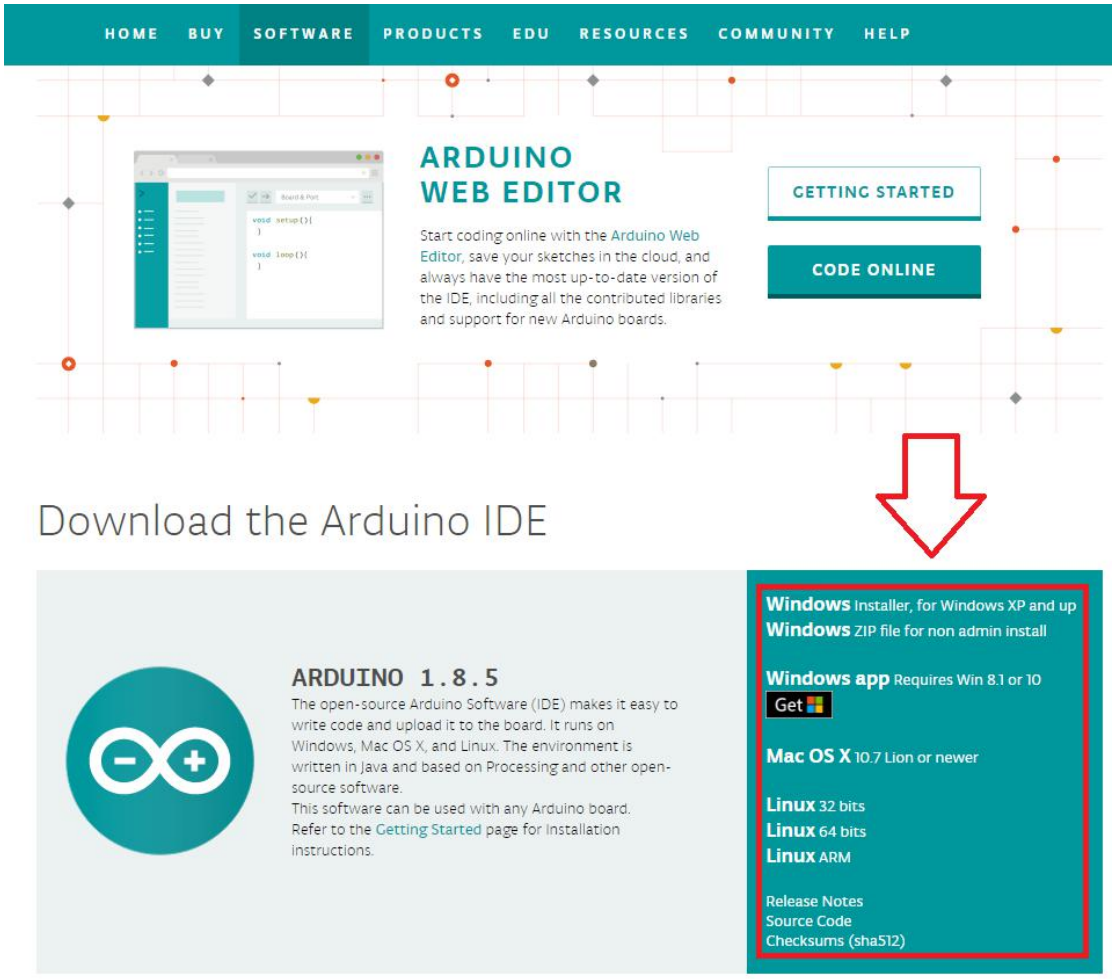
In addition, some pins have specialized functions:
Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the corresponding pins of the ATmega8U2 USB-to-TTL Serial chip.
External Interrupts: 2 and 3. These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attachInterrupt() function for details.
PWM: 3, 5, 6, 9, 10, and 11. Provide 8-bit PWM output with the analogWrite() function.
SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication using the SPI library.
LED: 13. There is a built-in LED driven by digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.
TWI: A4 or SDA pin and A5 or SCL pin. Support TWI communication using the Wire library.

The Uno has 6 analog inputs, labeled A0 through A5, each of which provide 10 bits of resolution (i.e. 1024 different values). By default they measure from ground to 5 volts, though is it possible to change the upper end of their range using the AREF pin and the analogReference() function.
There are a couple of other pins on the board:
AREF. Reference voltage for the analog inputs. Used with analogReference().
Reset. Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

Arduino Software (IDE)

Please refer to the following teaching video for IDE download and installation : https://youtu.be/BsTDVB8B240

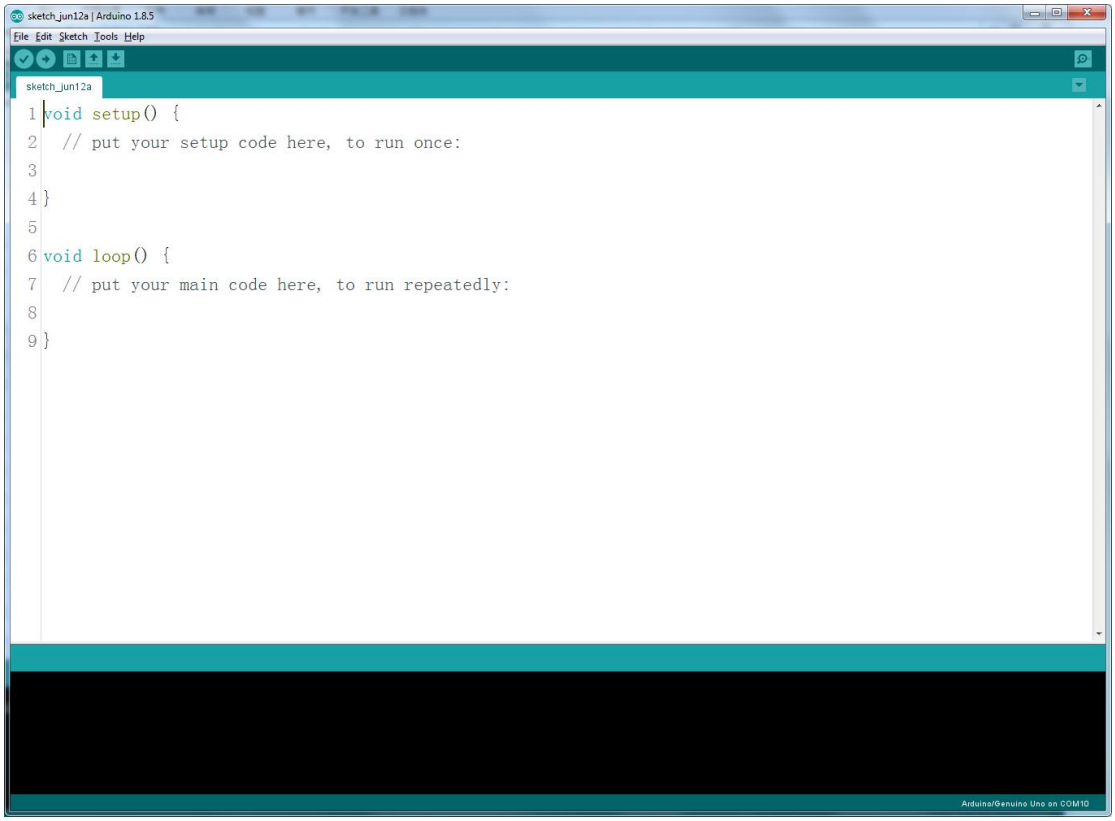
Arduino Software (IDE) is used to write and upload the code for Arduino Board. First, install Arduino software (IDE): visit https://www.arduino.cc/en/Main/Software. Download the corresponding installation program according to your operating system. If you are a Windows user, please select the “Windows Intaller” to download and install the driver correctly.



After the download completes, run the installer. For Windows users, there may pop up an installation dialog box of the driver during the installation . Please agree the installation when it appears.

After installation is completed, an Arduino software shortcut will be generated on the desktop. Run the ide.

The interface of Arduino software is as follows:



The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

Verify : Checks your code for errors when compiling it.

Upload : Compiles your code and uploads it to the configured board.

Before uploading your sketch, you need to select the correct items from the **Tools > Board** and **Tools > Port** menus. The boards are described below. On the Mac OS X, the serial port is probably something like **/dev/tty.usbmodem241** (for an Uno or Mega2560 or Leonardo) or **/dev/tty.usbserial-1B1** (for a Duemilanove or earlier USB board), or **/dev/tty.USA19QW1b1P1.1** (for a serial board connected with a Keyspan USB-to-Serial adapter). On Windows, it's probably **COM1** or **COM2** (for a serial board) or **COM4, COM5**, **COM7**, or higher (for a USB board) - to find out, you look for USB serial device in the ports section of the Windows **Device Manager**. On Linux, it should be **/dev/ttyACMx , /dev/ttyUSBx** or similar.

