LK Cokoino Arm Kit Tutorial

Catalogue

I About Us

LK Cokoino is mainly engaged in maker education. Its product series include Arduino, Raspberry, Microbit, ESP WiFi, etc.Our R & D and production team has been engaged in this industry for 7 years, with very strong R & D and production capacity, and the products developed and produced have been consistently praised by customers.

Email : cokoino@outlook.com
Github : https://github.com/Cokoino/CKK0006 (Tutorial)
Facebook：https://www.facebook.com/cokoino.lk
Company website address：http://cokoino.com/
Amazon:https://www.amazon.com/stores/COKOINO/page/D21BC7AE-4404-4508-89AA-BEDE7718902C?ref_=ast_bln

Ⅱ Arm Kit System

1.Overview

The Mechanical arm is the most widely used automated mechanical device in the mechanical field. It can be seen in the fields of industrial manufacturing, medical treatment, entertainment services, military, semiconductor manufacturing, and space exploration. Although their shapes are different, they all have a common feature, that is, they can accept instructions and accurately locate a point in the three-dimensional (or two-dimensional) space for operations.

The mechanical arm can imitate certain actions of human hands and arms, and realize grasping, assembling, and handling actions according to a fixed program. It is the earliest industrial robot that can replace human labor to achieve mechanization and automation of production, and can replace humans to complete dangerous operations. Therefore, mechanical arm are widely used in the assembly, handling, disassembly, inspection of flammable and explosive materials, as well as high-risk environments such as fire fighting, anti-terrorism and riot prevention.

2.Structure

The mechanical arm is mainly composed of three parts: the actuator, the drive mechanism and the control system. In order to grasp objects at any position and orientation in space, 6 degrees of freedom are required; degrees of freedom are the key parameter of manipulator design. The more degrees of freedom, the greater the flexibility of the manipulator, the wider the versatility, and the more complex the structure. Generally, the robot has 2 to 3 degrees of freedom.

2.1 Operation Structure

The operation structure of the mechanical arm is composed of hands, arms, and torso.

<1> Hands

The hand is mounted on the front end of the arm. The inner hole of the arm is equipped with a transmission shaft, which can transmit the application to the wrist to rotate, stretch the wrist, and open and close the fingers.

The structure of the hand of mechanical arm is imitating a human finger, and it is divided into three types: no joints, fixed joints and free joints. The number of fingers can be divided into two fingers, three fingers, and four fingers, among which two fingers are the most used. According to the shape, size, weight, material and operation requirements of the object to be grasped, there are a variety of structural forms, such as clamping type, holding type and adsorption type, etc.

<2> Arms

The function of the arm is to guide the fingers to grasp the work pieces accurately and transport it to the desired position. In order for the mechanical arm to work correctly, the 3 degrees of freedom of the arm must be accurately positioned.

<3> Torso

The torso is a bracket for installing arms, power sources and various actuators.

2.2 Drive mechanism

There are four main types of drive mechanisms used by mechanical arm: hydraulic drive, pneumatic drive, electrical drive and mechanical drive.

<1> Hydraulic Drive

The hydraulic drive mechanical arm usually consists of a hydraulic motor (various oil cylinders, oil motors), servo valves, oil pumps, oil tanks, etc. The drive system is composed of a drive mechanical arm to work. Usually it has a great snatch ability (up to several hundred kilograms), and it is characterized by compact structure, smooth movement, impact resistance, vibration resistance, and good anti-explosion. However, hydraulic components require high manufacturing accuracy and sealing performance. Otherwise, oil leakage will pollute the environment.

<2> Pneumatic Drive

The drive system is usually composed of air cylinders, air valves, air tanks and air compressors. It is characterized by convenient air source, rapid action, simple structure, low cost and convenient maintenance. But it is difficult to control the speed, and the air pressure cannot be too high, so the snatch ability is low.

<3> Electrical Drive

Electrical drive is the most commonly used drive method for mechanical arm. It is characterized by convenient power supply, fast response, large driving force, convenient signal detection, transmission, and processing, and a variety of flexible control schemes can be adopted. The driving motor generally adopts a stepping motor, and a DC servo motor is the main driving method.

<4> Mechanical Drive

The mechanical drive is only used for fixed movements. Generally, a cam link mechanism is used to achieve the prescribed action. It is characterized by reliable action, high working speed and low cost, but it is not easy to adjust. Others also use hybrid drive, that is, liquid-gas or electric-hydraulic hybrid drive.

2.3 Control System

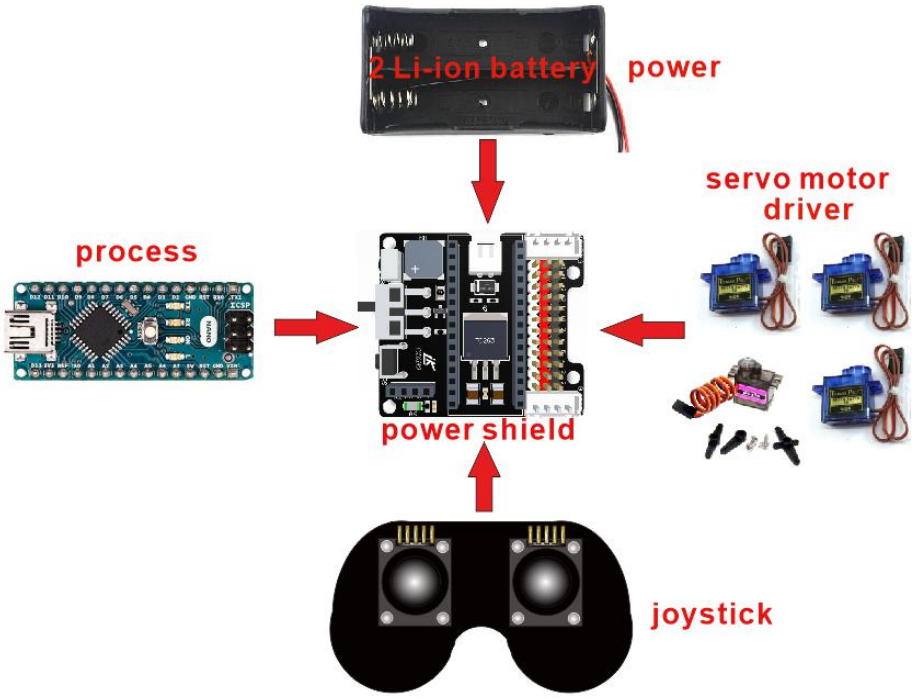
The control system completes specific actions by controlling the motors of each degree of freedom of the mechanical arm. At the same time, the feedback information from the sensor is received to form a stable closed-loop control.

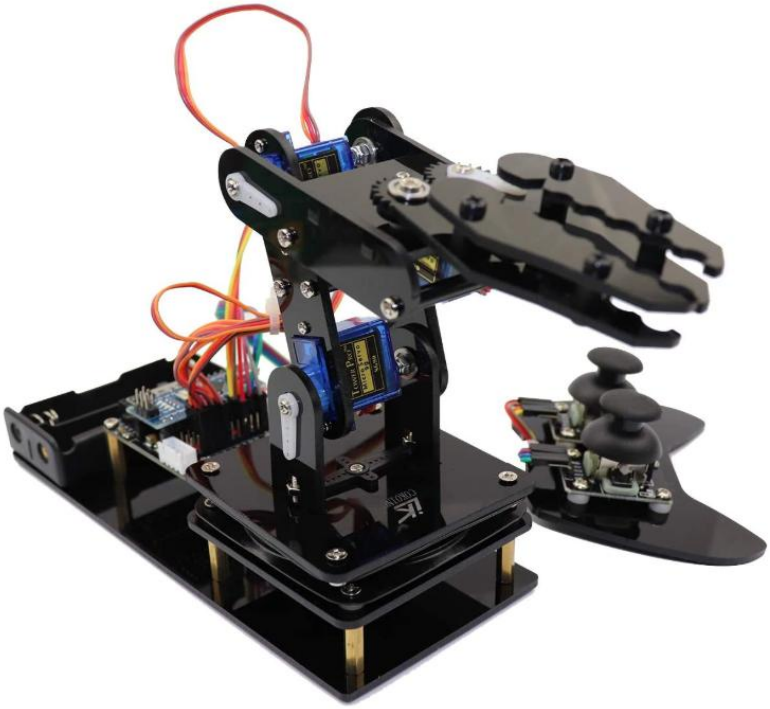
The elements of mechanical arm control include work sequence, arrival position, action time, movement speed, acceleration and deceleration, etc. The control of the mechanical arm is divided into two types: point position control and continuous trajectory control.

The control system can be designed to adopt digital sequence control according to the requirements of the action. It must first compile a program to store it, and then control the mechanical arm to work according to the prescribed program.

Ⅲ Cokoino Arm Kit

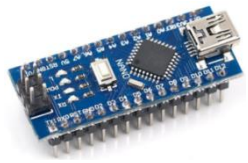
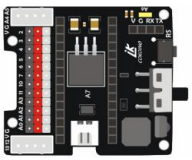
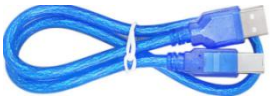
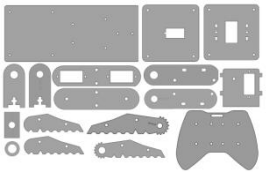
The above-mentioned are all demanding mechanical arm. It has high precision, large volume, heavy weight, and expensive price. It is very complicated and unnecessary for our beginners and maker hobbies. Next, we will introduce the DIY-based cokoino mechanical arm. Below, we will use pictures to express the control system, control method, power supply, power conversion, and actuator of the mechanical arm.





IV Components List

1. List

	NANO board*1		NANO shield*1
	USB Cable*1		Joystick module*2
	A pair of Acrylic sheet		SG90 Servo*3
	18650 battery case*1		MG90S Servo*1
	turntable*1		DuPont line*8
	P1.2*4mm self-tapping screw*17		M2*8mm round head screw *8
	M2 nut*8		M3*6mm round head screw*20
	M3*10mm round head screw*10		M3*10mm countersunk head screw*2
	M3*8mm countersunk head screw*6		M3*12mm countersunk head screw*4
	M3*18mm countersunk head screw*1		M3 mm nut*12
	M3 mm self-locking screw*7		M3*20mm copper column*4
	M3*30MMAluminium column*2		M3*37MMAluminium column*2

	Φ3*3mm nylon column*12		M3*6 black nylon stud*4
	M3*5 black nylon screw*8		Φ3*8*4 flange bearing F693ZZ*4
	M2 Phillips screwdriver		M3 Phillips screwdriver
	5.5-4 spanner		M3 Flat pad*3

2.Parts documentation

We provide a wealth of documents to help you learn and understand the working principle of the main components of the robotic arm, such as: arduino nano main control board, cokoino nano expansion board, servo, remote sensing module specifications and usage, etc., please refer to us for specific instructions "Documents" folder.

3.Notes Before Use

* This product contains small parts, please prevent children from swallowing it by mistake.
* Children must install and use our product in the company of an adult.
* This product contains sharp parts, please prevent punctures.
* Customers need to purchase formal and qualified 18650 lithium batteries.
* It is forbidden to use this product in a watery or humid environment.
* It is forbidden to forcibly move the mechanical arm by hand during operation, otherwise it will cause permanent damage.

V Set up a programming environment

1.Install Arduino IDE

1.1 Install in Windows System

See：https://www.arduino.cc/en/Guide/Windows

1.2 Install in macOS System

See：https://www.arduino.cc/en/Guide/macOS

1.3 Install in Linux System

See：https://www.arduino.cc/en/Guide/Linux

1.4 Portable IDE (Windows and Linux)

See：https://www.arduino.cc/en/Guide/PortableIDE

1.5 ChromeOS (Arduino Create App) in the Chrome Web Store

See：https://chrome.google.com/webstore/detail/arduino-create/dcgicpihgkmccjigalccipmjlnjopdfe

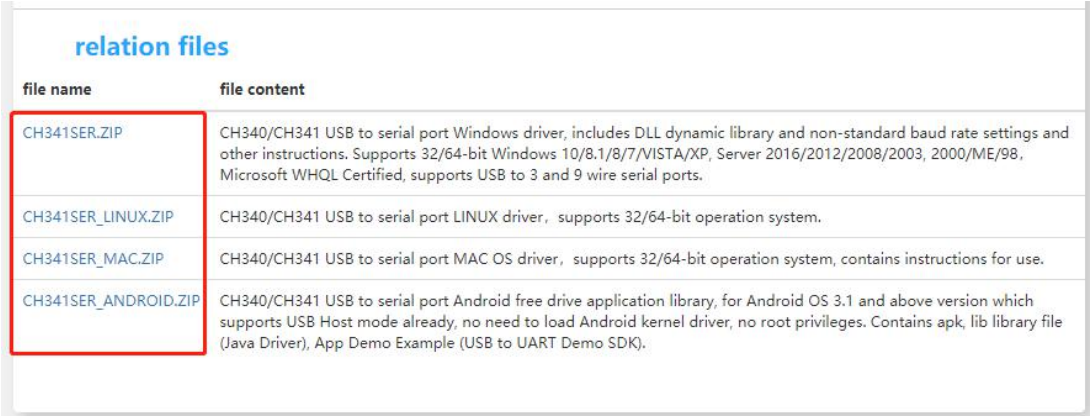
Noted of downloading the software package for free：

2.Use Arduino IED

Please refer to the Arduino IDE operation interface and tutorial：
https://www.arduino.cc/en/Guide/Environment

3. PC install CH340 USB to serial port driver

Our nano motherboard uses a USB-to-serial chip made in China. You can select the installation package you need according to this link and install it：
http://www.wch-ic.com/downloads/CH341SER_EXE.html



relation files

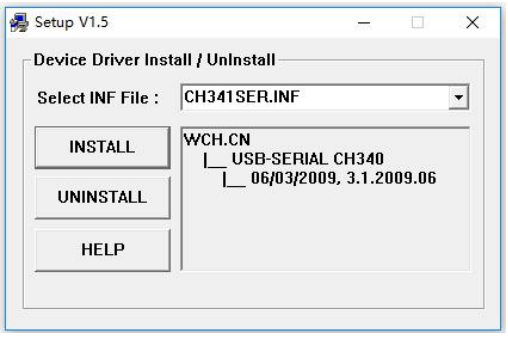
file name	file content
CH341SER.ZIP	CH340/CH341 USB to serial port Windows driver, includes DLL dynamic library and non-standard baud rate settings and other instructions. Supports 32/64-bit Windows 10/8.1/8/7/VISTA/XP, Server 2016/2012/2008/2003, 2000/ME/98, Microsoft WHQL Certified, supports USB to 3 and 9 wire serial ports.
CH341SER_LINUX.ZIP	CH340/CH341 USB to serial port LINUX driver，supports 32/64-bit operation system.
CH341SER_MAC.ZIP	CH340/CH341 USB to serial port MAC OS driver，supports 32/64-bit operation system, contains instructions for use.
CH341SER_ANDROID.ZIP	CH340/CH341 USB to serial port Android free drive application library, for Android OS 3.1 and above version which supports USB Host mode already, no need to load Android kernel driver, no root privileges. Contains apk, lib library file (Java Driver), App Demo Example (USB to UART Demo SDK).

Note: The "drivers" folder we provide also provides the above drivers.

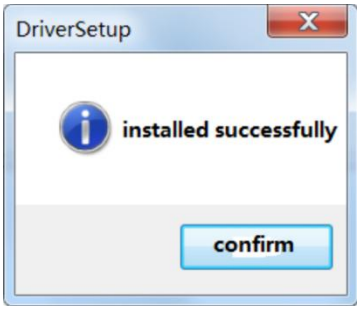
Windows Installation Example：

3.1 After unzipping, double-click to open the installer. As shown below:

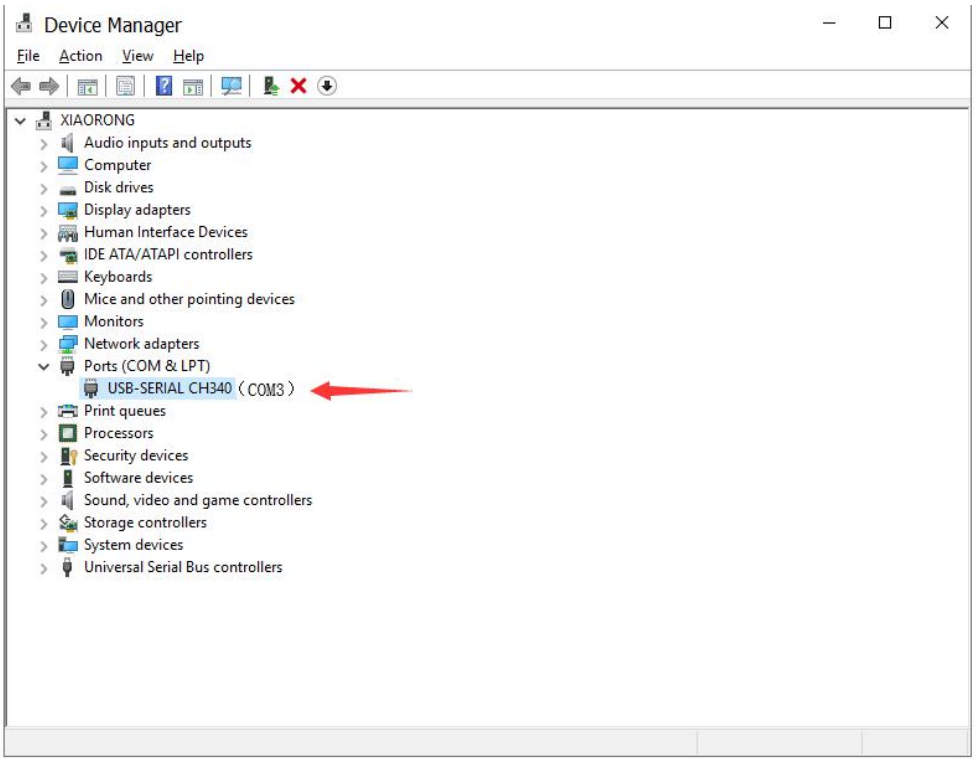
3.2 Pop up a install interface, click the top button to install the driver



3.3 Successful installation



3.4 If the driver is successfully installed, when the nano motherboard is connected to the computer through the USB cable, under the path "Computer" -> "Properties" -> "Device manager", you can find CH340 COM3, as shown below.



