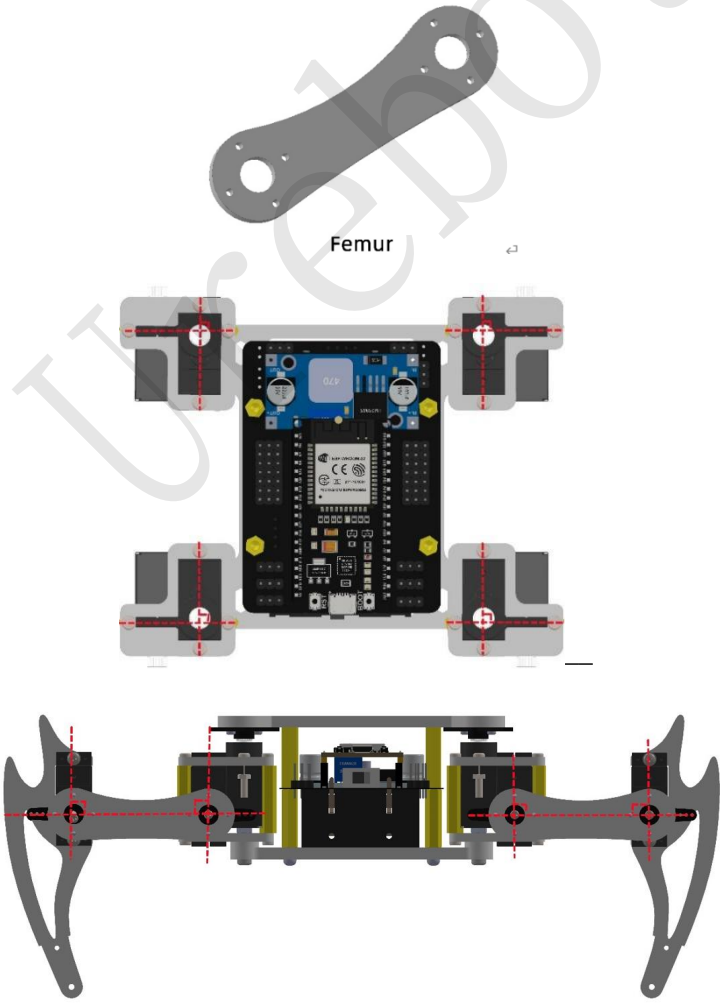
First burn the calibration program to the single chip microcomputer (the spider is not on),