Once you've selected the correct serial port and board, press the upload button in the toolbar or select the **Upload** item from the **Sketch** menu. Current Arduino boards will reset automatically and begin the upload. With older boards (pre-Diecimila) that lack auto-reset, you'll need to press the reset button on the board just before starting the upload. On most boards, you'll see the RX

and TX LEDs blink as the sketch is uploaded. The Arduino Software (IDE) will display a message when the upload is completed, or show an error.

When you upload a sketch, you're using the Arduino bootloader, a small program that has been loaded on to the microcontroller on your board. It allows you to upload code without using any additional hardware. The bootloader is active for a few seconds when the board resets; then it starts whichever sketch was most recently uploaded to the microcontroller. The bootloader will blink the on-board (pin 13) LED when it starts (i.e. when the board resets).

Note: If you are using an external programmer with your board, you can hold down the "shift" key on your computer when using this icon. The text will change to "Upload using Programmer"

 New: Creates a new sketch.

 Open: Presents a menu of all the sketches in your sketchbook. Clicking one will open it within the current window overwriting its content.
Note:Due to a bug in Java, this menu doesn't scroll; if you need to open a sketch late in the list, use the File | Sketchbook menu instead.

 Save: Saves your sketch.

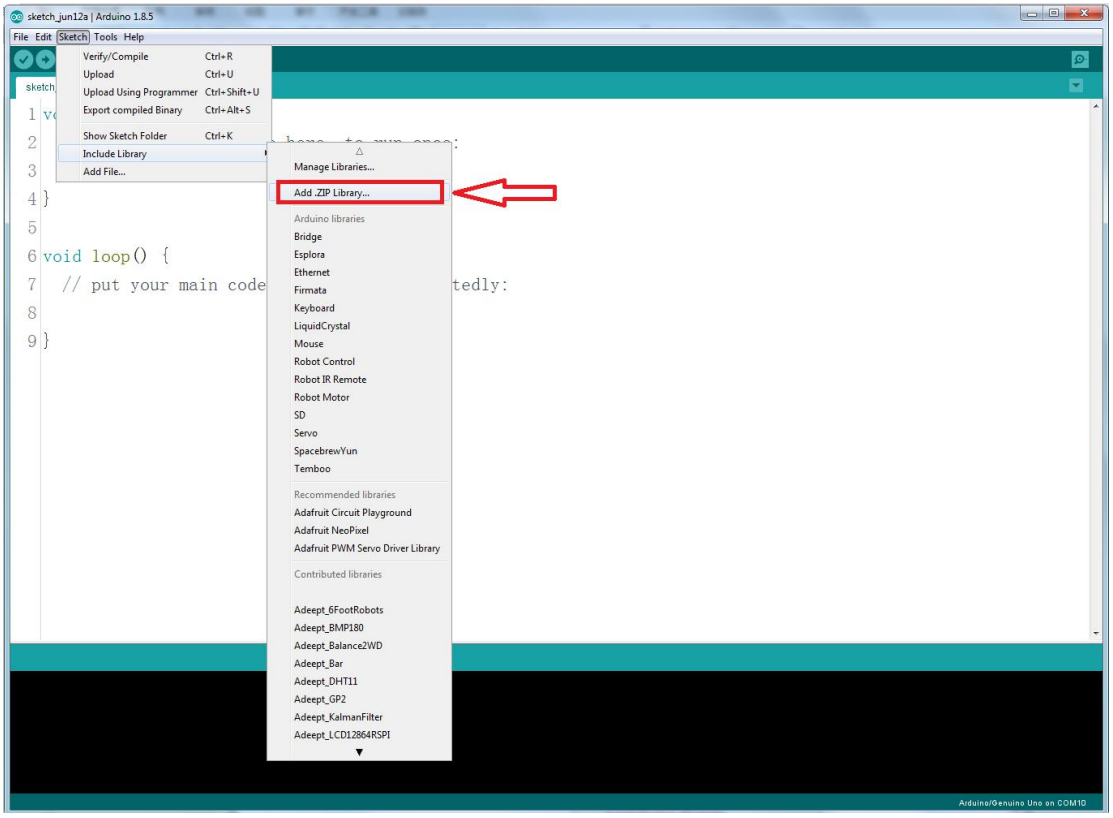
 Serial Monitor: Opens the serial monitor.

Additional commands are found within the five menus: **File**, **Edit**, **Sketch**, **Tools**, and **Help**. The menus are context sensitive, which means only those items relevant to the work currently being carried out are available.

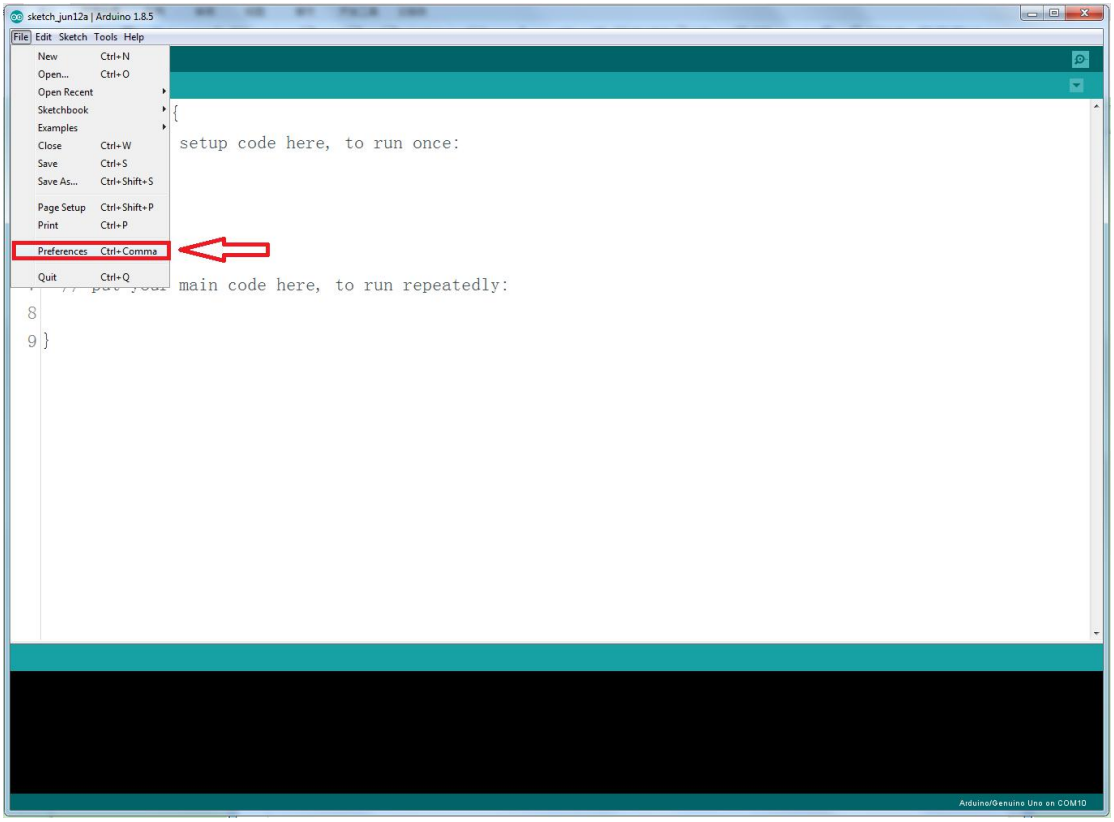
Since version 1.0, files are saved with an **.ino** file extension. Previous versions use the **.pde** extension. You may still open **.pde** named files in version 1.0 and later, and the software will automatically rename the extension to **.ino.**