4. More information for Using Arduino IDE

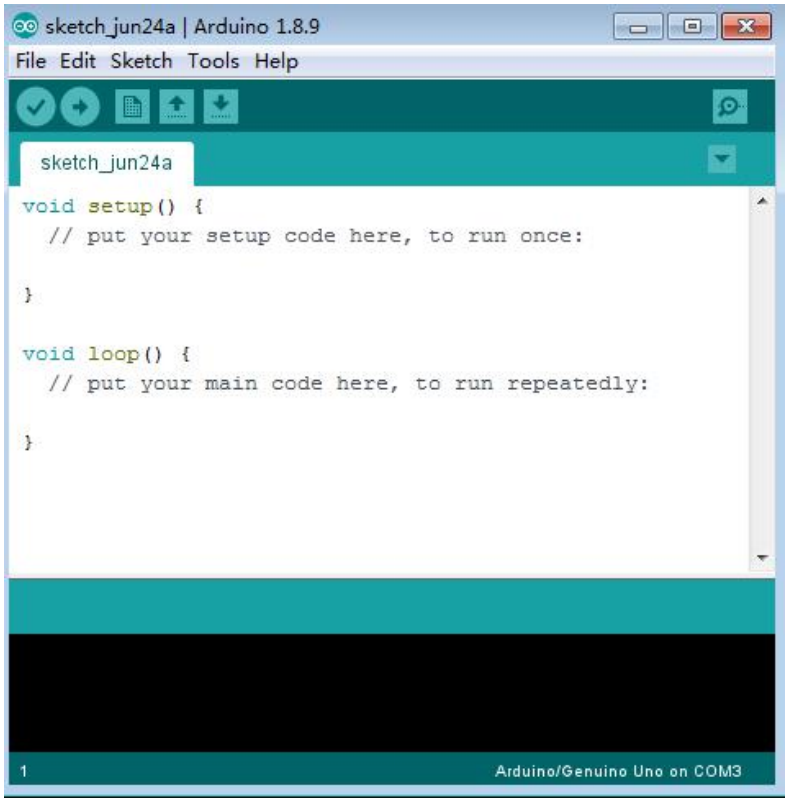
Official tutorials：https://www.arduino.cc/en/Tutorial/HomePage

Language Reference：https://www.arduino.cc/reference/en/

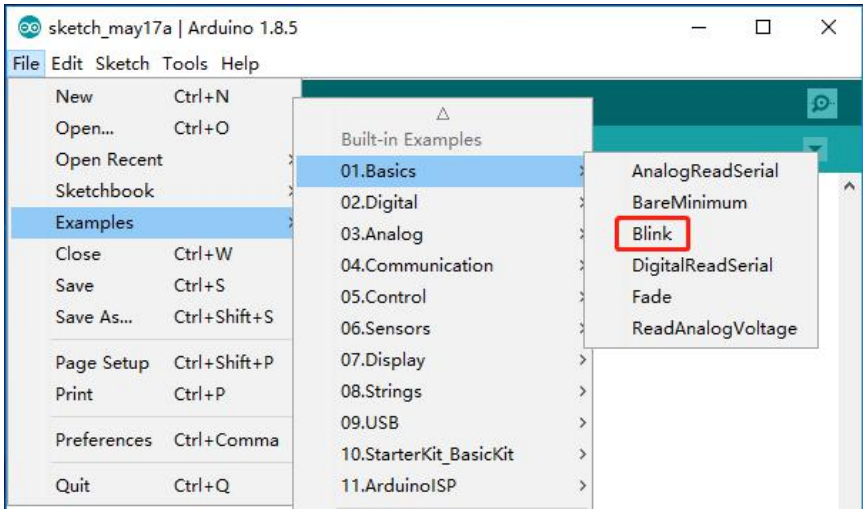
5.The first sample program

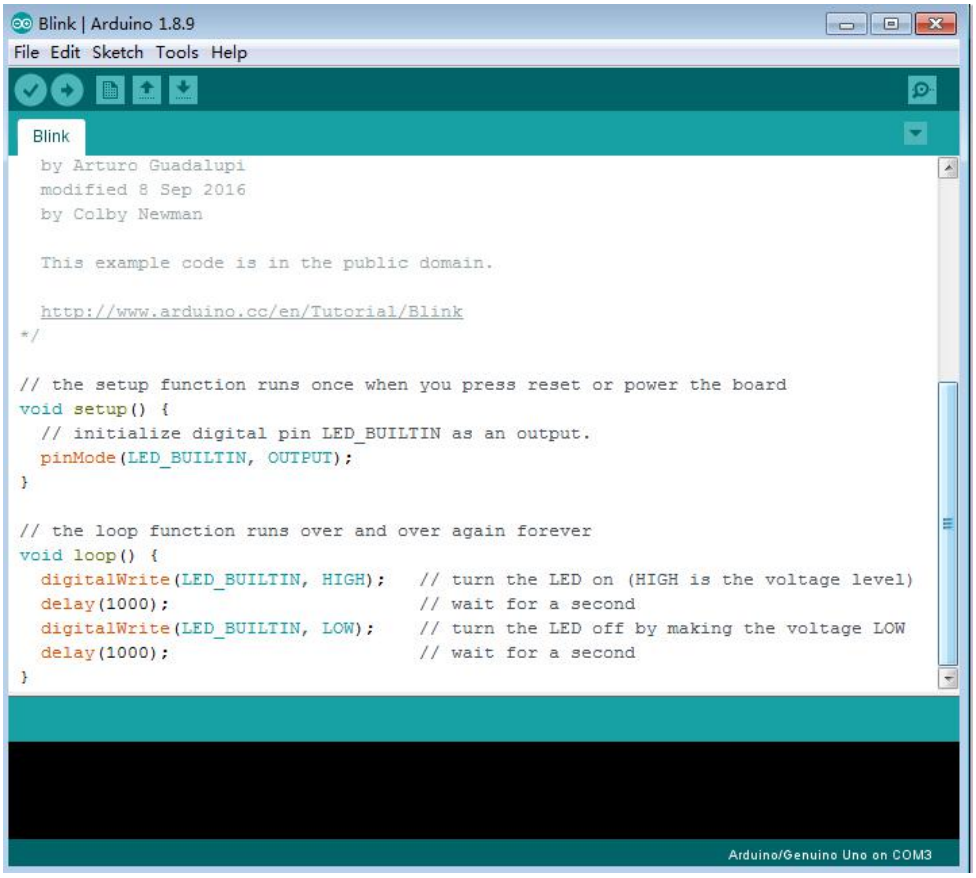
5.1 Double-click the computer desktop icon 

to open the arduino IDE, as shown below:

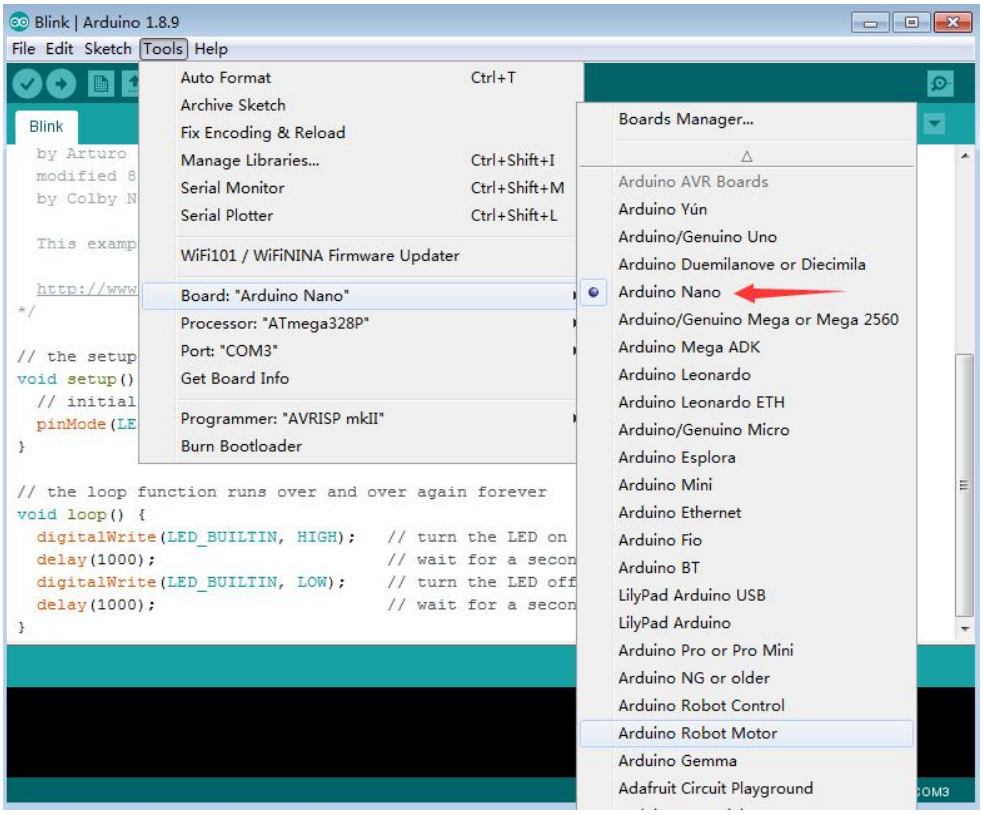


5.2 Open the LED blink example sketch: File > Examples >01.Basics > Blink.





5.3 Select the board type, click "tools"--->"Board"--->"Arduino Nano", as shown below:



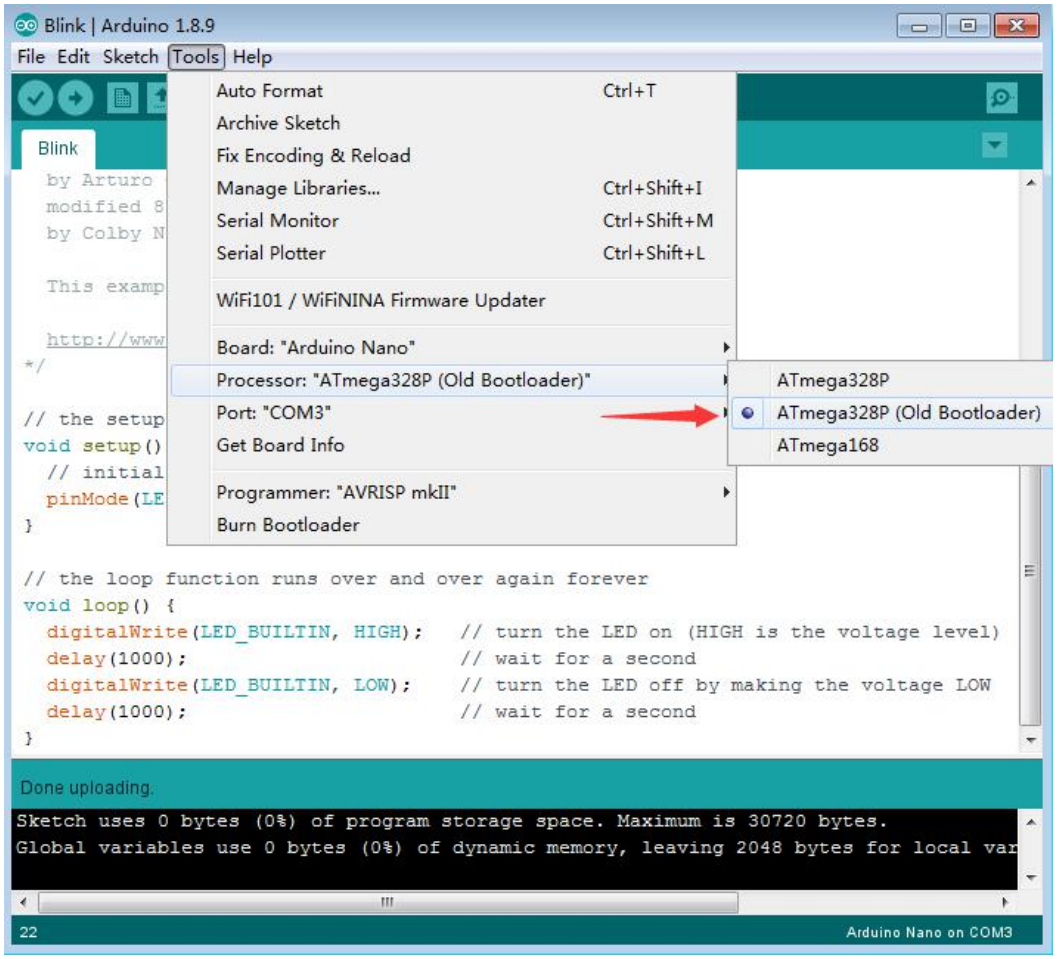
5.4 Nano processor selection:

You will find this option in the Arduino IDE above version 1.8.5.

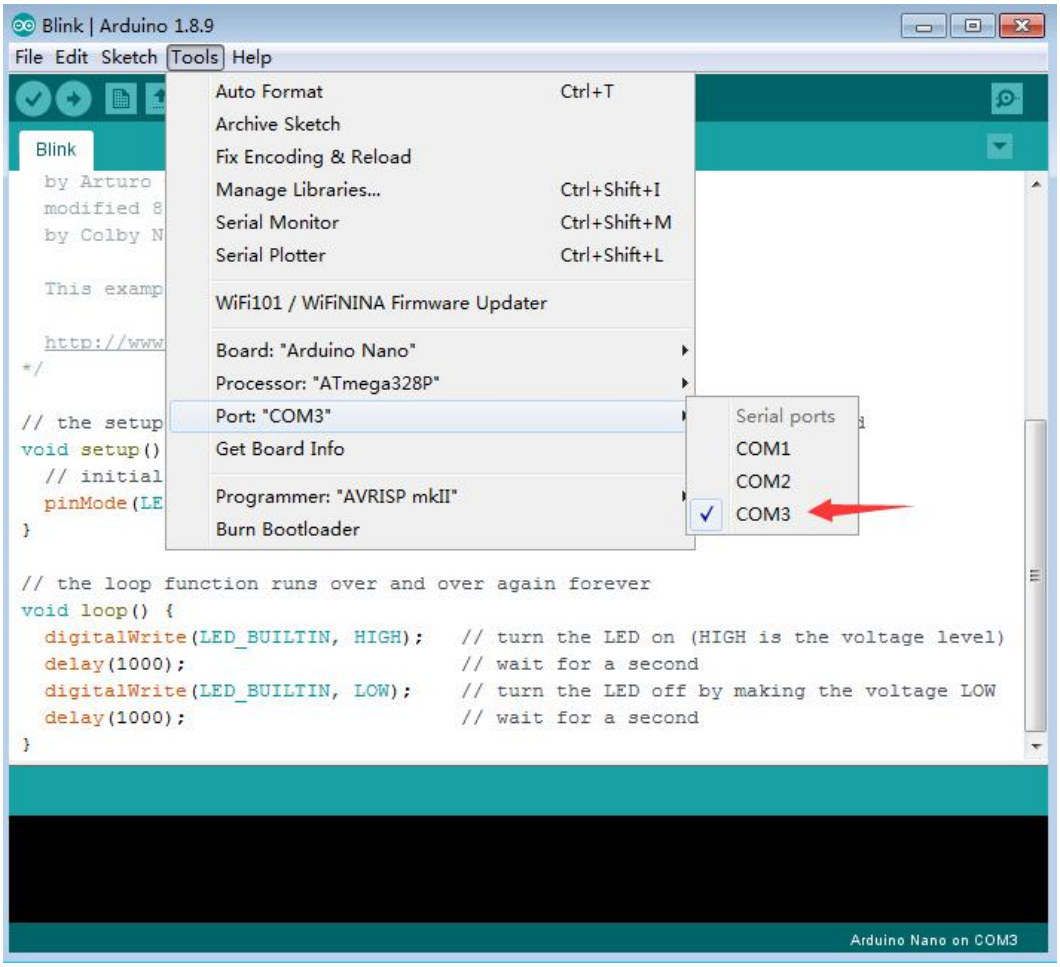
If the nano manufacturer burns the old version of the bootloader to the nano motherboard, you must select "ATmega328P (Old Bootloader)";

If the nano board is burned with a new version of the bootloader, you must select "ATmega328P".

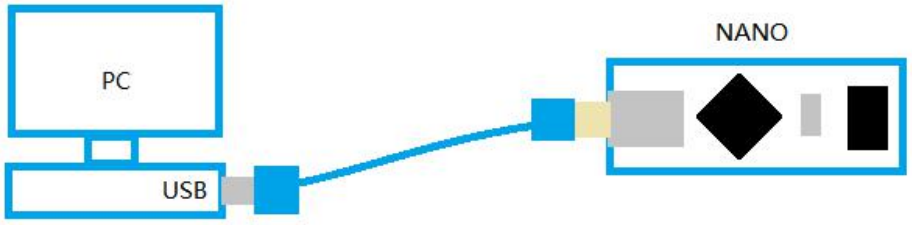
Here we choose the old bootloader, as shown below:



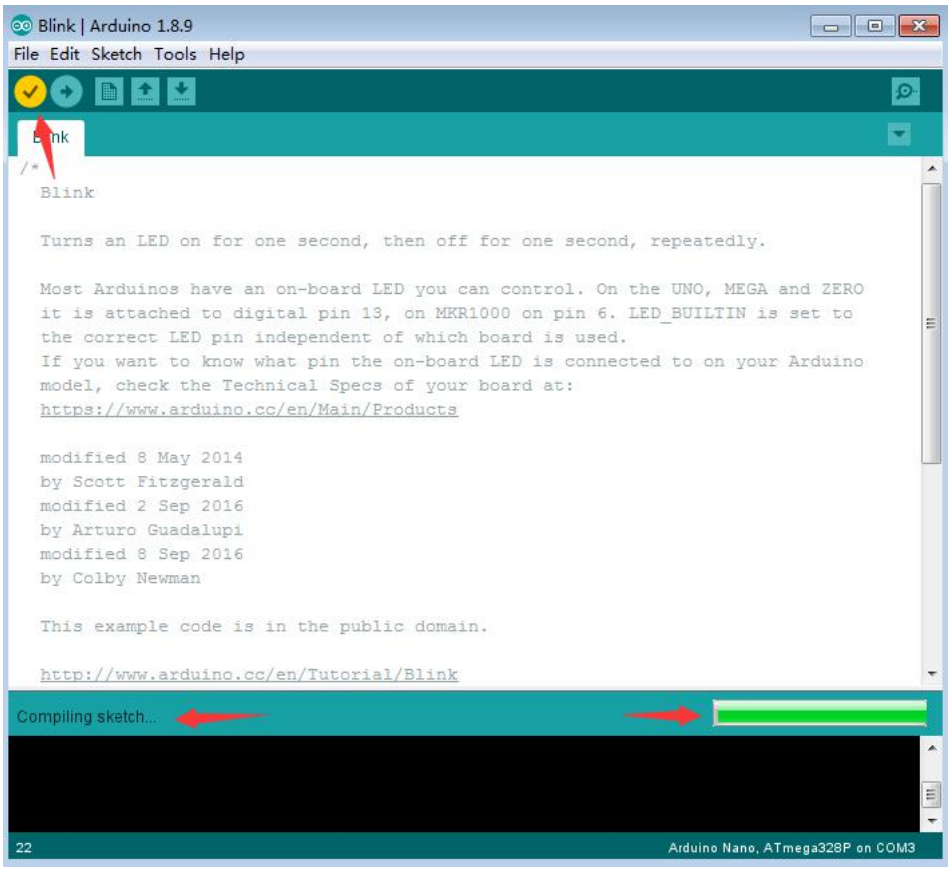
5.5 Select the port, "tools"---> "Port"---> "COM port of nano motherboard", as shown below:



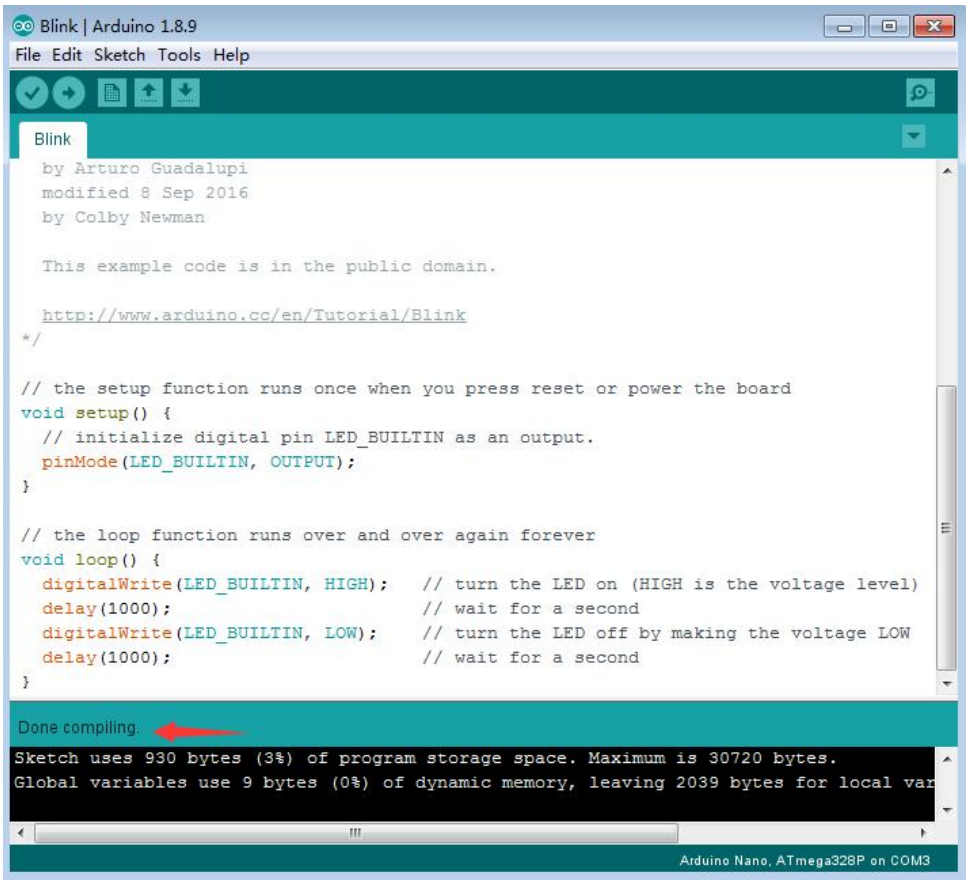
5.6 Connect the PC to the nano motherboard via the USB cable



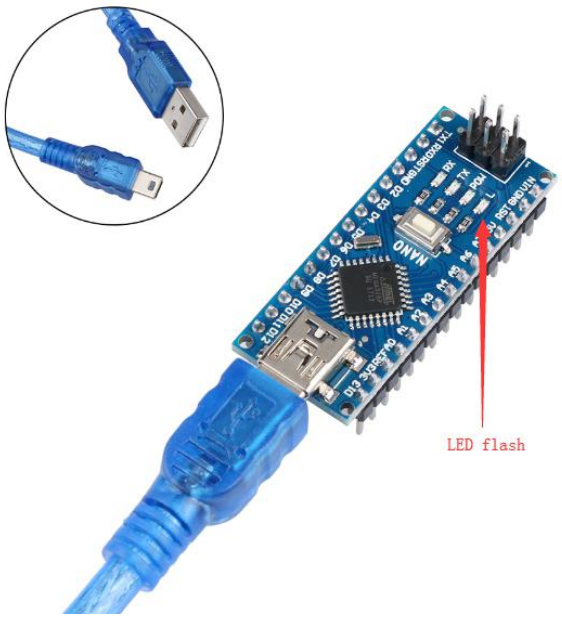
5.7 Compile the code and verify the correctness of the code, as shown below:



5.8 Upload the code



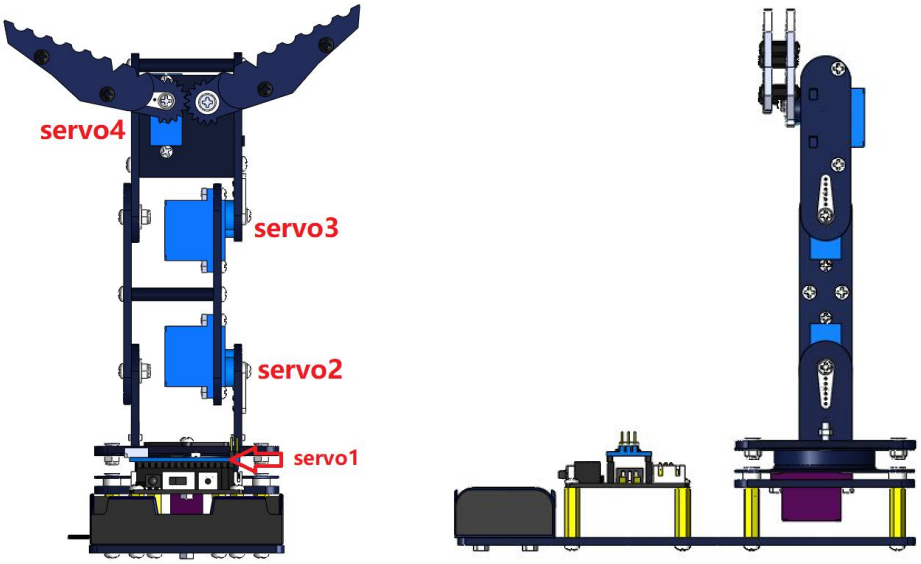
5.9 As a result, the L-label LED of the nano motherboard flashes once every 1 second, as shown below:



VI Initialize the servo before installation

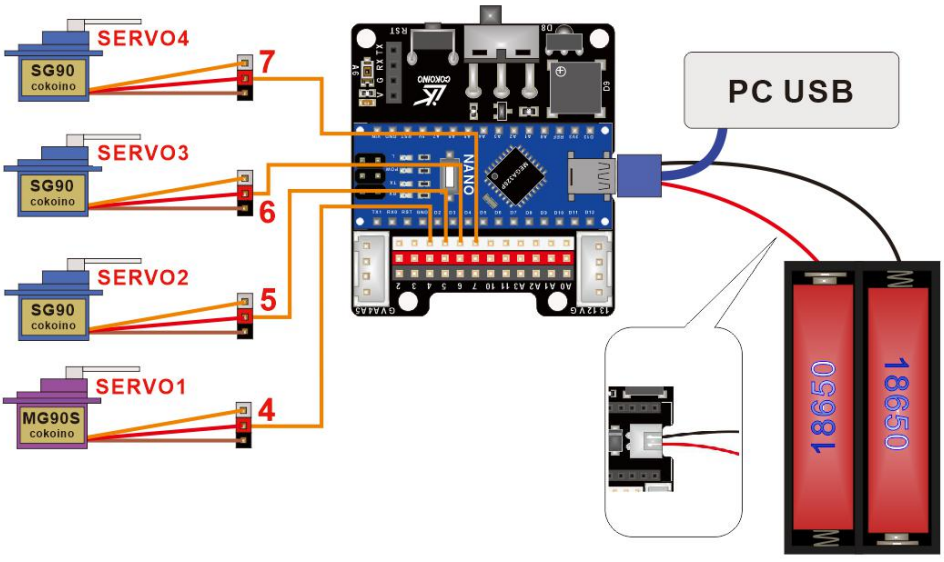
1.Why initialize servo?

Because we cannot know the angle of the servo when it comes out from the factory, and we need to know the angle of the servo when we install the robotic arm to assemble it correctly. All the servo motors of our robotic arm must be initialized to 90 degrees before they can be installed normally. The figure below is an example of the initial posture of the robot after it is installed. Only when the servo of the robotic arm is installed correctly according to this posture can the robot run perfectly.

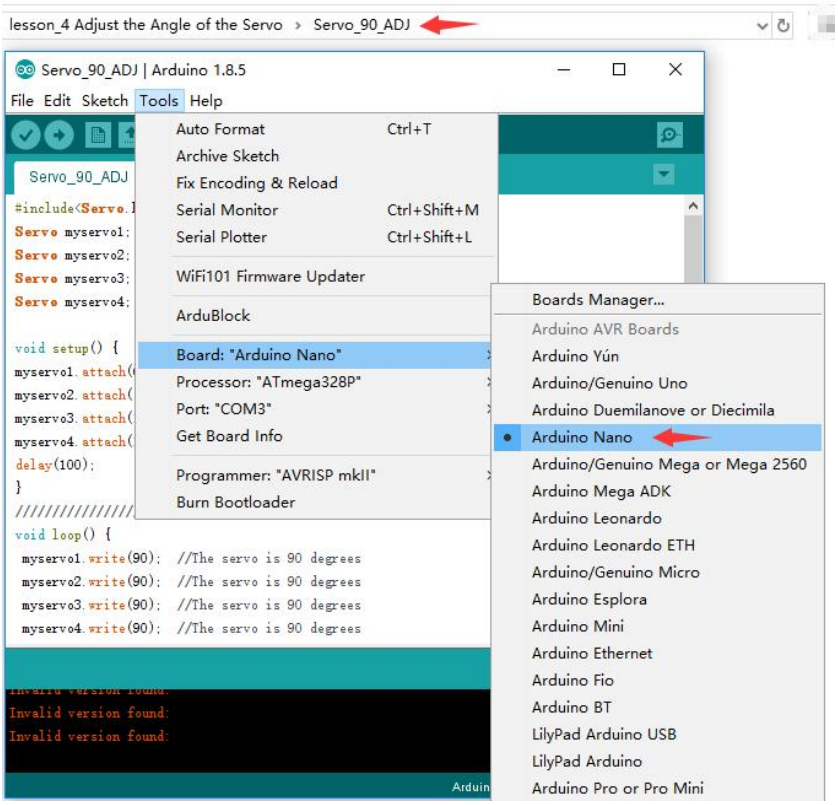


2.How to initialize the 4 servo angles of the robot?

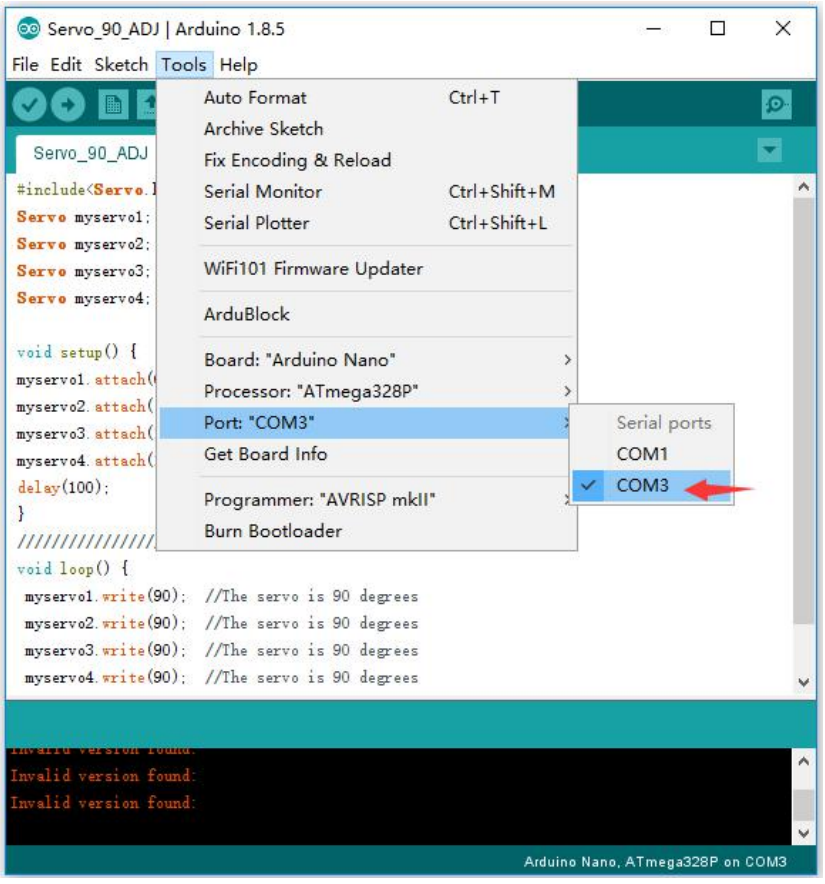
2.1 Please connect the 4 servos, naono motherboards, nano expansion boards, and battery boxes as shown in the figure below, and then connect them to the PC via a mini USB cable.



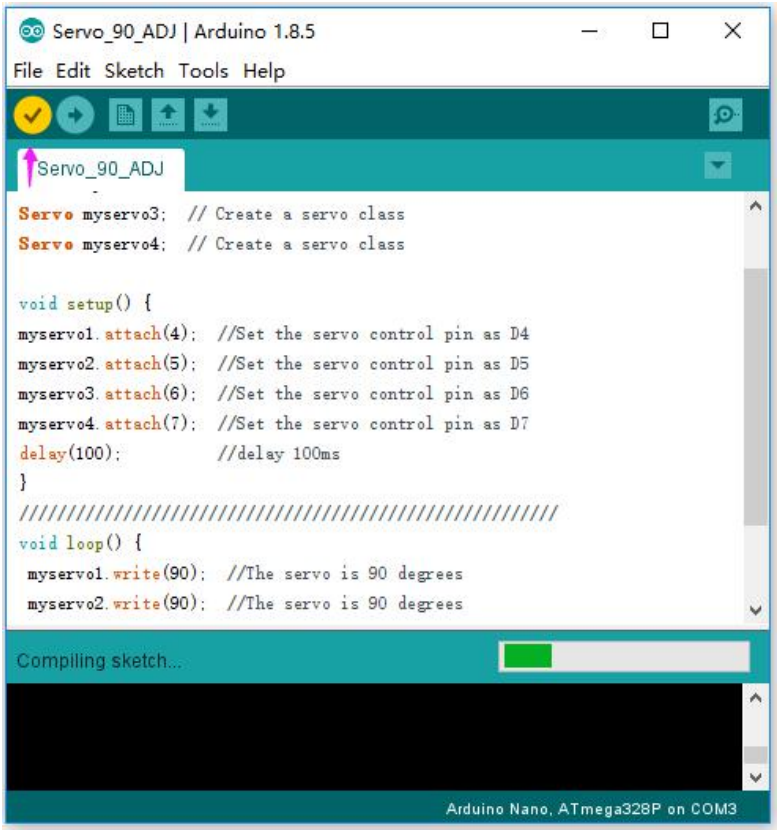
2.2 Then use the arduino IDE to open the source code program in the "Code"---> "Servo_90_ADJ" folder, and select the motherboard model, as shown in the figure below:



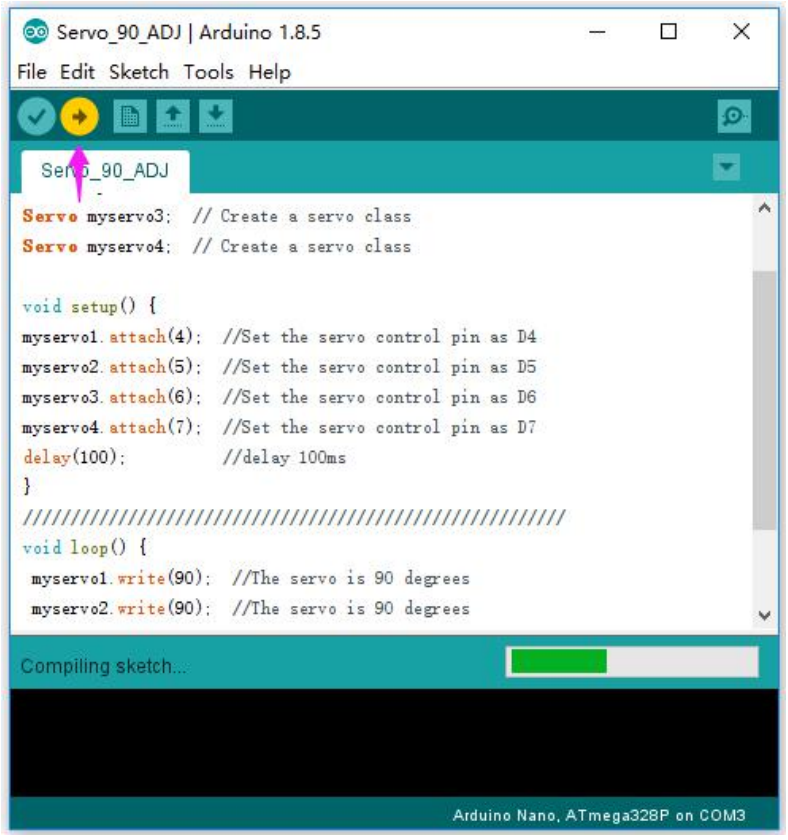
2.3 Choose a USB port



2.4 Verification Program

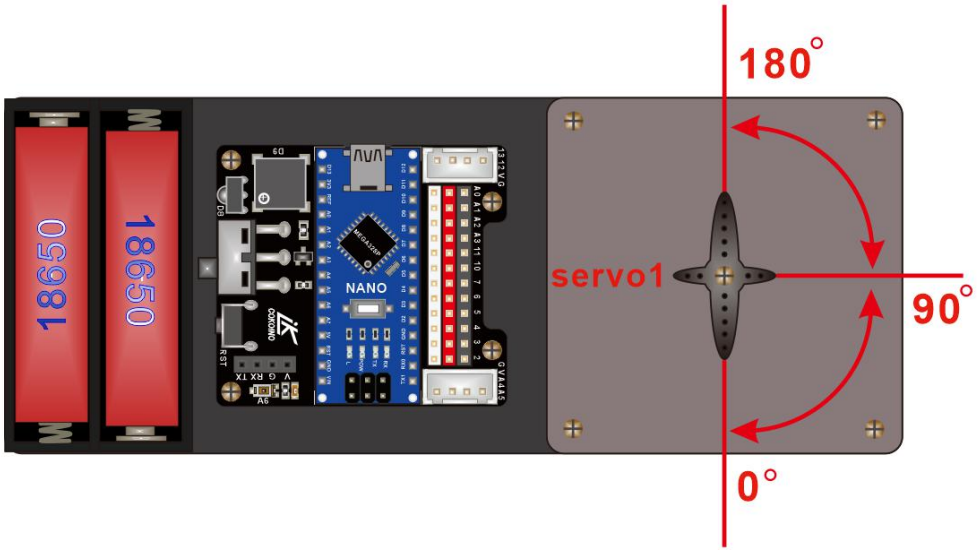


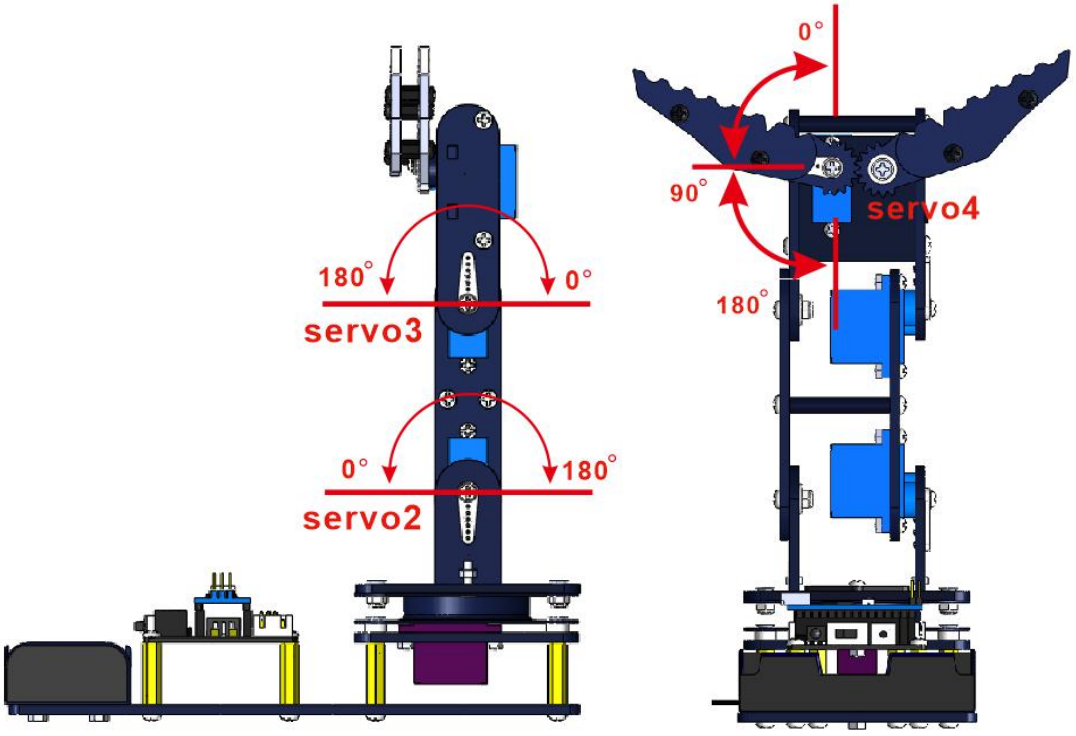
2.5 Upload the program to the NANO motherboard, then turn on the power switch on the expansion board, the program will automatically initialize the servo servo to 90 degrees. (Note: The Bluetooth module cannot be plugged into the expansion board when uploading the program)