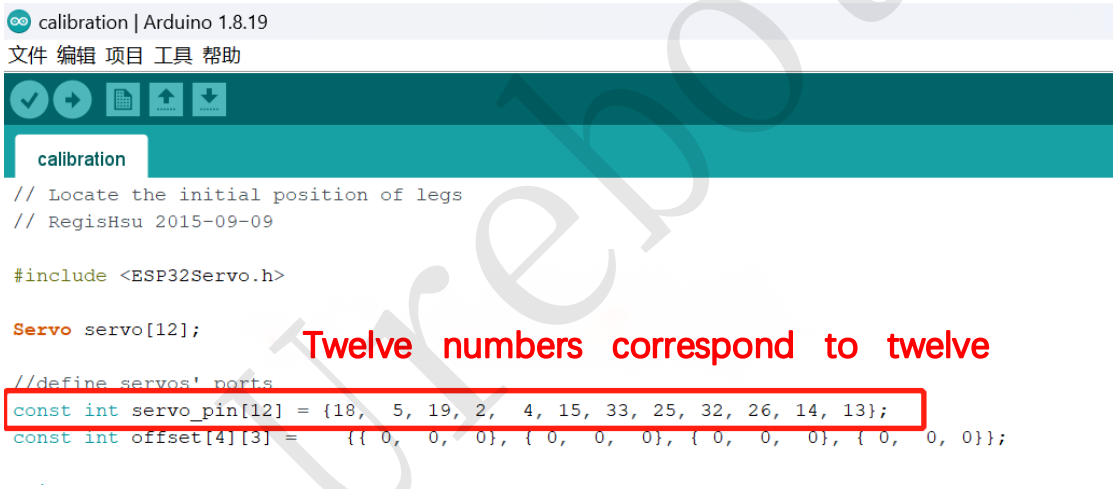
```
// Locate the initial position of legs
// RegisHsu 2015-09-09

#include <ESP32Servo.h>

Servo servo[12];

//define servos' ports
const int servo_pin[12] = {18,  5, 19, 2,  4, 15, 33, 25, 32, 26, 14, 13};
const int offset[4][3] =    {{ 0,  0,  0}, { 0,  0,  0}, { 0,  0,  0}, { 0,  0,  0}};

void setup()
{
  Serial.begin(9600);
  //initialize all servos
  for (int i = 0; i < 12; i++)
  {
      servo[i].attach(servo_pin[i], 500, 2500);
      delay(20);
  }
  for (int i = 0; i < 12; i++)
  {
      servo[i].write(90);
      delay(20);
  }
}

void loop(void)
{
  while(Serial.available() > 0)
  {
    char command = Serial.read();
    // SERVO Set command
    if ( command == 'S' || command == 's' )  // 'S' is Servo Command "S,Servo_no,Angle"
    {
      Serial.print(command);
      Serial.print(',');
      int servoNo = Serial.parseInt();
      Serial.print(servoNo);
      Serial.print(',');
      int servoAngle = Serial.parseInt();
      Serial.print(servoAngle);
      Serial.println();

//      if ( 0 <= servoNo &&  servoNo < MAX_SERVO_NUM+1 )
      {
        // Single Servo Move
```

Then, after starting the machine, the steering gear stops turning. After the shutdown, the connection between the two steering gear is installed as shown in the figure below

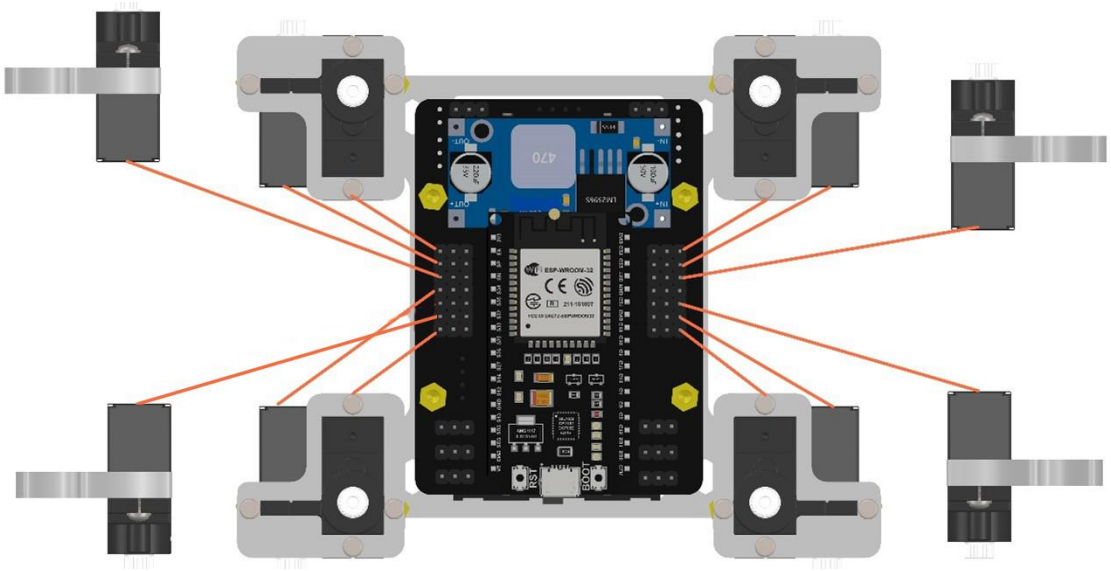


In parallel with the calibration code (USB connection to the computer and the spider) (spider boot status)

We can see two arrays in the code



The first array corresponds to twelve ports on the steering gear (with a number next to the port)



The second string of array is what we need to calibrate next

calibration | Arduino 1.8.19

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calibration

```
// Locate the initial position of legs
// RegisHsu 2015-09-09

#include <ESP32Servo.h>

Servo servo[12];

//define servos' ports
const int servo_pin[12] = {18   5  19   2   4  15  33  25  32  26  14  13};
const int offset[4][3] =    {{ 0,  0,  0}, { 0,  0,  0}, { 0,  0,  0}, { 0,  0, 0}};

void setup()
```

1.