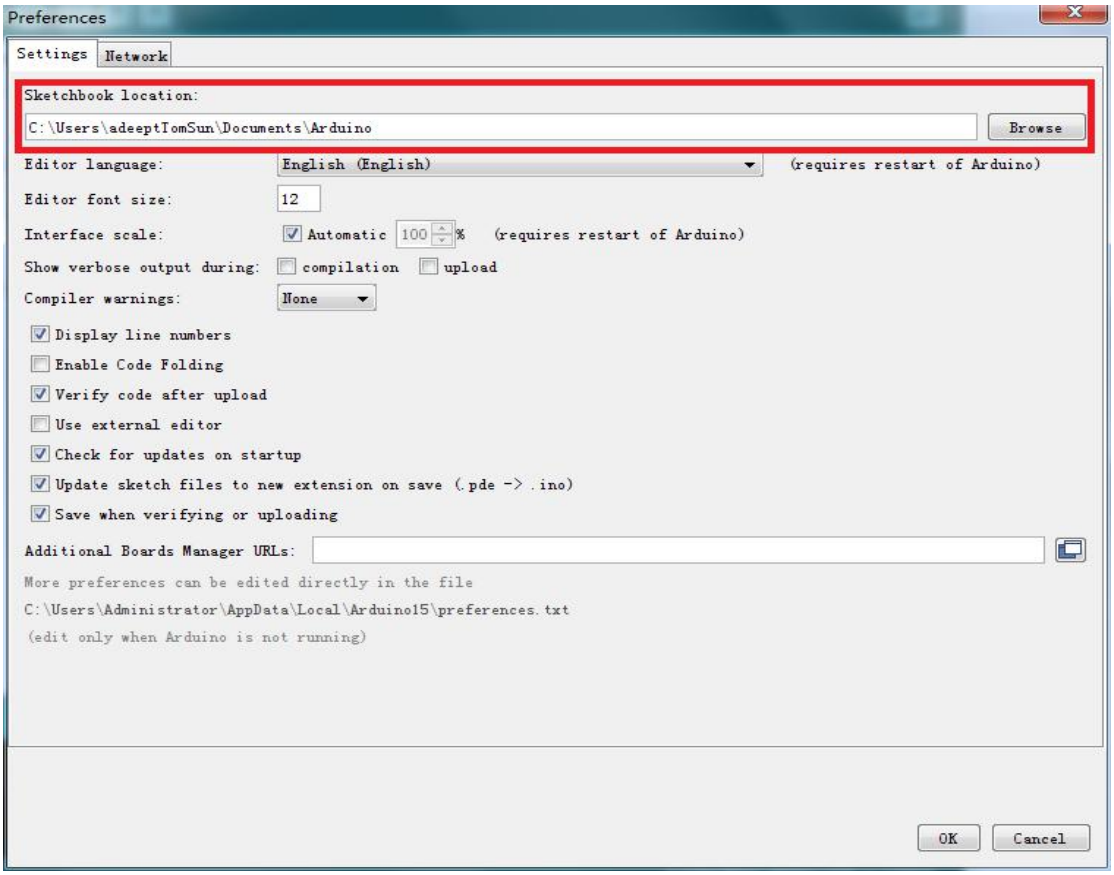
Install Library

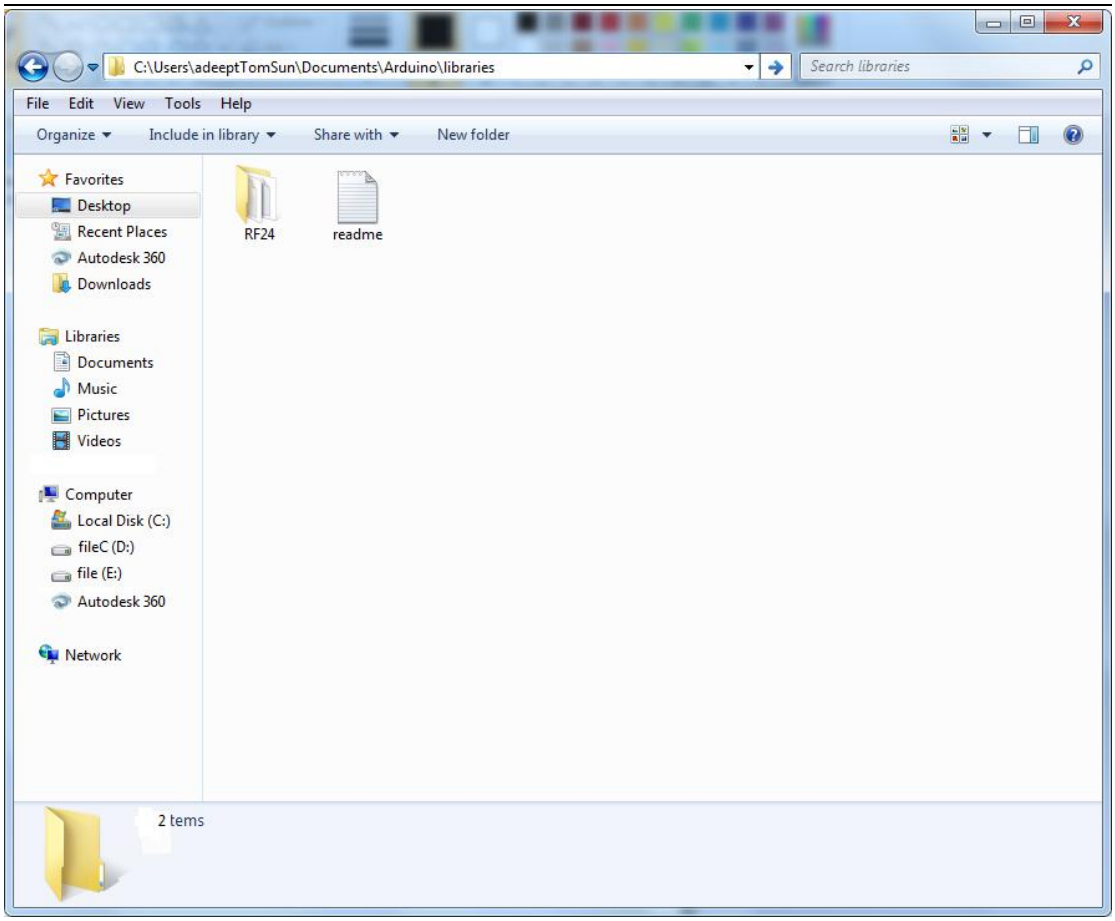
The example sketches provided use the *RF24.ZIP* library, so you need to install it before compiling. Click **Add.ZIP Library** to add the *RF24.ZIP* to the *libraries* folder.



After the library is installed successfully, you can find the RF24.ZIP under **Sketchbook location:** on the window popped up by clicking Preferences.


sketch_jun12a | Arduino 1.8.5
File Edit Sketch Tools Help
New Ctrl+N
Open... Ctrl+O
Open Recent
Sketchbook
Examples
Close Ctrl+W
Save Ctrl+S
Save As... Ctrl+Shift+S
Page Setup Ctrl+Shift+P
Print Ctrl+P
Preferences Ctrl+Comma
Quit Ctrl+Q
{
setup code here, to run once:
main code here, to run repeatedly:
}
Arduino/Genuino Uno on COM10