3.Servo installation and precautions after initial angle

It is forbidden to rotate the servo motor again after the servo servo is initialized at 90 degrees. The following figure shows the initial installation of servo1, servo2, servo3, and servo4 and the trajectory during subsequent movement.



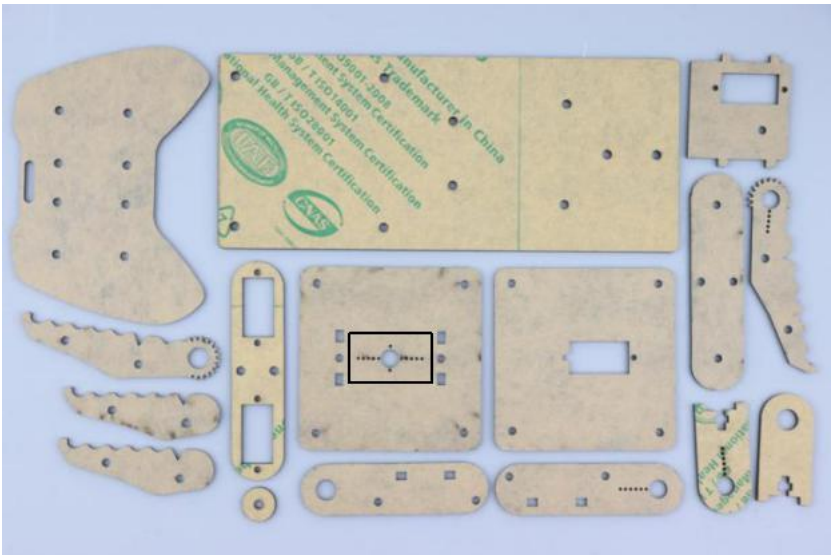


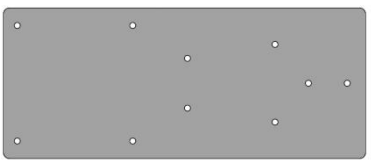
Ⅶ Robotic arm installation and wiring

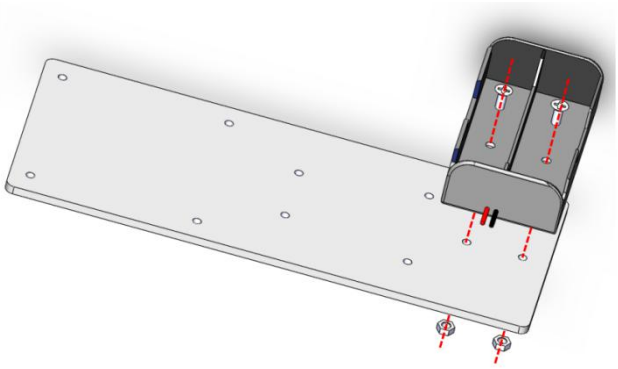
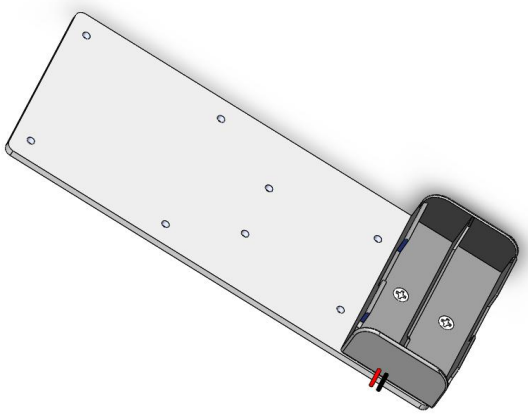
1.Robotic arm installation

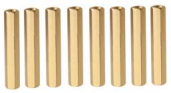
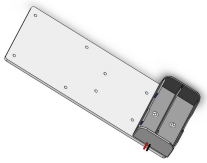
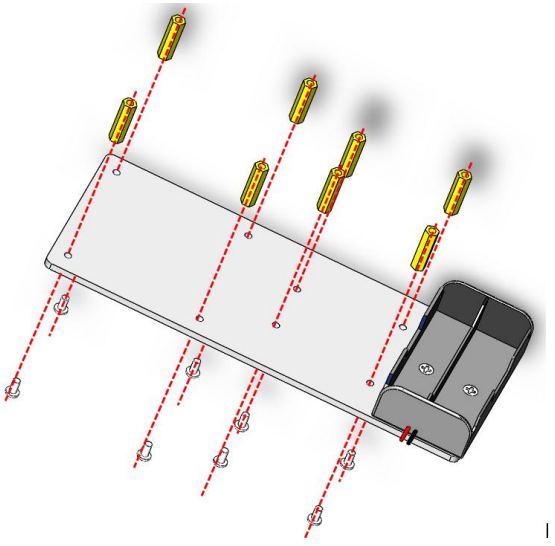
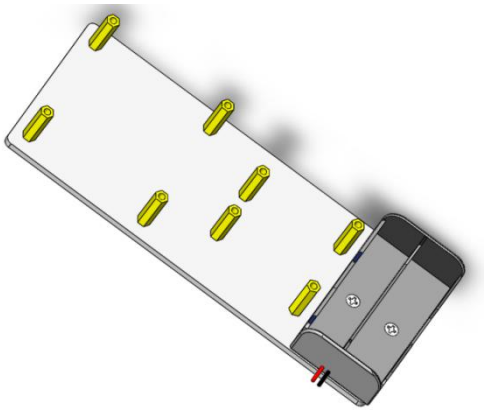
Start assembly

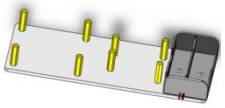
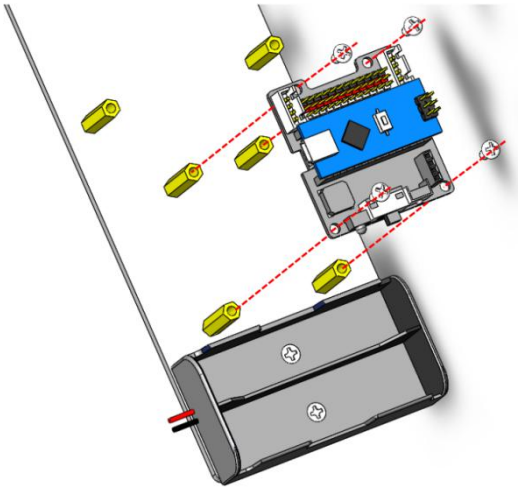
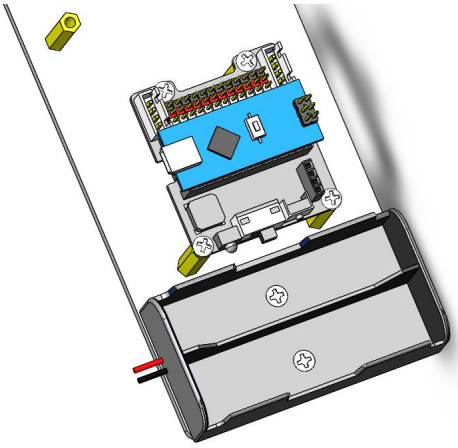
1. Before assembly, we need to use a screwdriver to peel off the acrylic sheet

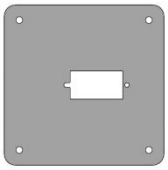
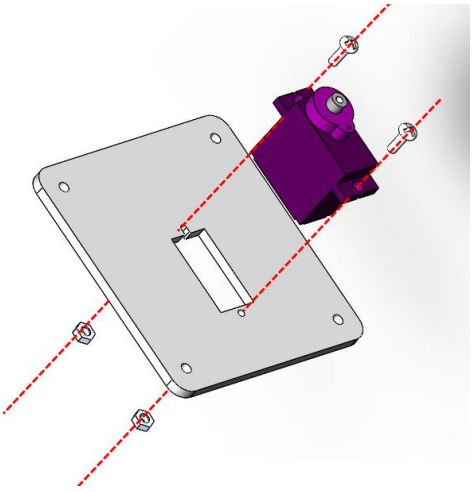
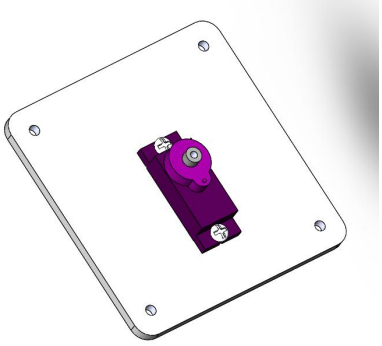


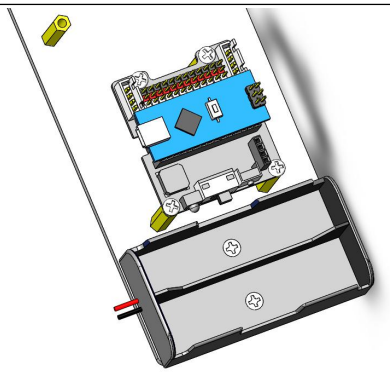
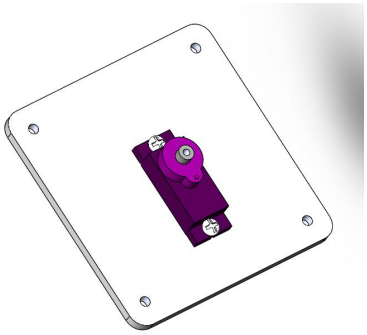
Step 1： Assembling the Battery Box		Tool： 
Need to prepare：		
acrylic plate A	1	

the Battery Box	1	
M3 * 8 countersunk head screw	2	
M3 nut	2	
Demo：		
Use M3 * 8 countersunk head screws and M3 nuts to install the battery box on the structure A; Pay attention to the installation direction of the battery box;		 

Step 2： Assembling the M3 * 20MM hexagon copper pillar		Tool： 
Need to prepare：		
M3 * 20MM hexagon copper pillar	8	
M3*6 mm nut	8	
Step 1 structure	1	
Demo：		
Use M3 * 6MM round head screws to install M3 * 20MM hexagonal copper pillars on structural member A;		 

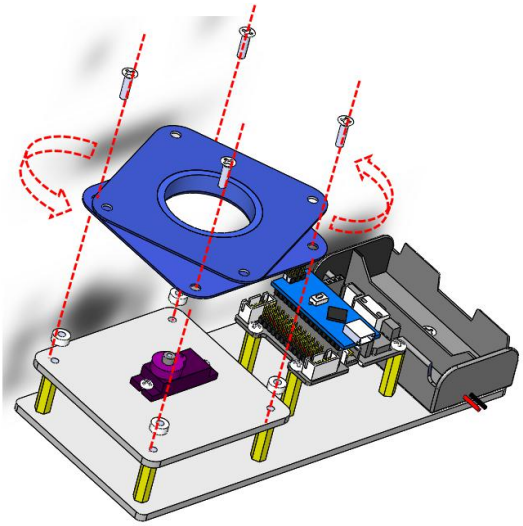
Step 3： Assembling nano board and nano shield		Tool： 
Need to prepare：		
M3*6mm round head screw	4	
Nano board	1	
Nano shield	1	
Step 2 structure	1	
Demo：		
Use M3 * 6MM round head screws to fix NANO and NANO expansion board on structure A;		 

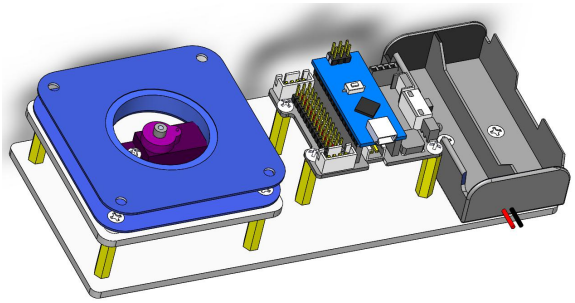
Step 4： Assembling the MG90 servo		Tool： 
Need to prepare：		
Structure B	1	
MG90 servo	1	
M2 mm nut	2	
M2*8 round head screw	2	
Demo：		
Use M2 * 8MM round head screws and M2 nuts to install the MG90 servo on the structural member B;		 

Step 5： Assembling the turntable, structure B, structure A		Tool： 
Need to prepare：		
Step 3 structure	1	
Step 4 structure	1	
turntable	1	
Φ 3*3mm nylon column	4	
M3*12mm countersunk head screw	4	

Demo：

Use M3 * 12 countersunk head screws to fix the turntable, structure B, and nylon post on structure A;

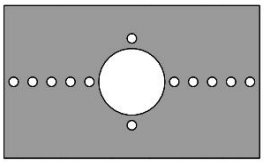




Step 6: Assembling the MG90 servo cross

Tool：

Need to prepare：

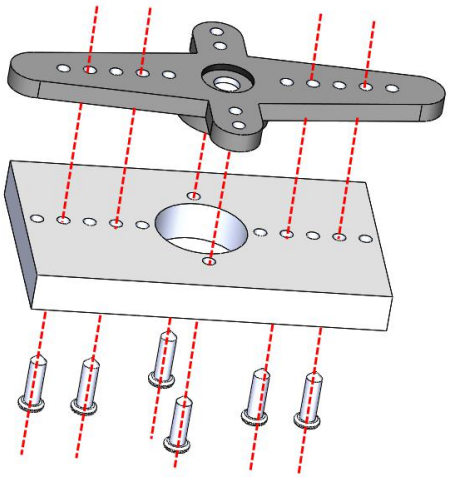
Structure S	1	

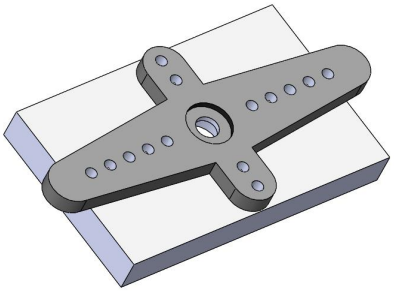
MG90 servo cross	1	
P1.2*4mm self-tapping screw	6	

Demo：

Use M1.2 * 4 self-tapping screws to fix MG90 servo cross on structural member S;

Pay attention to the installation direction of MG90 servo cross

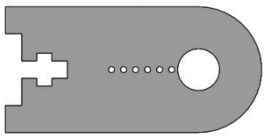
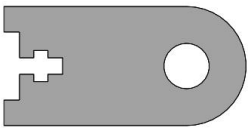
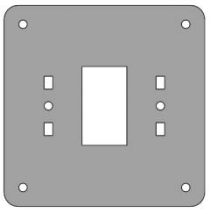




Step 7： Assembling Structure D, Structure E and Structure C

Tool：

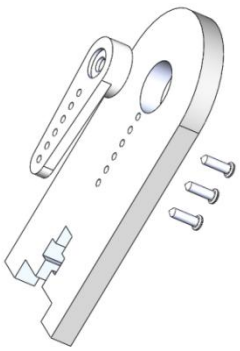
Need to prepare：

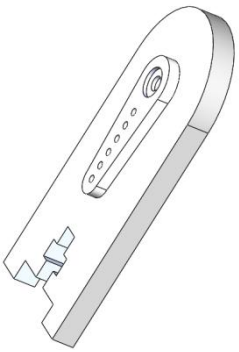
Structure D	1	
Structure E	1	
Structure C	1	
M3*10mm countersunk head screw	2	
P1.2*4mm self-tapping screw	3	
M3 nut	2	
Servo arm	1	

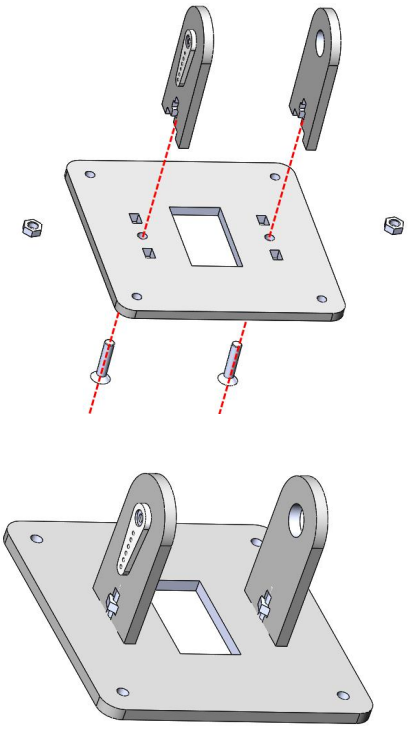
Demo：

Use M1.2 * 4MM self-tapping screws to fix the servo arm on the structure D;