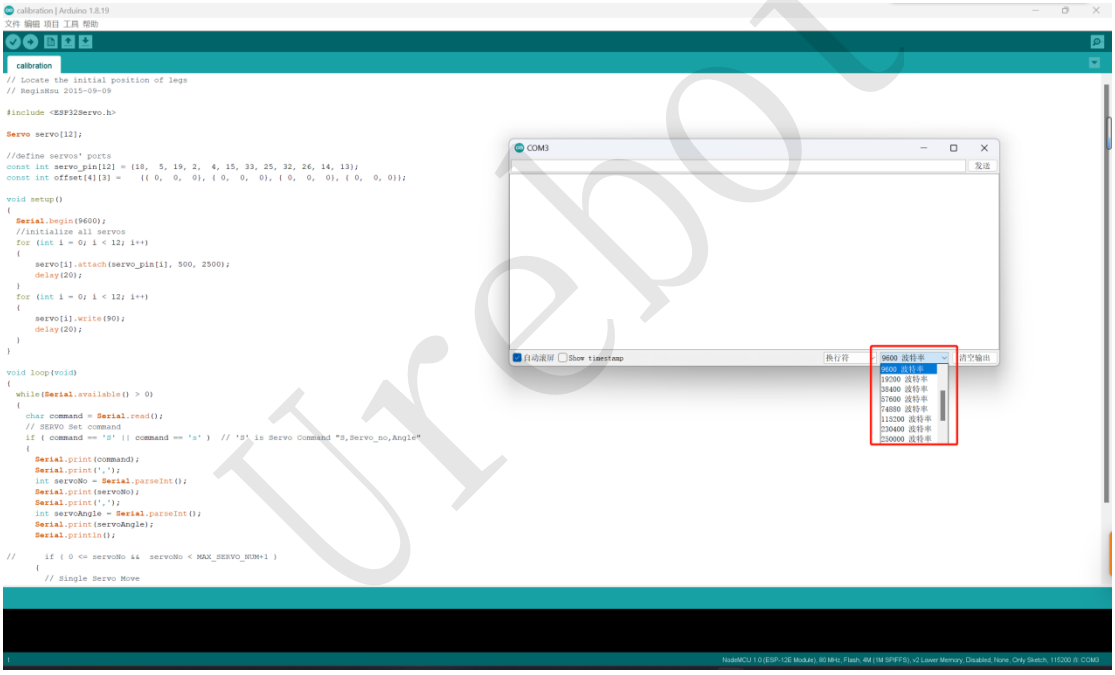
```
void loop(void)
{
  while(Serial.available() > 0)
  {
    char command = Serial.read();
    // SERVO Set command
    if ( command == 'S' || command == 's' )  // 'S' is Servo Command "S,Servo_no,Angle"
    {
      Serial.print(command);
      Serial.print(',');
      int servoNo = Serial.parseInt();
      Serial.print(servoNo);
      Serial.print(',');
      int servoAngle = Serial.parseInt();
      Serial.print(servoAngle);
      Serial.println();

//      if ( 0 <= servoNo &&  servoNo < MAX_SERVO_NUM+1 )
      {
        // Single Servo Move
        servo[servoNo].write(90+servoAngle);

        // Wait Servo Move
        delay(300); // 180/60(°/100msec) =300(msec)
      }
    }  // SERVO Set END
  }
}
```

Firstly, we define an 'S'