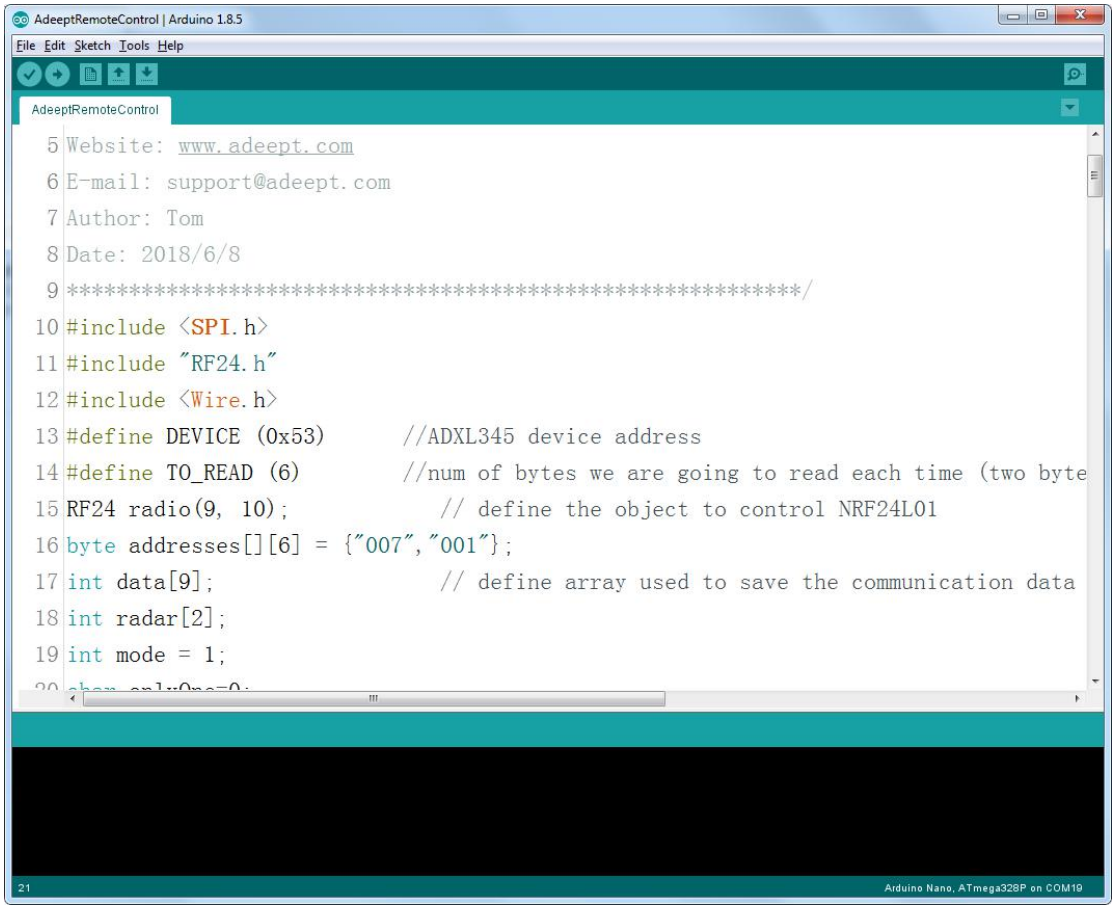

Preferences
Settings
Network
Sketchbook location:
C:\Users\adeeptTomSun\Documents\Arduino
Browse
Editor language:
English (English)
(requires restart of Arduino)
Editor font size:
12
Interface scale:
Automatic
100
%
(requires restart of Arduino)
Show verbose output during:
compilation
upload
Compiler warnings:
None
Display line numbers
Enable Code Folding
Verify code after upload
Use external editor
Check for updates on startup
Update sketch files to new extension on save (.pde -> .ino)
Save when verifying or uploading
Additional Boards Manager URLs:
More preferences can be edited directly in the file
C:\Users\Administrator\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)
OK
Cancel


C:\Users\adeeptTomSun\Documents\Arduino\libraries
Search libraries
File Edit View Tools Help
Organize
Include in library
Share with
New folder
Favorites
Desktop
Recent Places
Autodesk 360
Downloads
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
fileC (D:)
file (E:)
Autodesk 360
Network
RF24
readme
2 tems

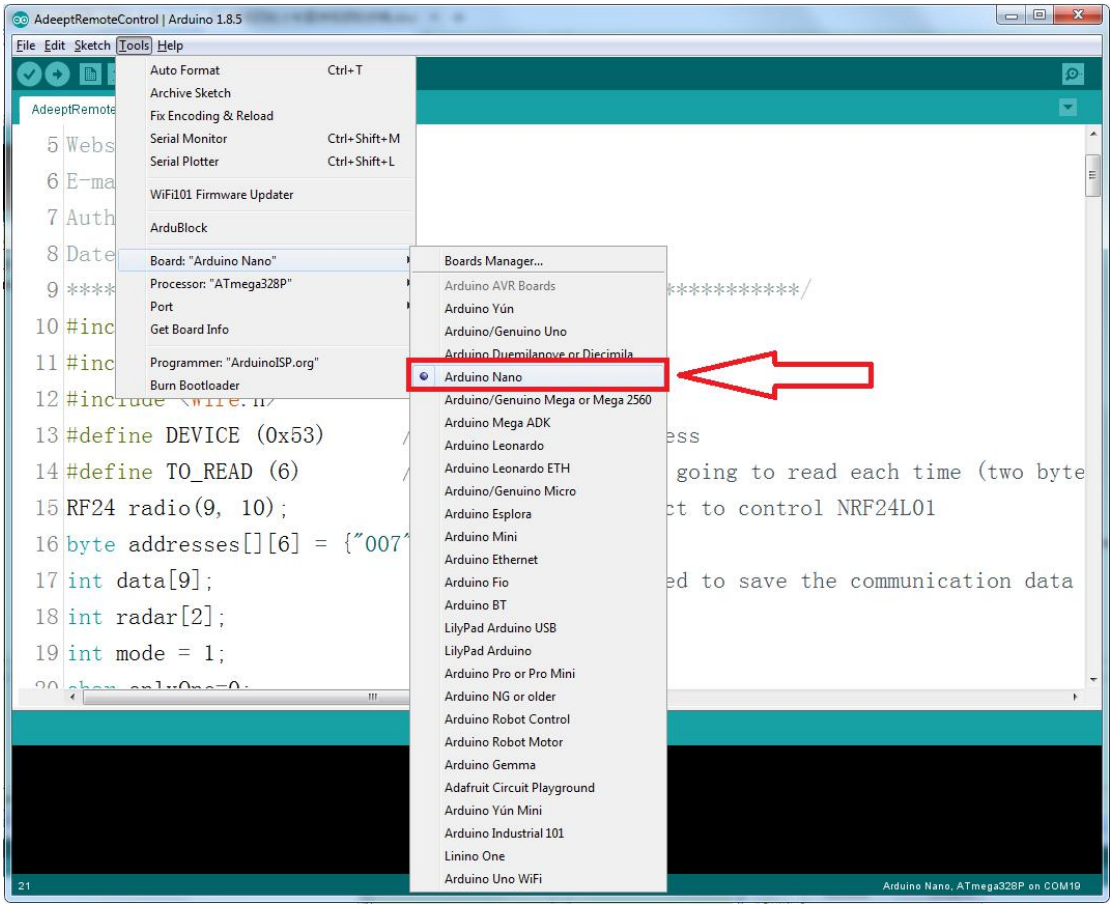
Upload Program

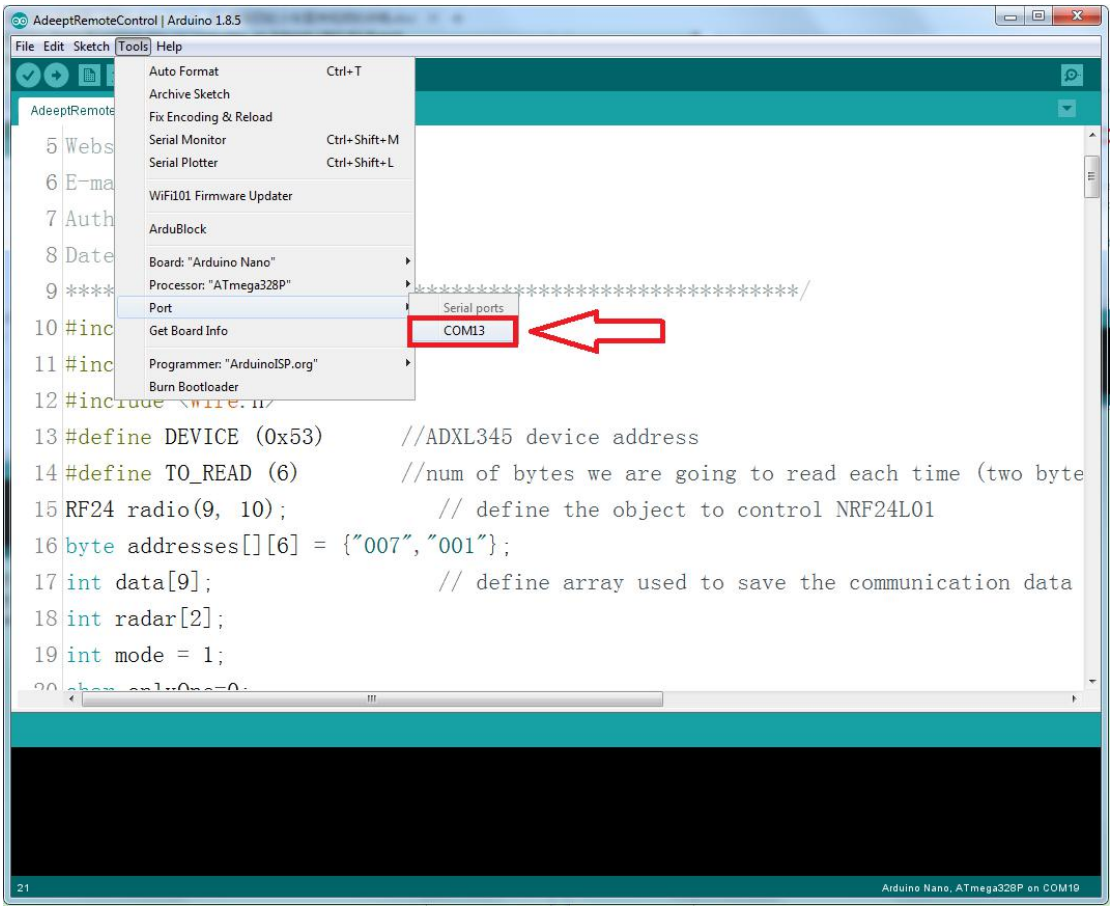
After the preparations above, next we will upload the program (example sketches provided) to the Arduino Nano Board and Adeept UNO R3 Boards. The car kit comprises of two parts: the remote control based on Arduino Nano Boardand the car controller on Adeept UNO R3 Board.