Pay attention to the direction of servo arm

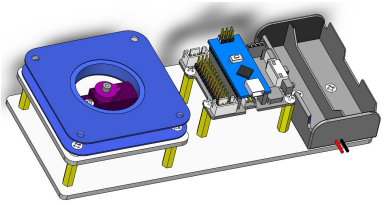
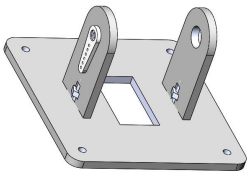




Use M3 * 10MM countersunk head screws and M3 nuts to fix structure D and structure E to structure C; Pay attention to the installation direction of structure D and E;	

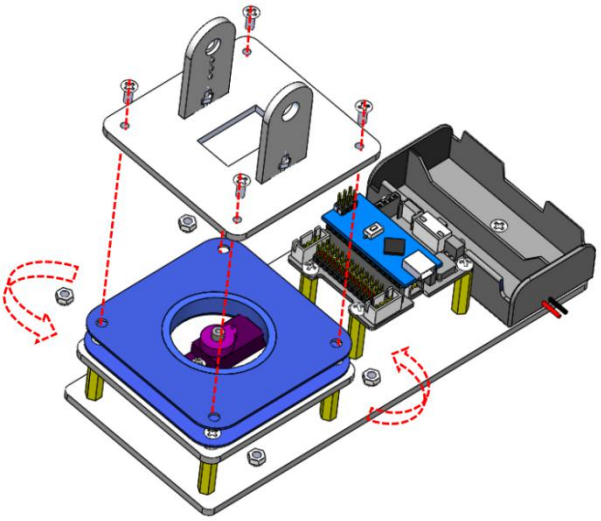
Step 8: Assembling Step 7 Structure and Step 5 Structure	Tool: 

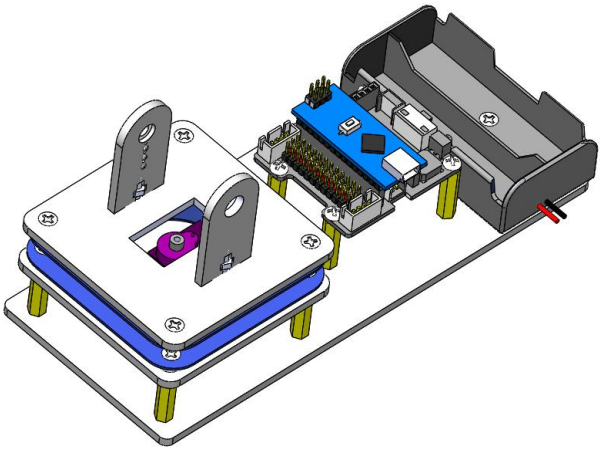
Need to prepare：

Step 5 Structure	1	
Step 7 Structure	1	
M3 * 8 countersunk head screws	4	
M3 self-locking nut	4	

Demo：

Use M3*8 countersunk screws and M3 self-locking nuts to install the step 7 structural parts on the step 5 structural parts;
Note: When installing the self-locking nut, you can rotate the shaft on the structure of step 5 to facilitate installation;

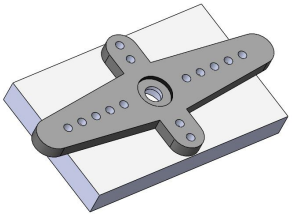


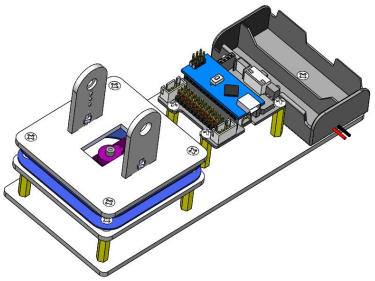


Step 9: Assembling Structure C and turntable

Tool：

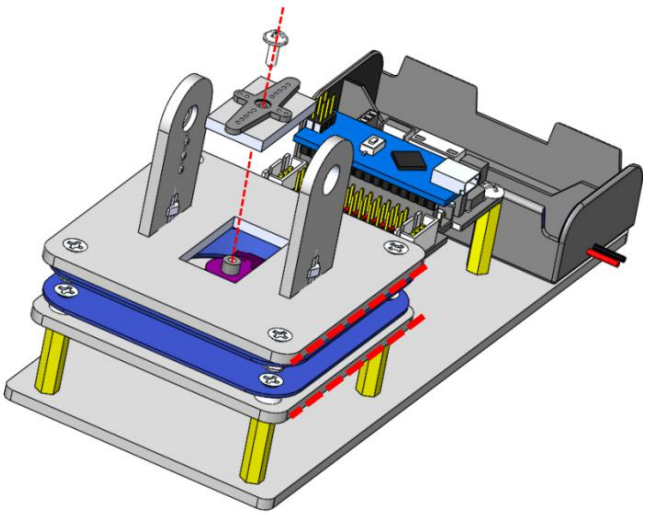
Need to prepare：

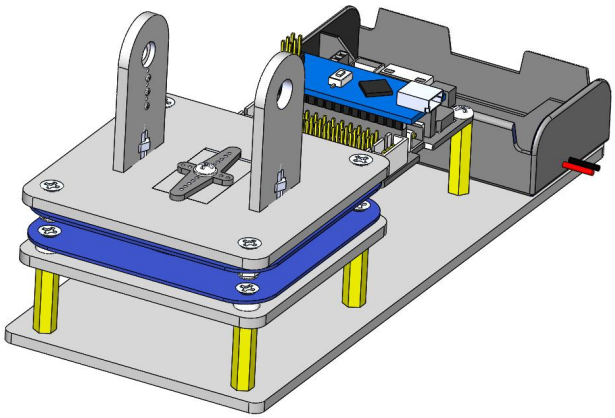
Step 6 Structure	1	

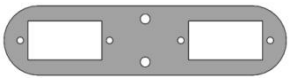
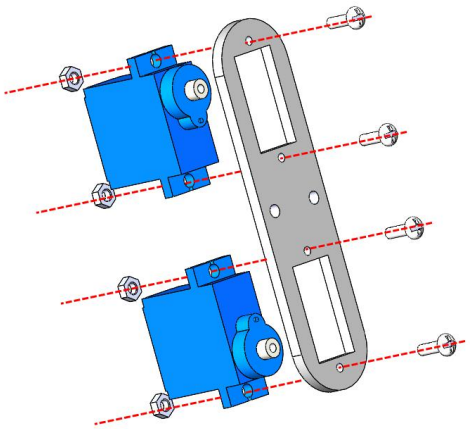
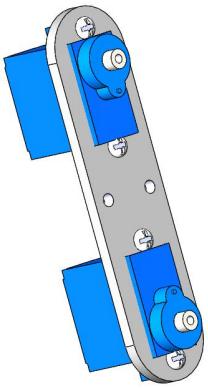
Step 8 Structure	1	
MG90 Servo Screw	1	

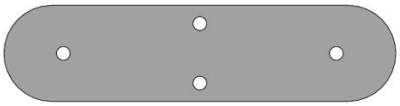
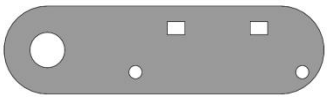
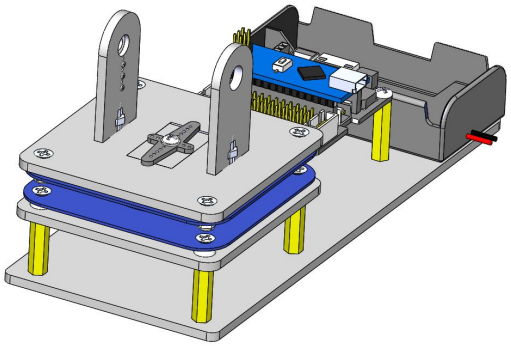
Demo：

1. First, ensure that the MG90 servo angle is reset to zero;
2. Ensure that the side of structural member B is parallel to the side of structural member C; (the thick dotted line in the figure)
3. Use the M2.5 self-tapping screw that comes with the MG90 steering gear to fix the structure of step 6 to the steering gear on the structure of step 8;

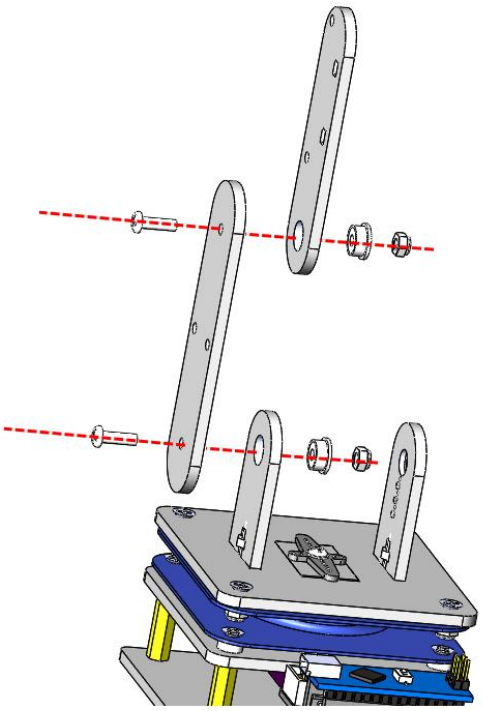


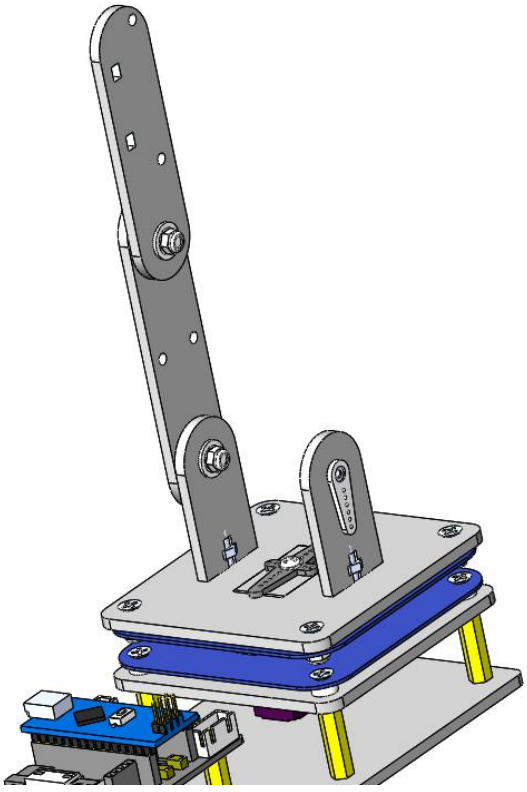


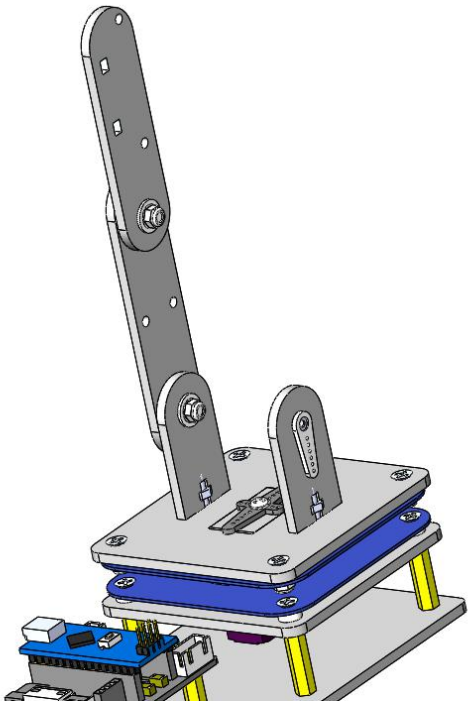
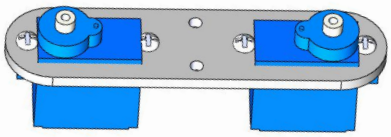
Step 10: Assembling Structure F and SG92 Servo		Tool: 
Need to prepare：		
Structure F	1	
M2*8mm round head screw	4	
M2 nut	4	
servo	2	
Demo：		
Use M2 * 8MM round head screws and M2 nuts to install the servo on the structural part F; Note the install direction of the servo;		 

Step 11: Assembling Structure G and Structure H		Tool: 
Need to prepare：		
Structure G	1	
Structure H	1	
Step 9 Structure	1	
ϕ3*8*4 flange bearing F693ZZ	2	
M3 mm self-locking screw	2	
M3*10mm round head screw	2	
Demo：		

Use M3 * 10MM round head screws and M3 self-locking nuts to fix structure G, structure H and bearing;
Pay attention to the installation order of structure G, structure H, and bearings;

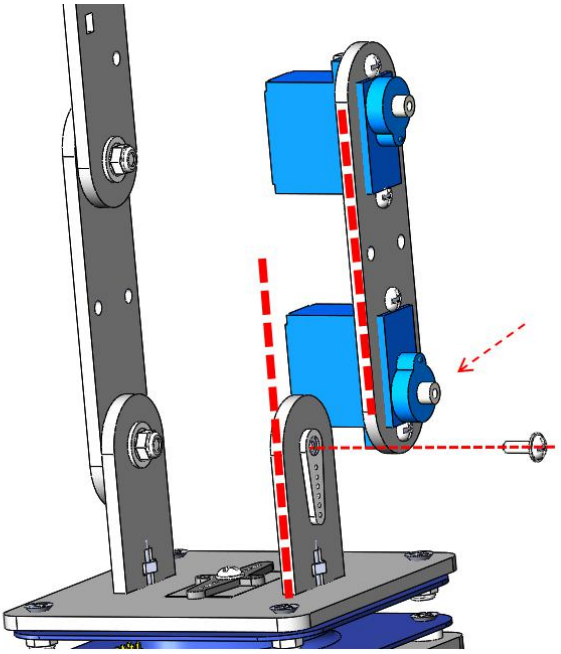


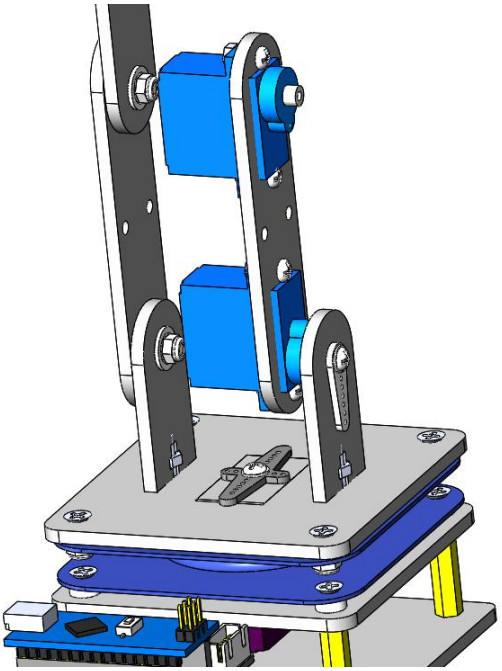


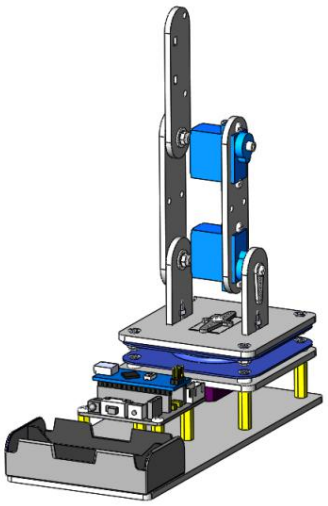
Step 12: Assembling Step 11 Structure **and** Step 10 Structure		Tool： 
Need to prepare：		
Step 11 Structure	1	
Step 10 Structure	1	
SG90 servo screw	1	

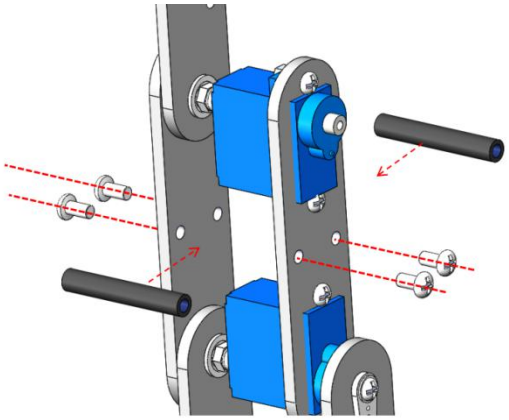
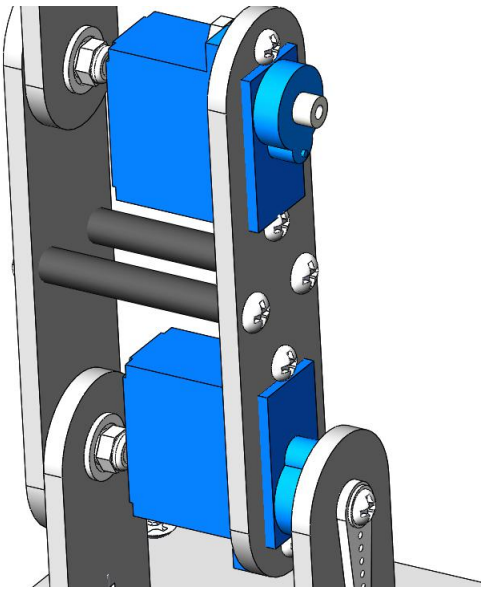
Demo：

Keep structure D and structure F parallel, shown by the red dotted line;



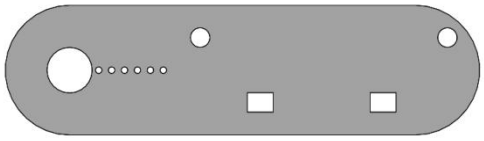


Step 13: Assembling M3*30MM aluminium column		Tool： 
Need to prepare：		
Step 12 Structure	1	
M3*30MM aluminium column	2	
M3*6mm round head screw	4	
Demo：		

Use M3 * 6 round head screws to install the M3*30MM aluminium column on the step 12 Structure ;	 

Step 14: Assembling Structure I and servo arm	Tool: 