The input values are saved in the command and separated by commas

3. Next, open the serial port monitor

4. Adjust the Paud rate to 9,600



5. After adjusting to 9600, enter s, 0,10 above

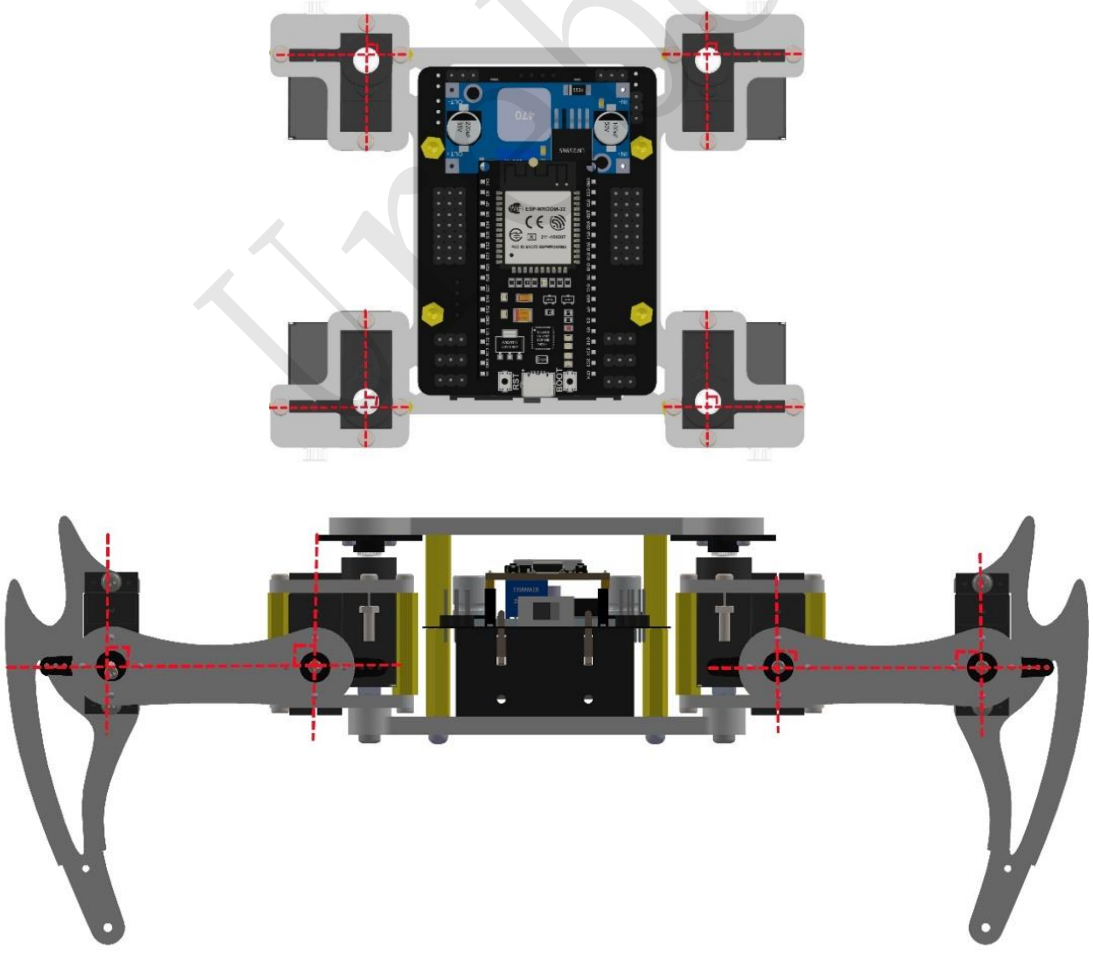
(S, 0,10 The 0 in the middle represents port 18 in the first array, the input 1 represents port 5, and so on)

(S, 0,10 after 10 represents the adjustment angle, and the general input value is probably between 20 and-20)

(After entering s, 0,10, click send, you will find that the rudder machine inserted in port 18 turns, then slowly adjust the correct number (keep parallel), and then record the final number)