First, upload the sketch to Arduino Nano Board. Open the file for the remote control, the file *AdeeptRemoteControl.ino*.



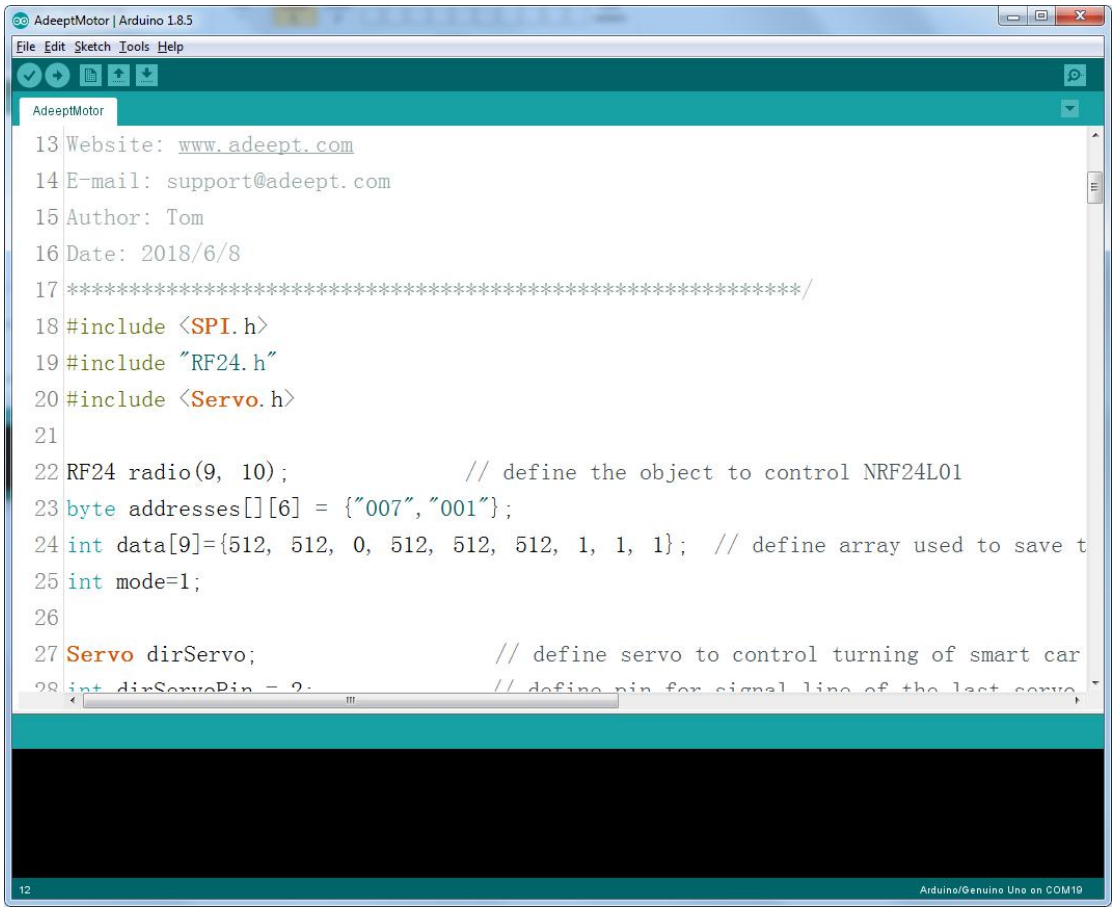
Connect the Arduino Nano the computer. Select **Tool** -> **Board**: "**Arduino Nano**"-> **Arduino Nano**, and **Port** ->**COM13.** COMx is the port number assigned to the Arduino Nano and can be COM1, COM2, COM3...So it depends.


AdeeptRemoteControl | Arduino 1.8.5
File Edit Sketch Tools Help
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 Firmware Updater
ArduBlock
Board: "Arduino Nano"
Processor: "ATmega328P"
Port
Get Board Info
Programmer: "ArduinoISP.org"
Burn Bootloader
Boards Manager...
Arduino AVR Boards
Arduino Yún
Arduino/Genuino Uno
Arduino Nano
Arduino/Genuino Mega or Mega 2560
Arduino Mega ADK
Arduino Leonardo
Arduino Leonardo ETH
Arduino/Genuino Micro
Arduino Esplora
Arduino Mini
Arduino Ethernet
Arduino Fio
Arduino BT
LilyPad Arduino USB
LilyPad Arduino
Arduino Pro or Pro Mini
Arduino NG or older
Arduino Robot Control
Arduino Robot Motor
Arduino Gemma
Adafruit Circuit Playground
Arduino Yún Mini
Arduino Industrial 101
Linino One
Arduino Uno WiFi
#define DEVICE (0x53)
#define TO_READ (6)
RF24 radio(9, 10);
byte addresses[][6] = {"007"
int data[9];
int radar[2];
int mode = 1;
going to read each time (two byte
ct to control NRF24L01
ed to save the communication data
Arduino Nano, ATmega328P on COM19

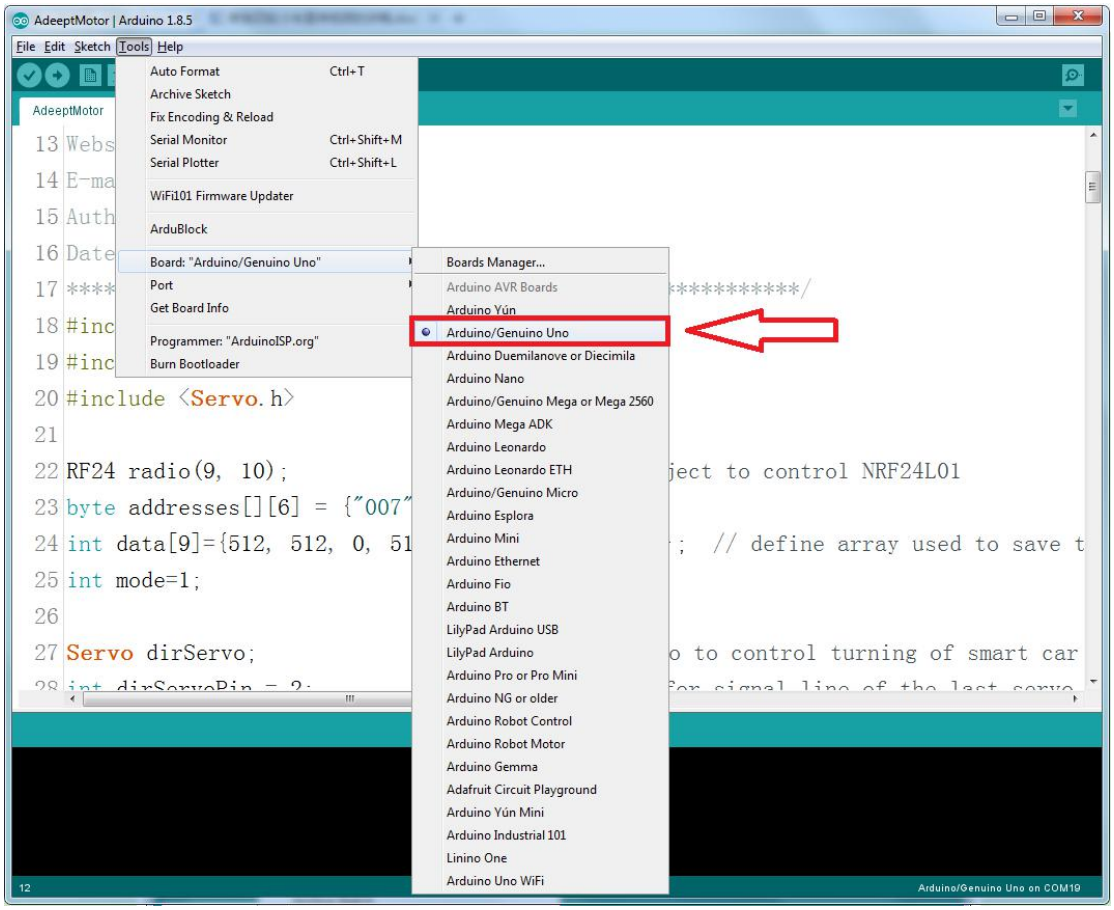

AdeeptRemoteControl | Arduino 1.8.5
File Edit Sketch Tools Help
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 Firmware Updater
ArduBlock
Board: "Arduino Nano"
Processor: "ATmega328P"
Port
Get Board Info
Programmer: "ArduinoISP.org"
Burn Bootloader
Serial ports
COM13
#define DEVICE (0x53) //ADXL345 device address
#define TO_READ (6) //num of bytes we are going to read each time (two byte
RF24 radio(9, 10); // define the object to control NRF24L01
byte addresses[][6] = {"007","001"};
int data[9]; // define array used to save the communication data
int radar[2];
int mode = 1;
Arduino Nano, ATmega328P on COM19