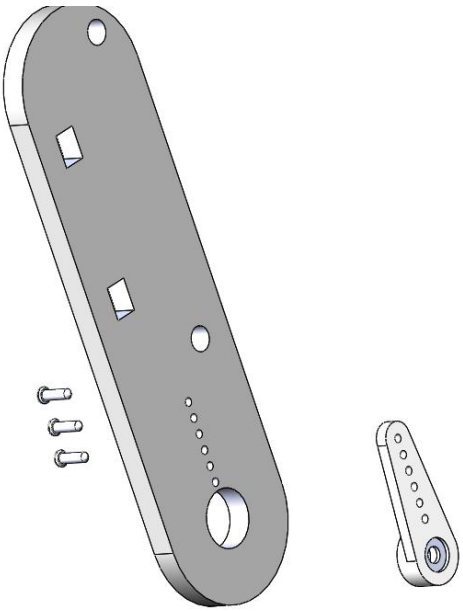
Need to prepare：

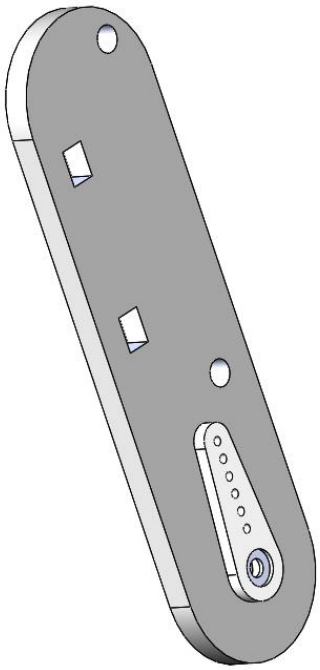
Structure K	1	
P1.2*4mm self-tapping screw	3	
servo arm	1	

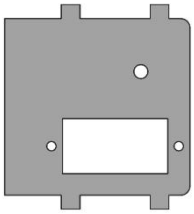
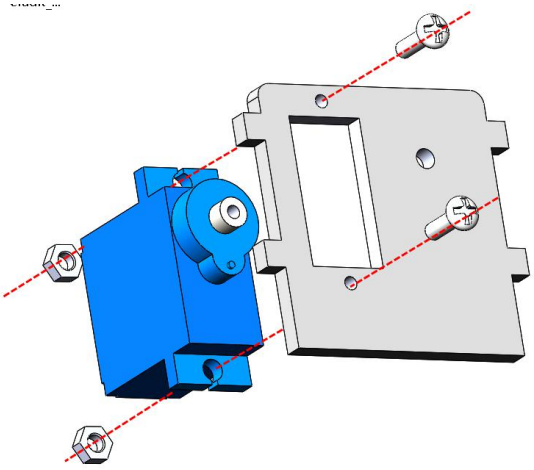
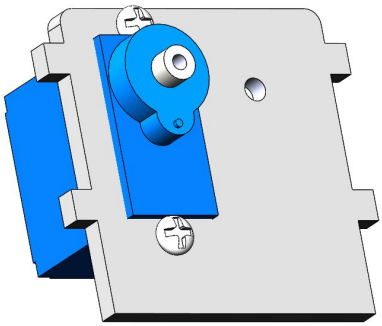
Demo：

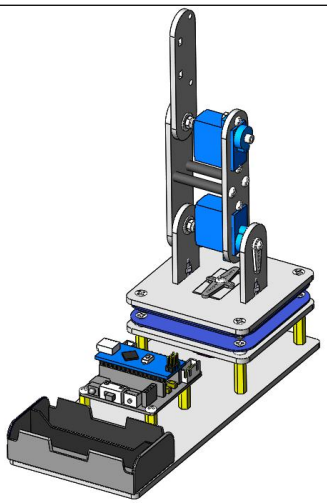
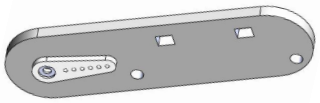
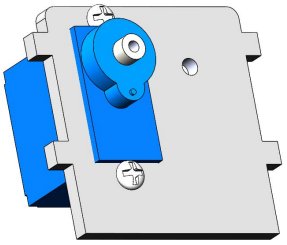
Use M1.2 * 4 self-tapping screws to fix the servo arm on the structure K;

Pay attention to the mounting direction of the servo arm



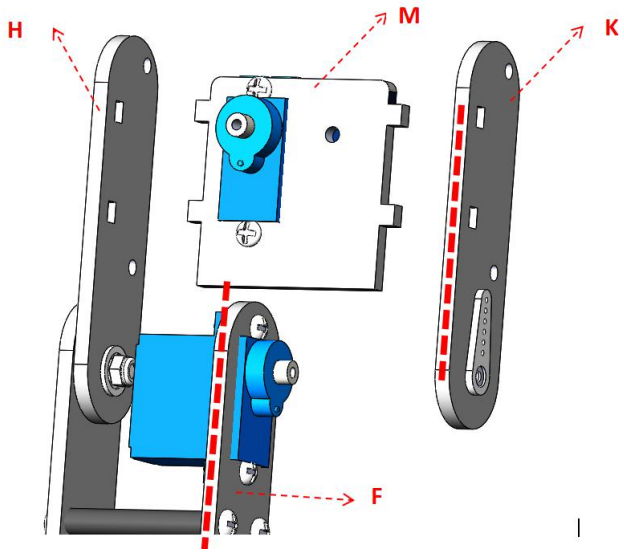


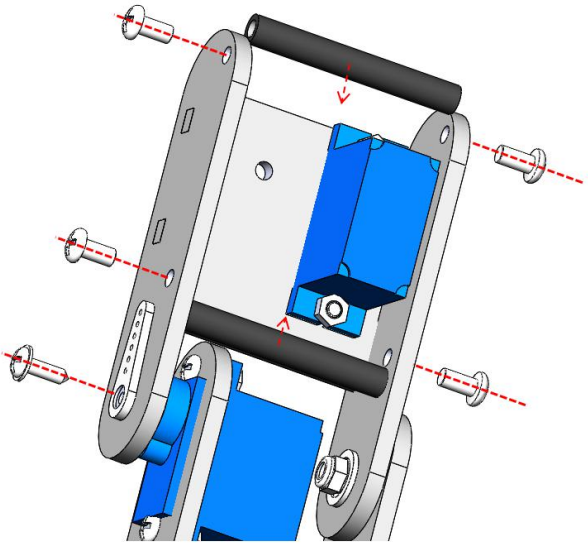
Step 15: Assembling Structure J and servo		Tool： 
Need to prepare：		
Structure M	1	
SG90 Servo	1	
M2*8mm round head screw	2	
M2 nut	2	
Demo：		
Use M2 * 8MM round head screws and M2 nuts to install the servo on the structure M; Pay attention to the installation direction of the servo;		 

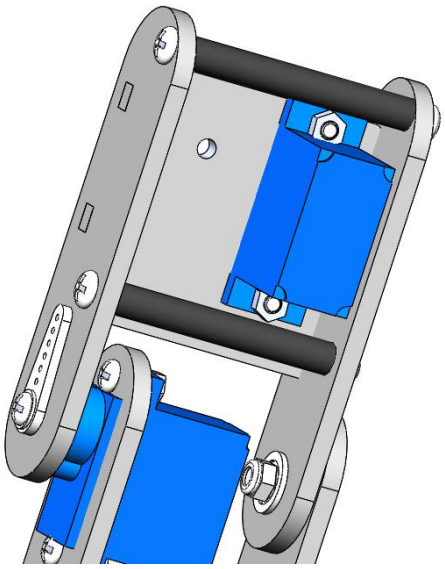
Step 16: Assembling Step 13 Structure, Step 14 Structure and Step 15 Structure		Tool： 
Need to prepare：		
Step 13 Structure	1	
Step 14 Structure	1	
Step 15 Structure	1	
M3*37MM Aluminium column	2	
M3*6mm round head screw	4	
Servo screw	1	

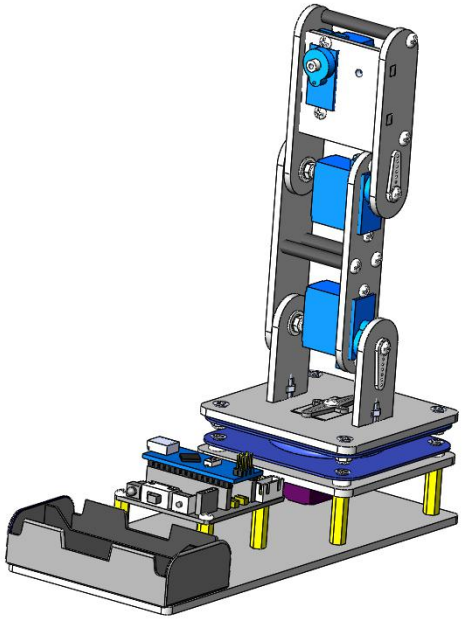
Demo：

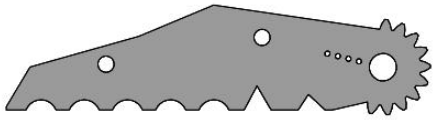
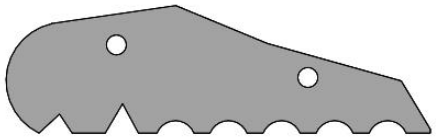
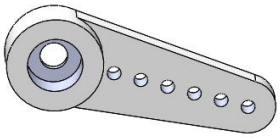
1. 1. Install structural part M and structural part H;
2. 2. The side of structural member K and the side of structural member F are kept parallel (the red thick dashed line is shown in the figure);
3. 3. Install the single arm of the steering gear on the structure K with the steering gear shaft on the structure F, and install the structure M and the structure K at the same time;
4. 4. Use M3*6 screws to install the aluminum column between the structural part H and the structural part K;
5. Use the self-tapping screws of the steering gear to fix the single arm of the steering gear and the steering gear shaft (the screw fixing force needs to be moderate)





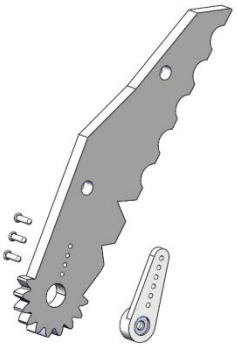


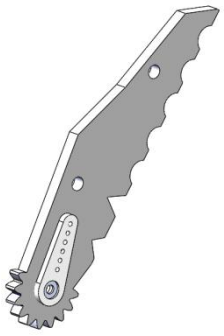


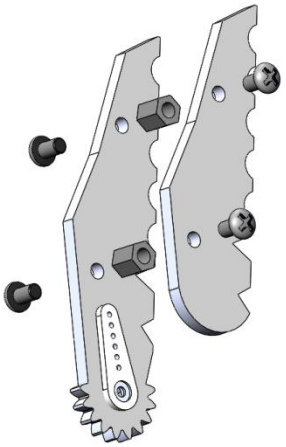
Step 17: Assembling the left finger of the hand		Tool： 
Need to prepare：		
Structure N	1	
Structure L	1	
Servo arm	1	
P1.2*4mm self-tapping screw	3	
M3*6 black nylon stud	2	
M3*5 black nylon screw	4	

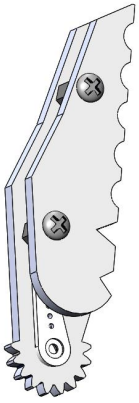
Demo：

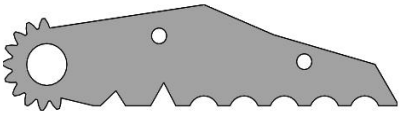
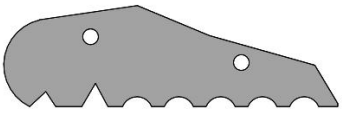
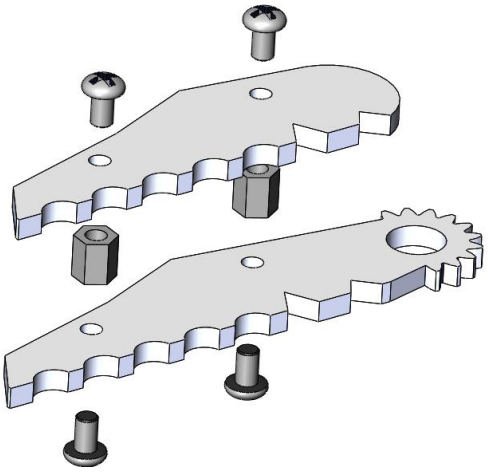
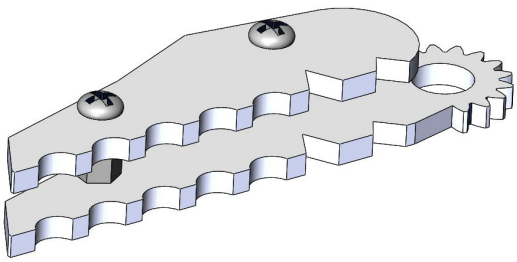
1. 1. Use M1.2*4 self-tapping screws to fix the single arm of the steering gear on the structure N; (pay attention to the direction)
2. Use M3*5 nylon screws to fix the nylon column, structural part N, and structural part L; (note the direction)

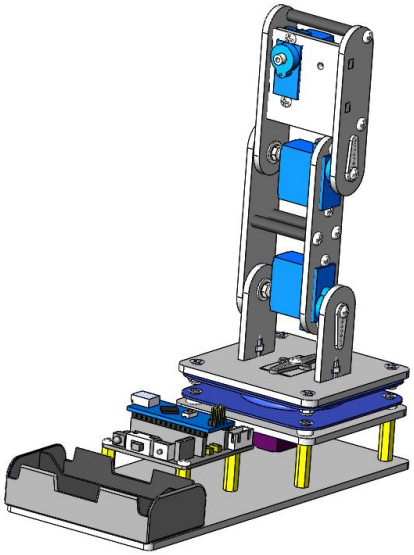
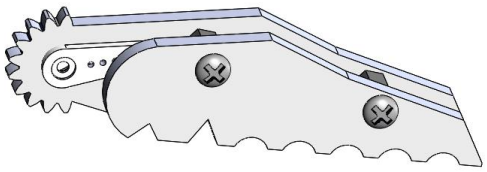
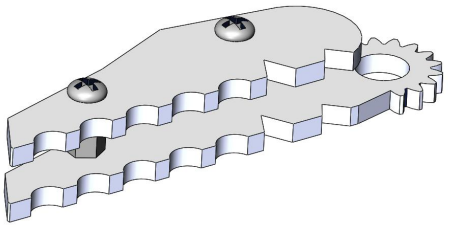


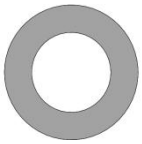




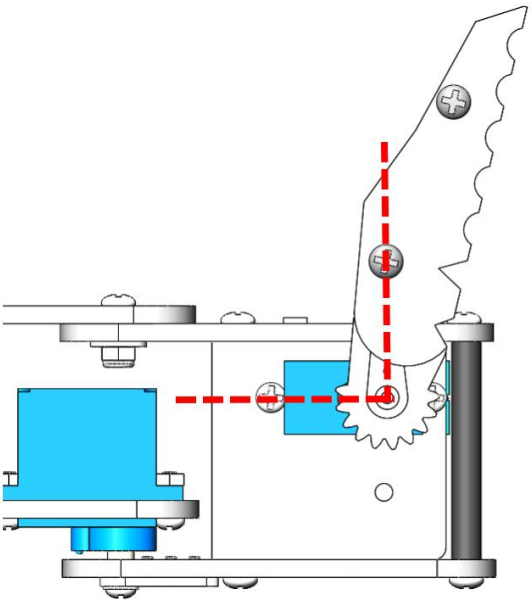


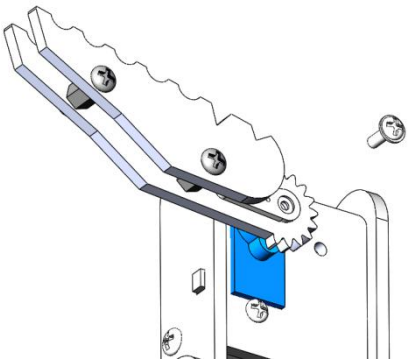
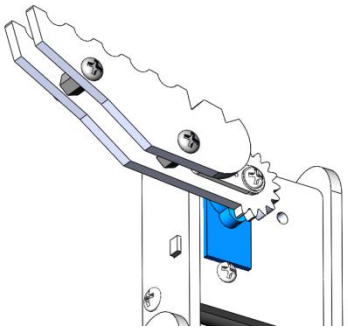
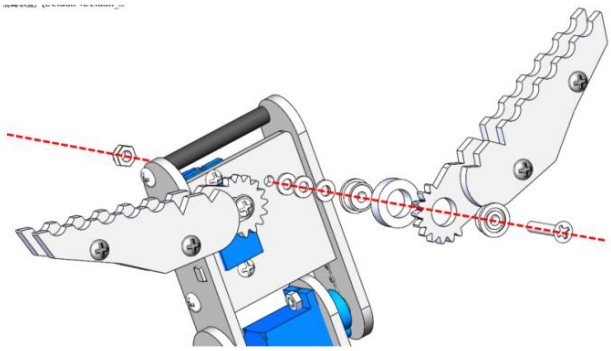
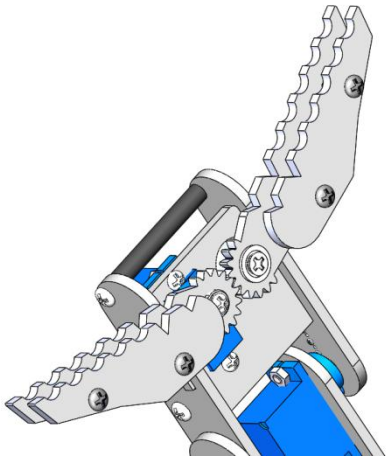
Step 18: Assembling right finger of the hand		Tool： 
Need to prepare：		
Structure X	1	
Structure L	1	
M3*6 black nylon stud	2	
M3*5 black nylon screw	4	
Demo：		
Use nylon screws and nylon studs to fix the structure L on the structure X;		 

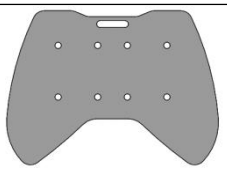
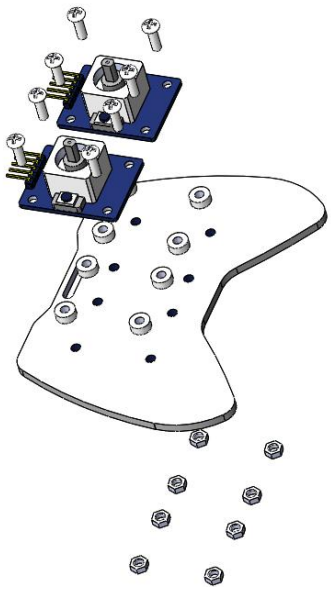
Step 19: Assembling Step 16 Structure and robot finger		Tool： 
Need to prepare：		
Step 16 Structure	1	
Left finger	1	
Right finger	1	

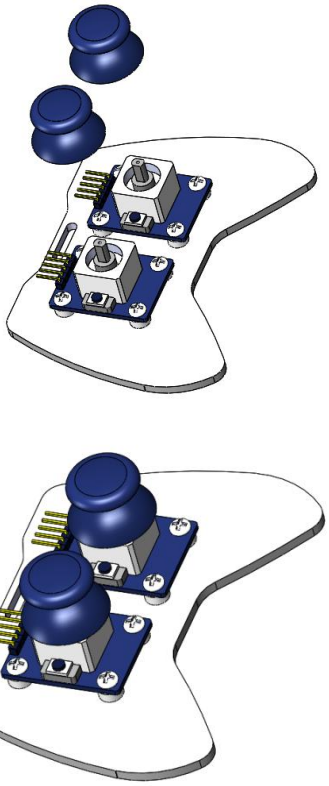
Structure P	1	
ϕ3*8*4 flange bearing F693ZZ	2	
M3 Flat pad	3	
M3*18mm countersunk head screw	1	
M3 mm self-locking screw	1	