Example: For example, the final number recorded below me s, 0, xx is-5, s, 1, xx final, parallel value is-10 (the value of each device is different, the picture is for reference only)

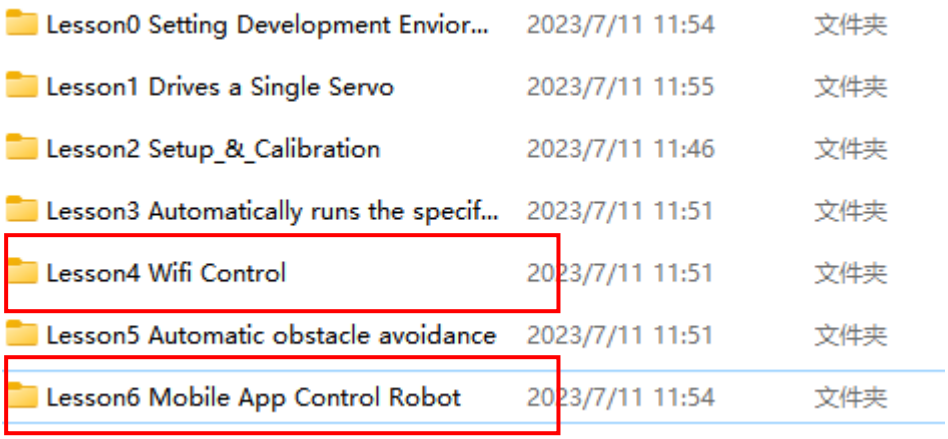
After recording the twelve numbers, the spider's current state is parallel to all four feet



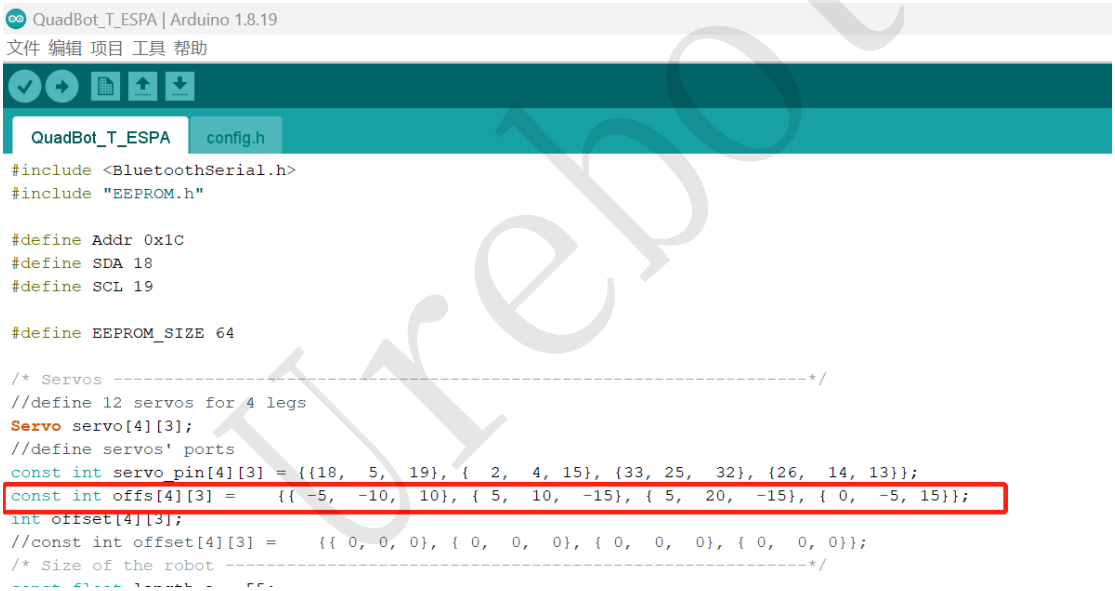
Then download the mobile app control program or the web page control program

(When downloading the program, keep it off, otherwise the rudder will turn around)

(Download which program in which way)



Then replace the twelve numbers recorded before with the numbers in the second array below



Then burn the control program into the spider