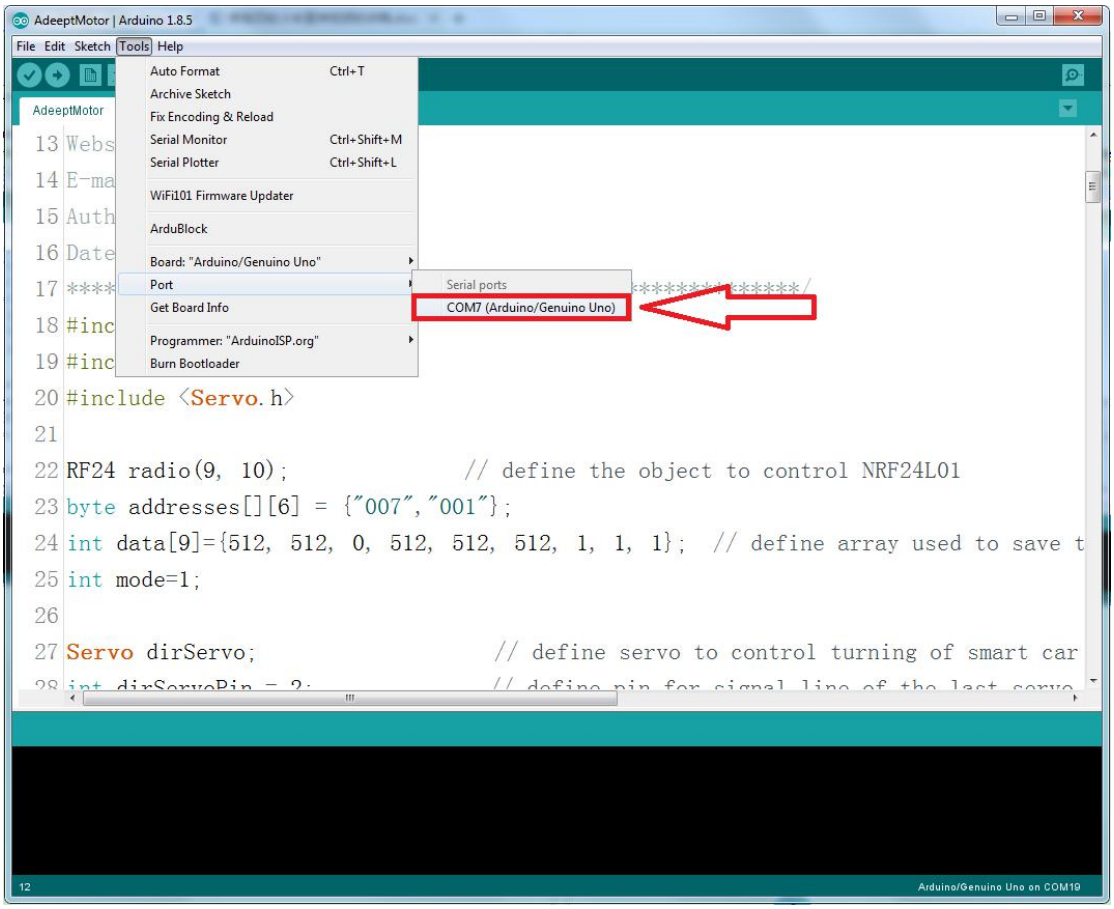
Next, click the upload button  .

After the program is uploaded to the Nano successfully, upload another sketch to the Adeept UNO R3. Open the program provided for the control board, the file "*AdeeptMotor.ino*".



Connect the Arduino UNO R3 Board to the PC. Select **Tool** -> **Board "Arduino/Genuino Uno"**, and **Port** -> **COM7**. Also here is COM7, assigned to the Uno, but it can be COM1, COM2, COM3...





Click the button  to upload the sketch to the board.

About Processing

What is Processing?

Processing is a programming language, development environment, and online community. Since 2001, Processing has promoted software literacy within the visual arts and visual literacy within technology. Initially created to serve as a software sketchbook and to teach computer programming fundamentals within a visual context, Processing evolved into a development tool for professionals. Today, there are tens of thousands of students, artists, designers, researchers, and hobbyists who use Processing for learning, prototyping, and production.

» Free to download and open source

» Interactive programs with 2D, 3D or PDF output

» OpenGL integration for accelerated 3D

» For GNU/Linux, Mac OS X, and Windows

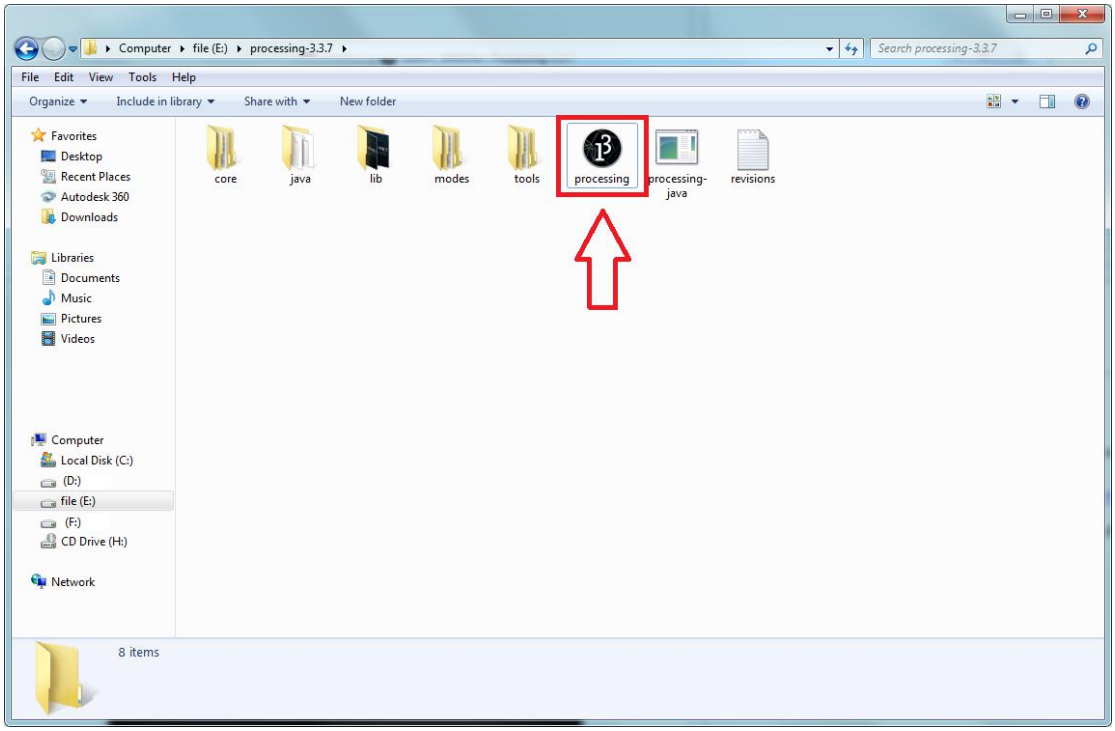
» Over 100 libraries extend the core software