Demo：

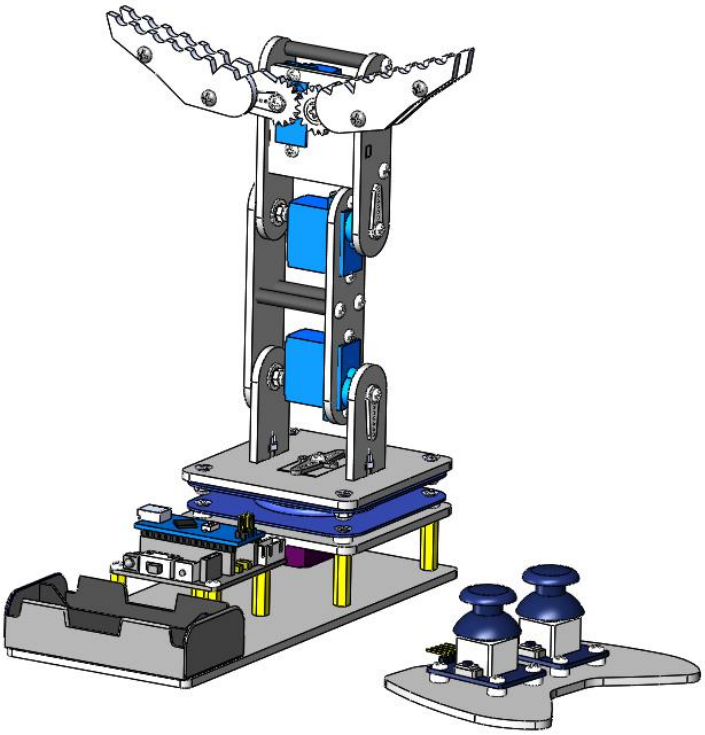
1. The left part of the claw and the steering gear shaft on the structural member M are installed at 90 degrees; (as shown in the figure) 2. Use the screws provided with the steering gear to fix the single arm of the steering gear and the steering gear shaft;	

	 
Use M3 * 18 countersunk head screws and M3 self-locking nuts to fix the bearing, right finger, structure N, and Flat pad on structural part J Note: 1. Install in order; 2. Be careful not to damage the gear;	 

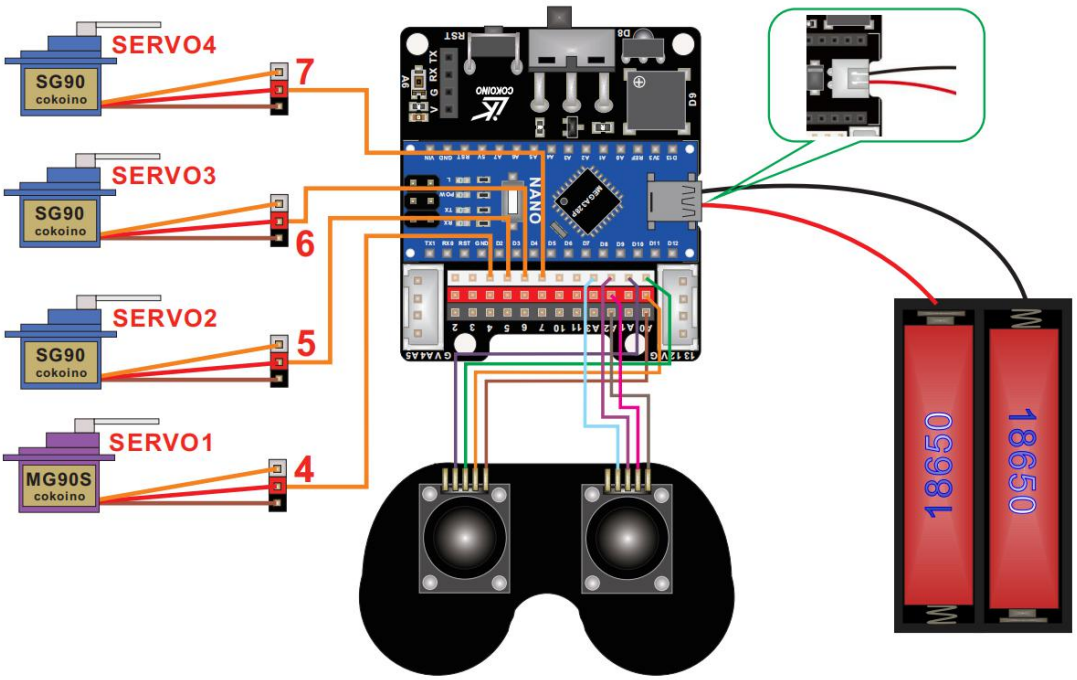
Step 20: Assembling the joystick controller		Tool： 
Need to prepare：		
Structure K	1	
Structure L	2	
M3*10mm round head screw	8	
N3 nut	8	
ϕ3*3mm nylon column	8	
Demo：		
Pay attention to the mounting direction of the servo arm;		

Congratulations, a cool robot is done



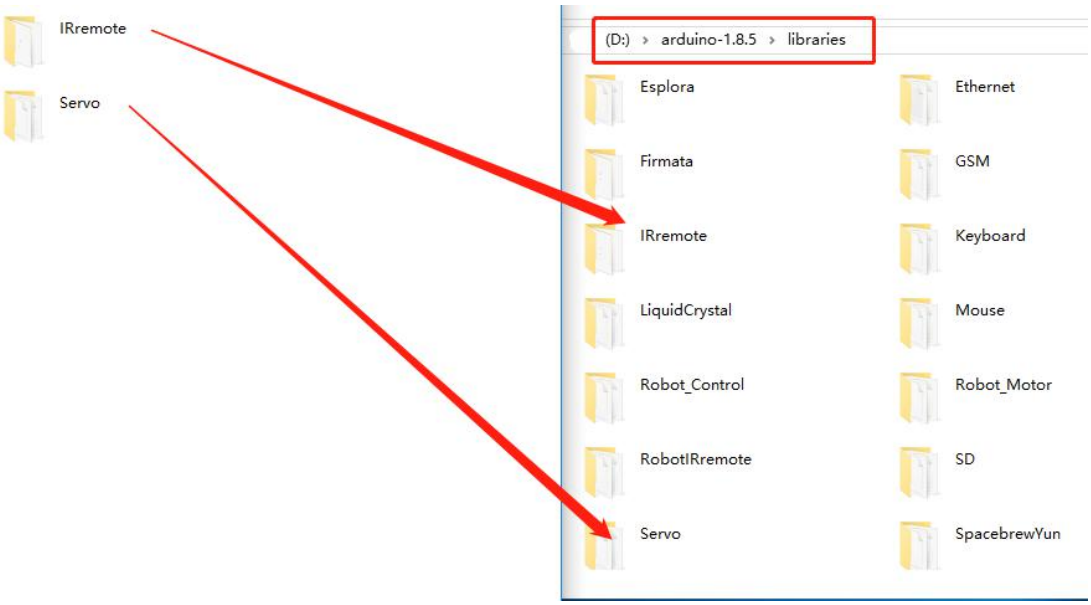
2. Wiring diagram



Ⅷ Run the robotic arm

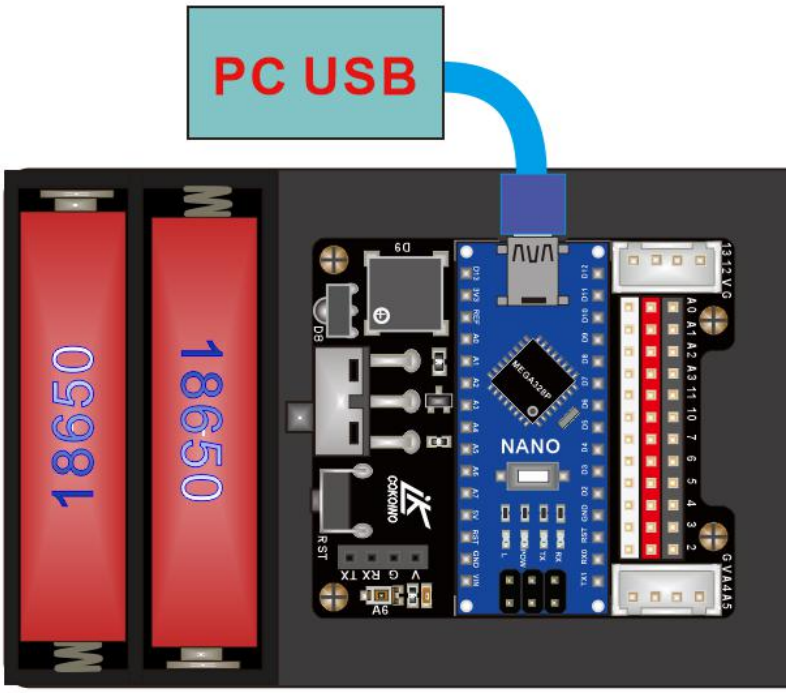
1. Install the library file

Our code uses the two arduino library files "Servo" and "IRremote". Before running the code, the "Servo" and "IRremote" folders under the Libraries folder provided by us must be copied to the arduino installation directory. In the "libraries" file, as shown
below:

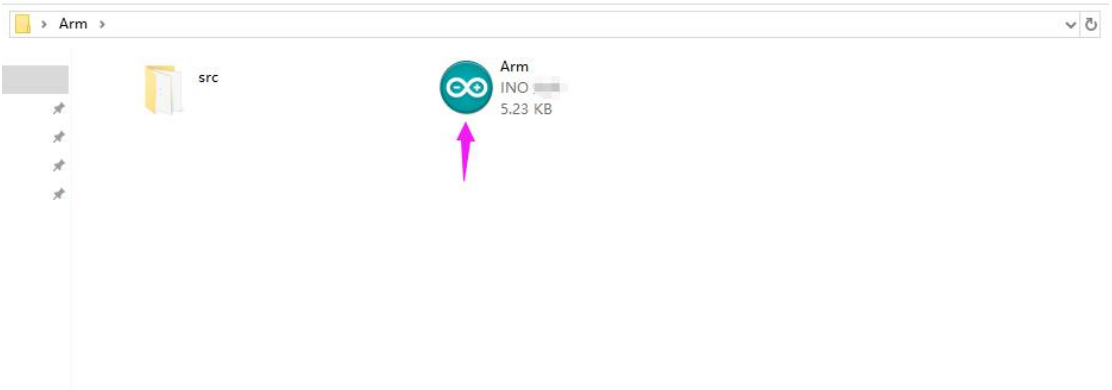


1. Burning program

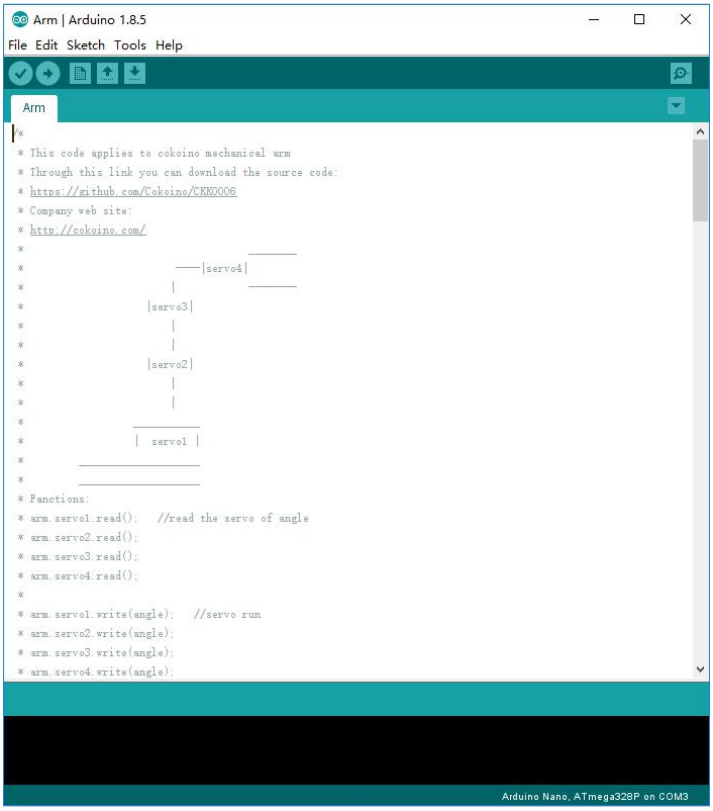
2.1 Turn the power switch on the nano motherboard to the "ON" state, and connect the USB port to the USB port of the PC via a USB cable



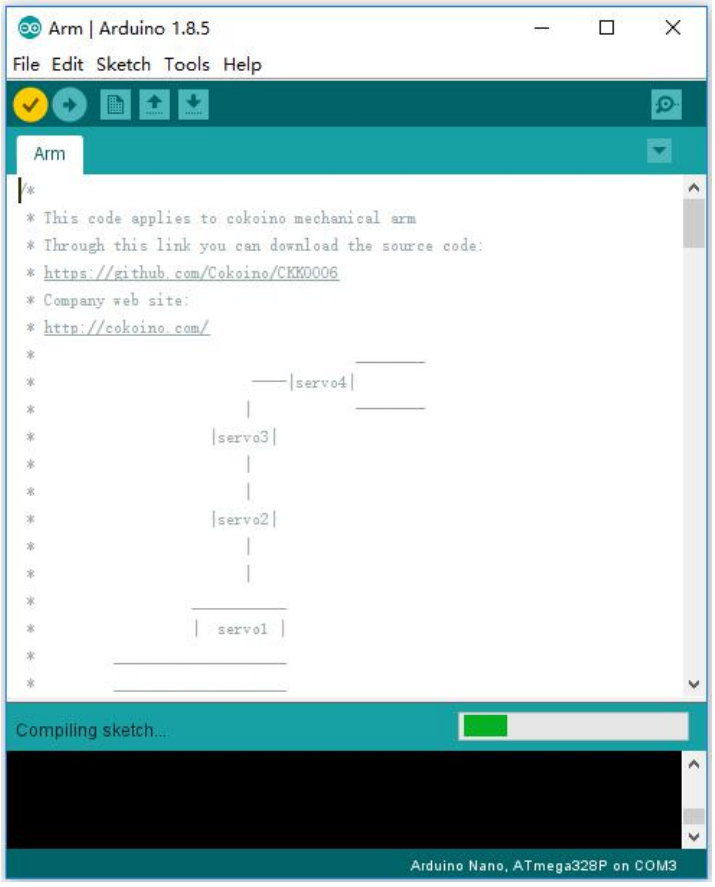
2.2 Double-click to open the source code of the "Code"--->"Arm" folder, as shown in the figure below:



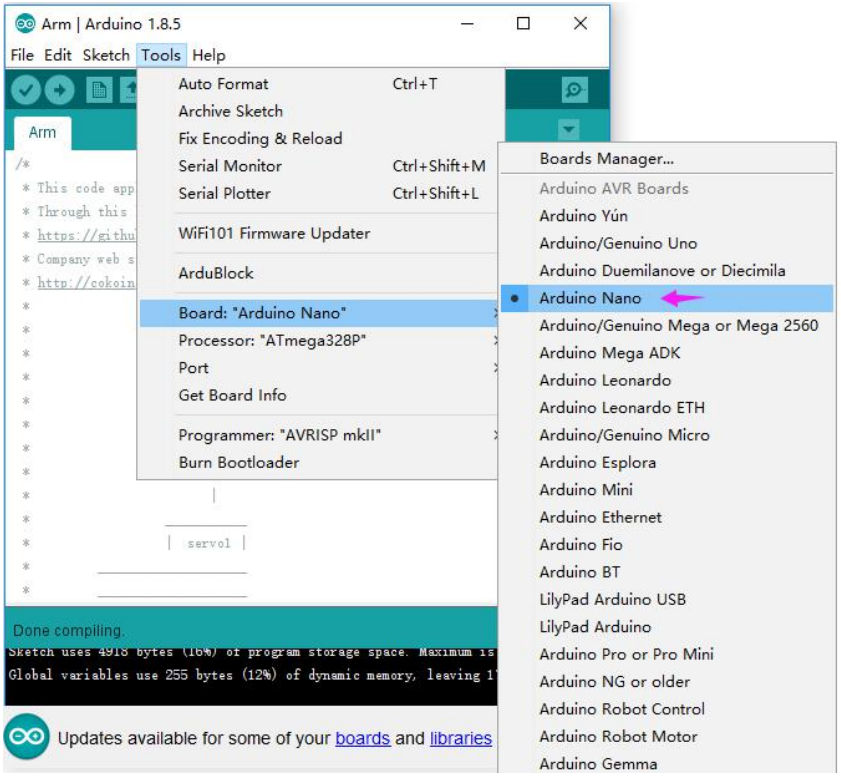
2.3 Arduino IDE opens the initial picture of the code:



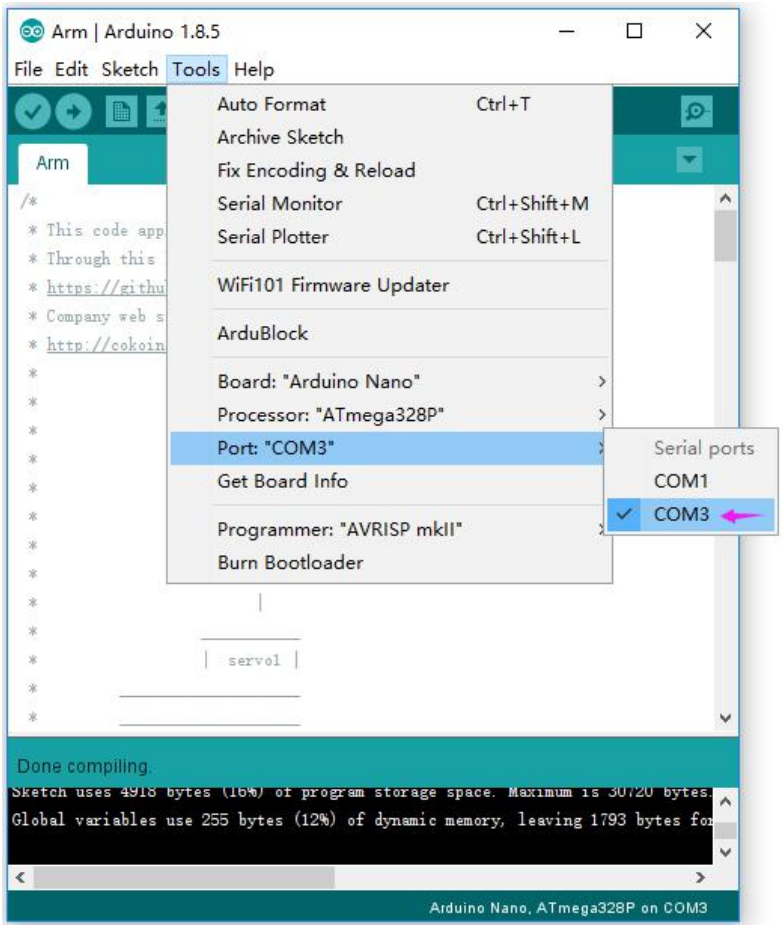
2.4 Check code:



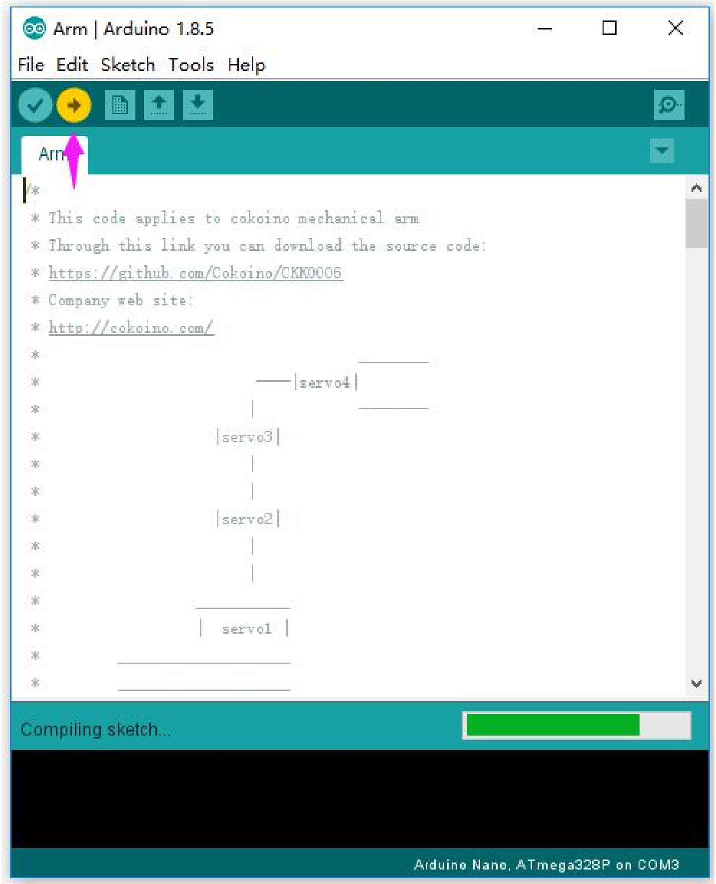
2.5 Select the development board:



2.6 Select the burning port:



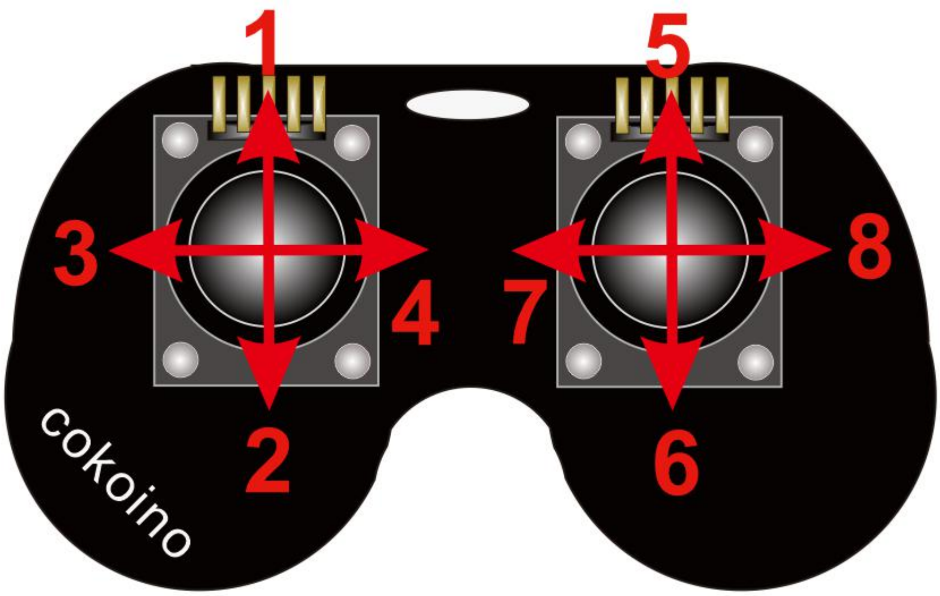
2.7 Burning code:



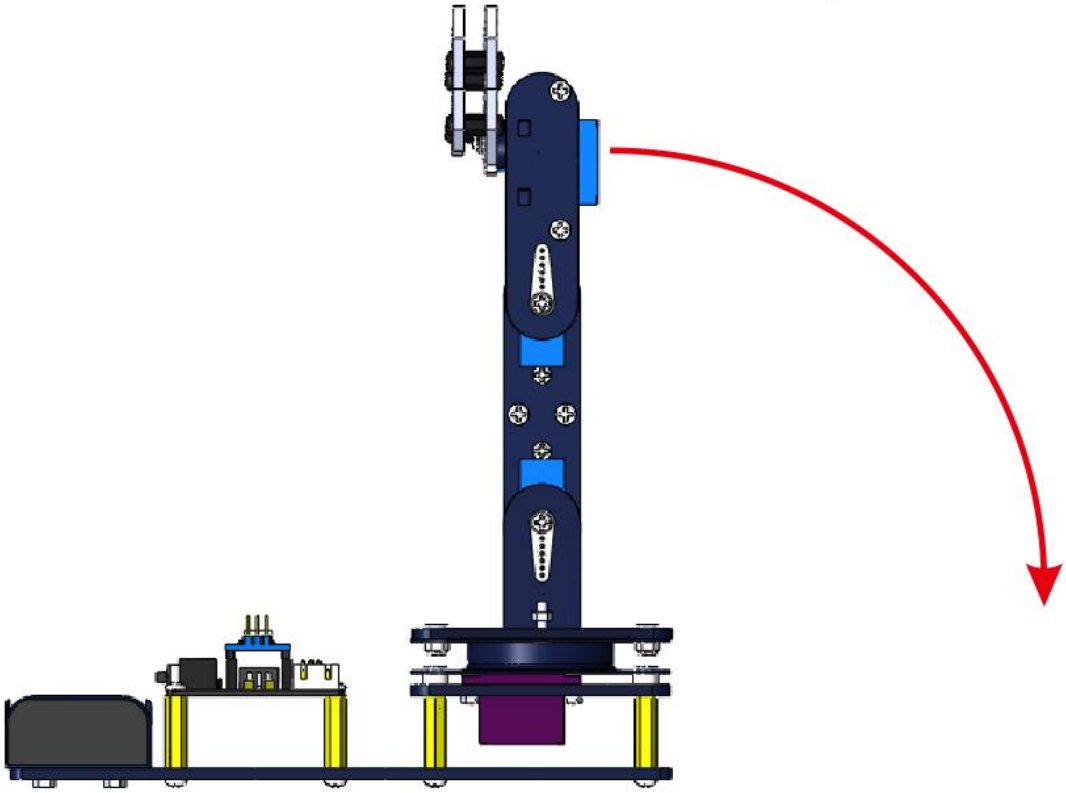
At this step, the code burning has been completed. Let's learn how to operate the robot arm and feel the joy of success!

2. Manipulate the robotic arm

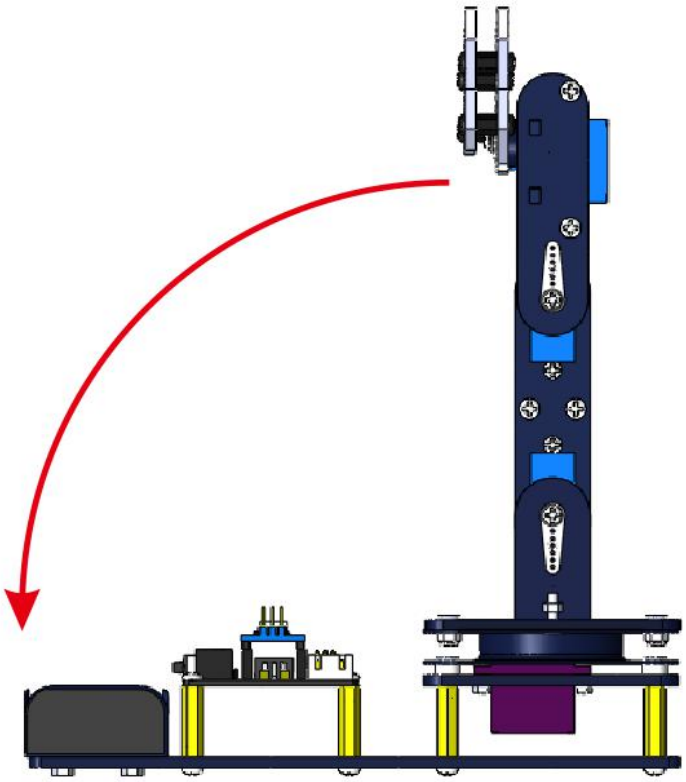
Description of the joystick handle:



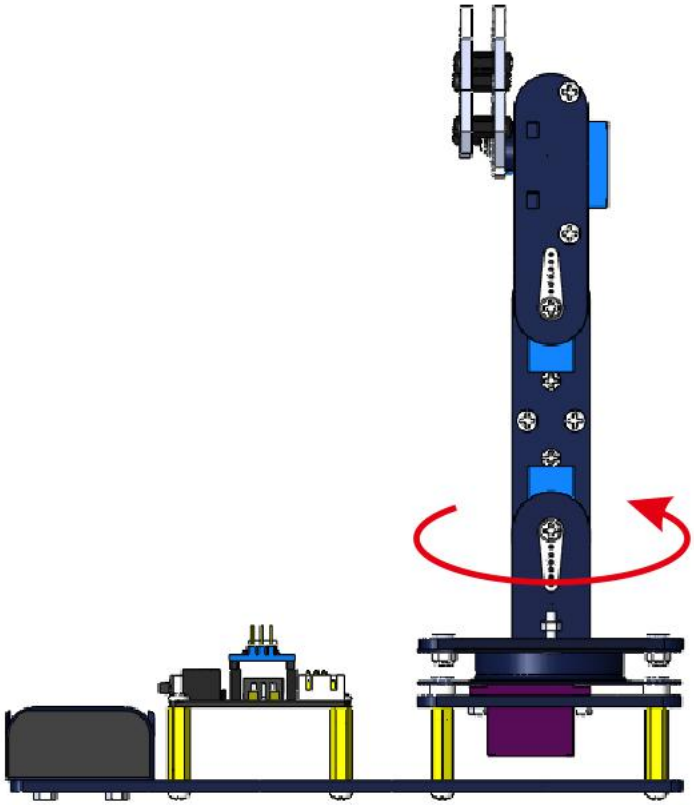
1：Robot arm swings forward



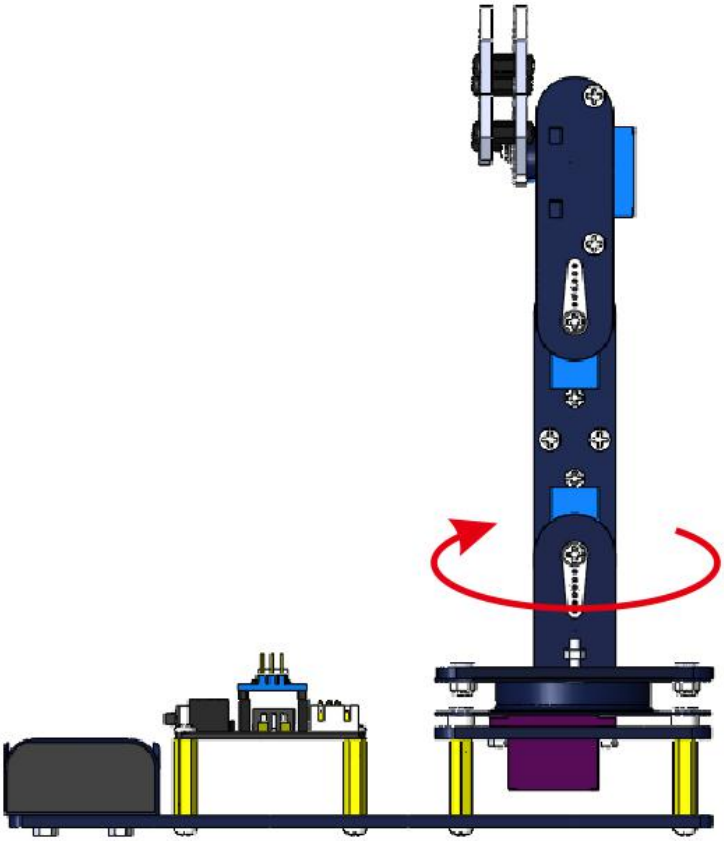
2：Robot arm swings backward



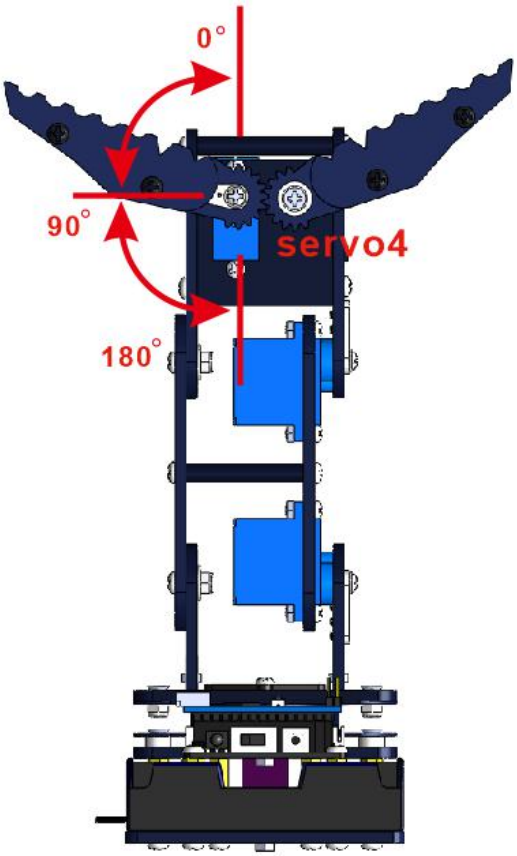
3：Robot arm swings left



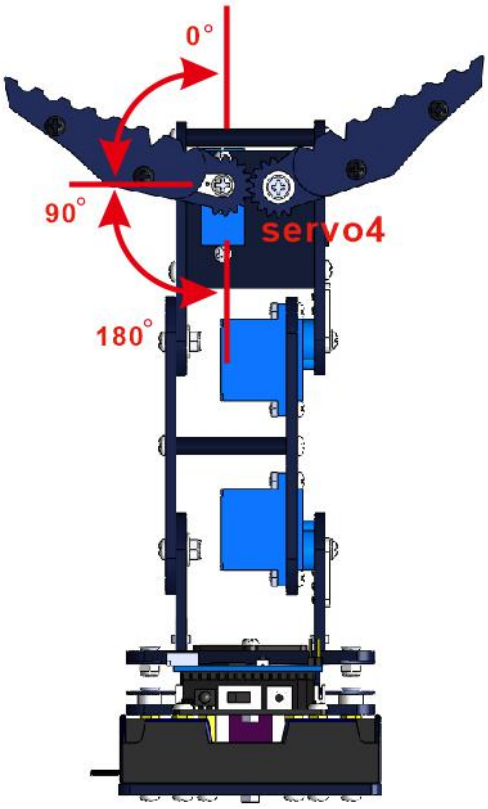
4：Robot arm swings right



5：The claws of the robot arm are closed (servo4 turns to 0 degrees)

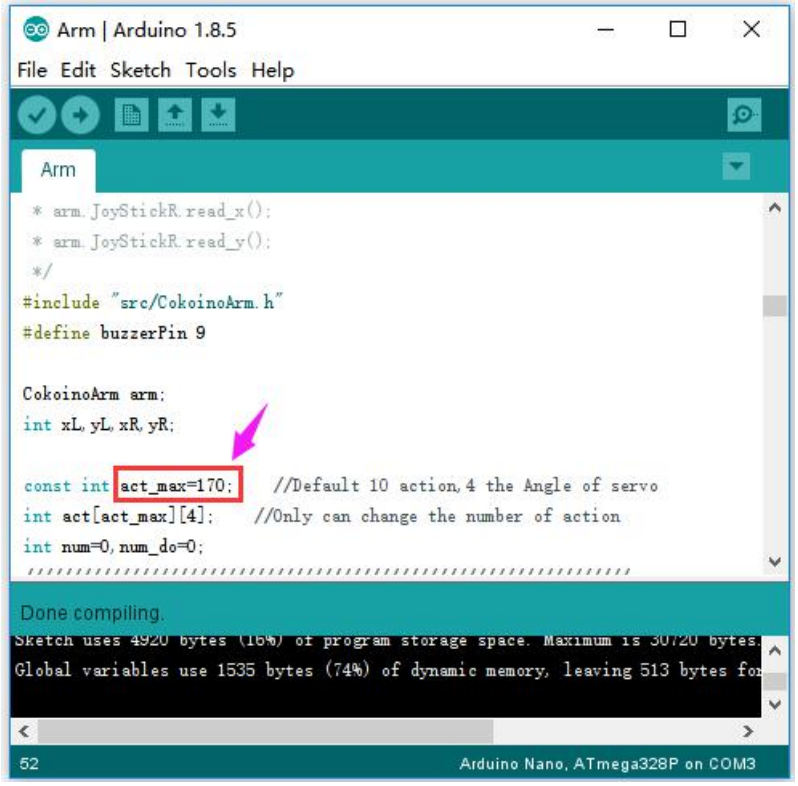


6：The claws of the robot arm are open (servo4 turns to 180 degrees)



7：Record the actions of the mechanical arm

The default design in the program can record 10 robot arm actions continuously, and the buzzer will sound once when the recorded action is greater than 10 actions. By modifying the numbers in the basic code, a maximum of 170 actions can be recorded, as shown in the figure below:



8：Perform recorded actions

The buzzer first buzzes, and then executes the recorded robot arm actions in sequence. The machine cannot be controlled during the recording action of the manipulator, until the recorded action is completed, the buzzer will beep again to prompt the completion of the recording action.

IX Trouble shooting

1.Robot arm does not work

<1>Please ensure that the total voltage of the two lithium batteries is between 7-8.4V.
<2>Whether the two lithium batteries are installed correctly.
<3>Please confirm whether the wiring is correct.

2.The robotic arm does not rotate

<1>Please ensure that the total voltage of the two lithium batteries is between 7-8.4V.
<2>Please confirm whether to install the robotic arm after initial servo according to chapter Ⅵ.
<3>Please confirm whether the wiring is correct.

3.The operation of the robotic arm is different from the description of the data

<1>Please confirm whether to install the robotic arm after initial servo according to chapter Ⅵ.
<2>Please confirm whether the wiring is correct.

4.Contact us for support

Email : cokoino@outlook.com
Facebook：https://www.facebook.com/cokoino.lk