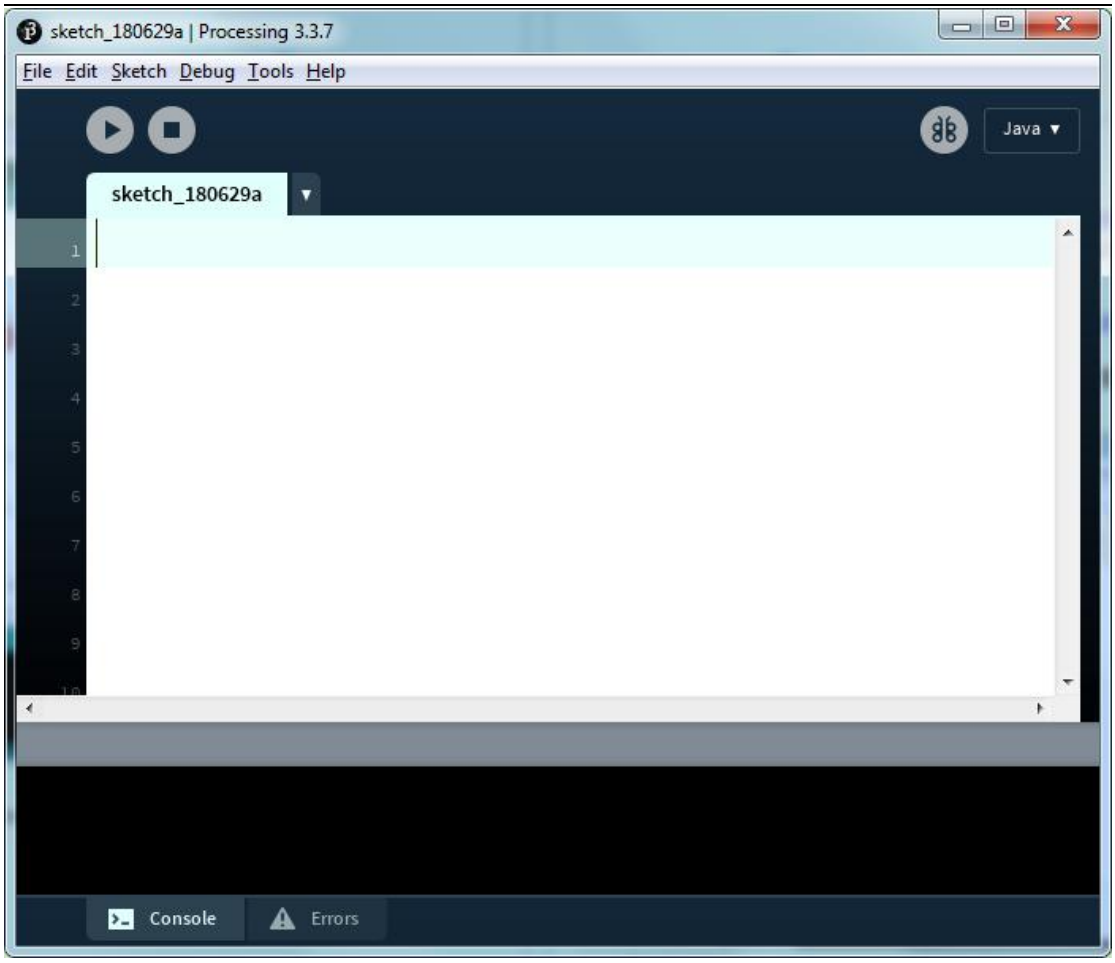
PROCESSING SOFTWARE

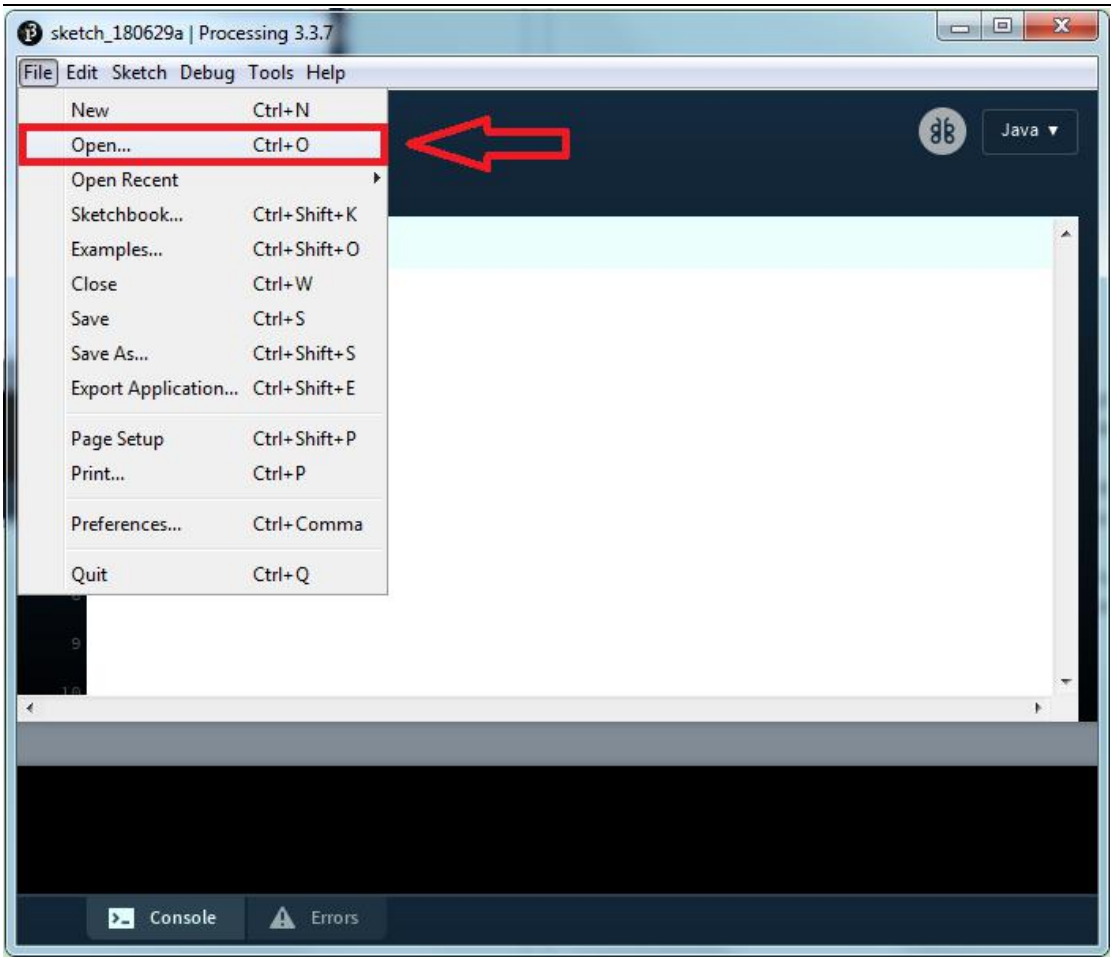
Download Processing:
https://www.processing.org/download/

For more detailed information about Processing IDE, please refer to the following link:
https://www.processing.org/reference/environment/

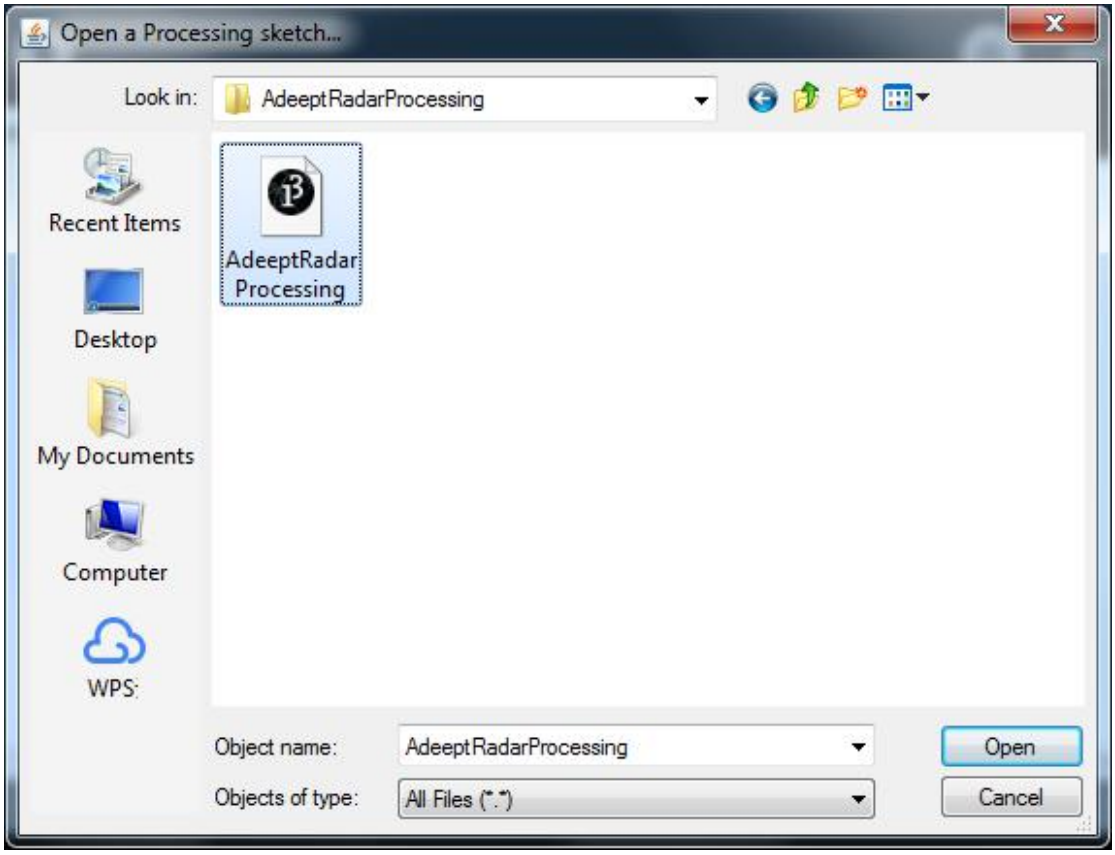
After downloading the decompression of the Processing software package, we do not need to install the Processing software. And we need to connect the remote control we provided to the computer and open the Processing software.

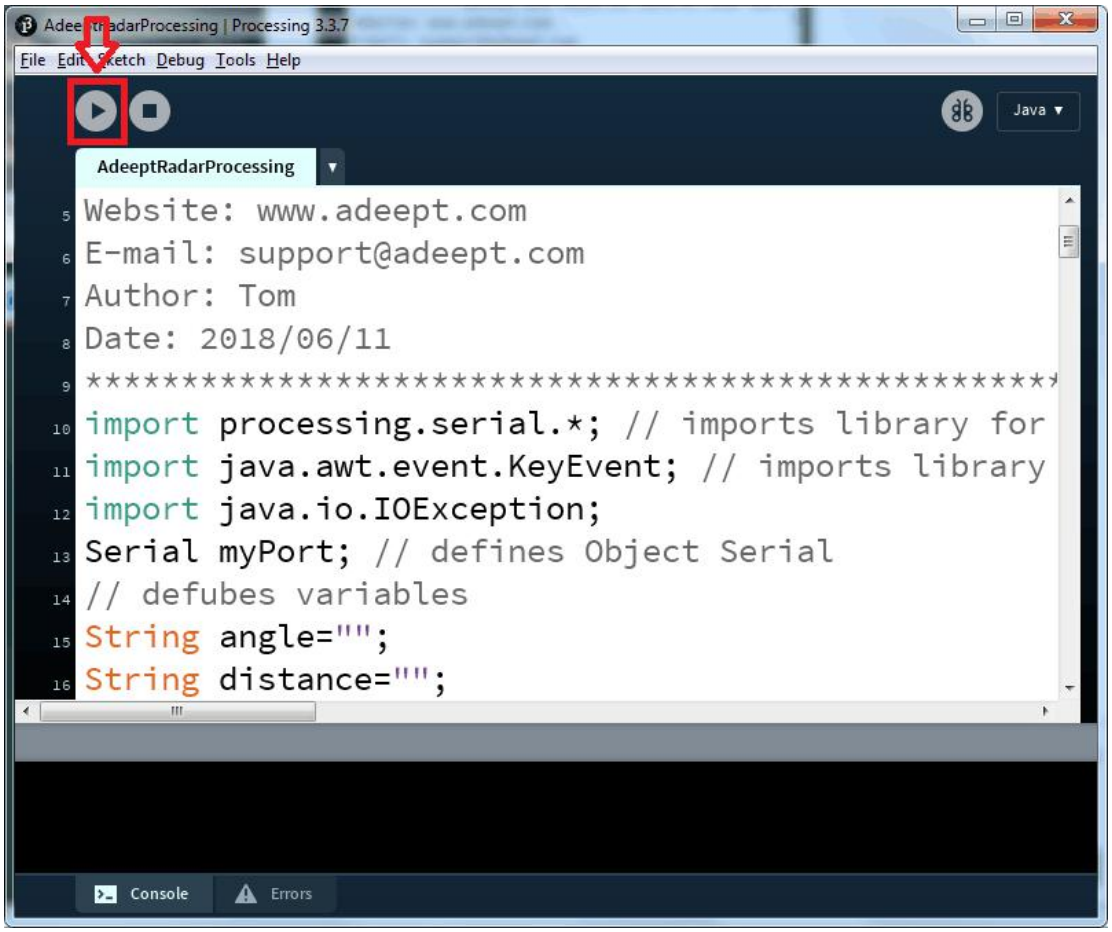



sketch_180629a | Processing 3.3.7
File Edit Sketch Debug Tools Help
Java
sketch_180629a
Console
Errors

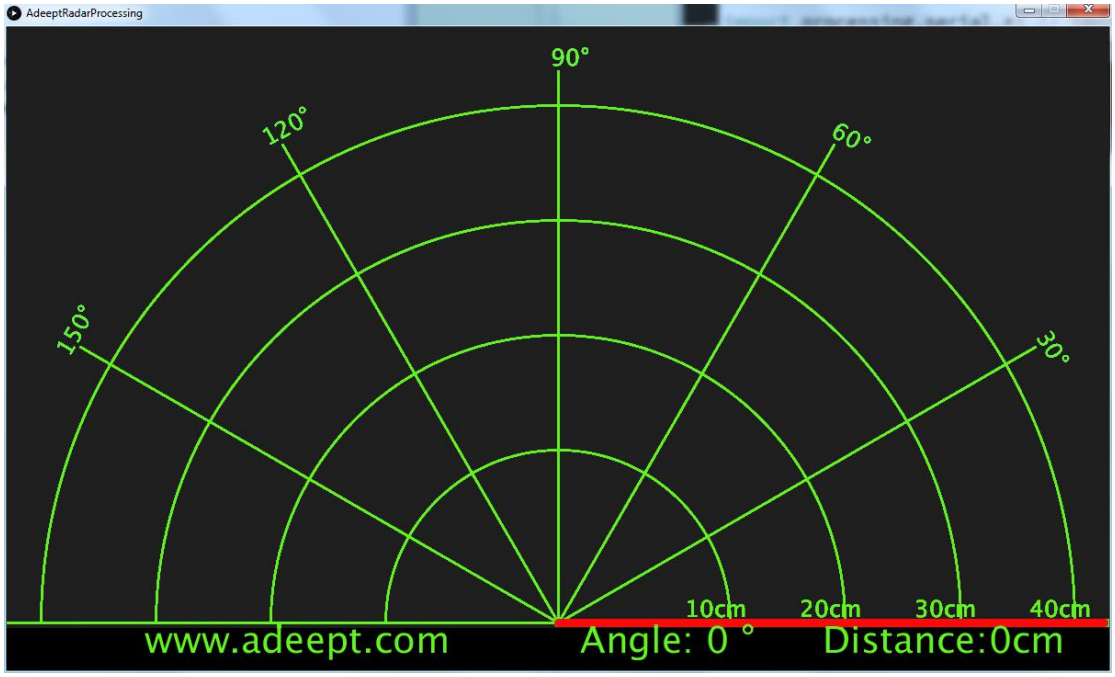


Find AdeeptRadarProcessing.pde we have provided,


Open a Processing sketch...
Look in:
AdeeptRadarProcessing
Recent Items
Desktop
My Documents
Computer
WPS
AdeeptRadar
Processing
Object name:
AdeeptRadarProcessing
Objects of type:
All Files (*.*)
Open
Cancel



Look at the following interface



Press the button D on the remote control. You'll see real-time radar scanning data from the car.

Note: when we press button D here, sometimes the car cannot send back data. We need to press button D several times before the car can send back data. This problem is about program we

provided. We will improve the code in this area in the next time. We will upload the updated code to our website as soon as possible. We also welcome everybody to discuss together, study together, make progress together in Adeept BBS (http://www.adeept.com/forum).

Afterword

Thanks for purchasing our product and reading the manual! If you spot any errors or have any ideas or questions for the product and this guide, welcome to contact us! We will correct them if any as quickly as possible.

After completing all projects in the guide, you should have some knowledge of the book and Arduino, thus you can try to change the car into other projects by adding more Adeept modules or changing the code for extended functions.

For more information about Arduino, Raspberry Pi, smart car robot, or robotics, etc., please follow our website www.adeept.com. We will introduce more cost-effective, innovative and intriguing products!

Thanks again for choose Adeept product!

Adeept

Sharing Perfects Innovation

E-mail: support@adeept.com

website: www.adeept.com