First, burn the calibration program into the microcontroller (when the robot is not turned on),

After turning on the machine, when you hear the servo stop rotating, turn off the machine. After turning off the machine, install the structure of the connecting parts between the two servos as shown in the following figure

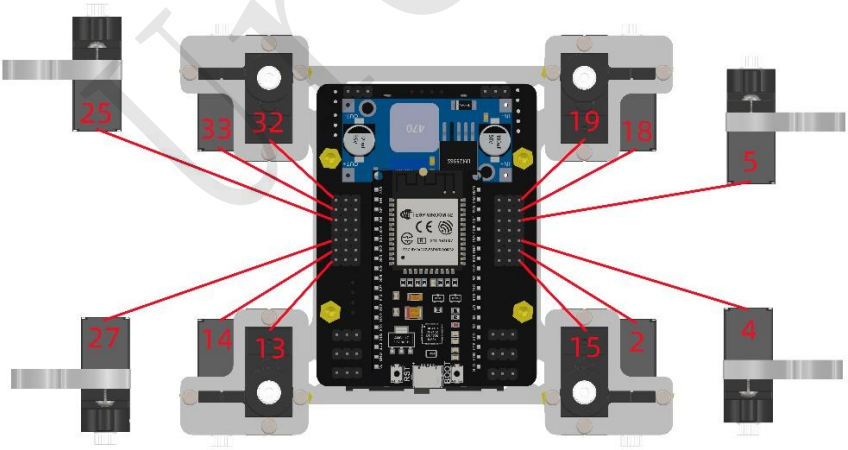
After assembly into parallel, open the calibration code (USB connection between computer and robot) (robot startup status)

In the code, we can see two arrays

12 numbers correspond to the calibration values of 12 servos respectively

```
//define servos' ports
const int servo_pin[12] = {18,  5, 19, 2,  4, 15, 33, 25, 32, 27, 14, 13};
const int offset[4][3] =  {{0,  0, 0 }, { 0,  0,  0}, { 0,  0,  0}, { 0,  0, 0}};
```

The first array corresponds to the twelve ports plugged into the servo on our expansion board (with numbers written next to the expansion board ports



The second array is what we need to calibrate next

calibration | Arduino 1.8.19

文件 编辑 项目 工具 帮助

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()
```

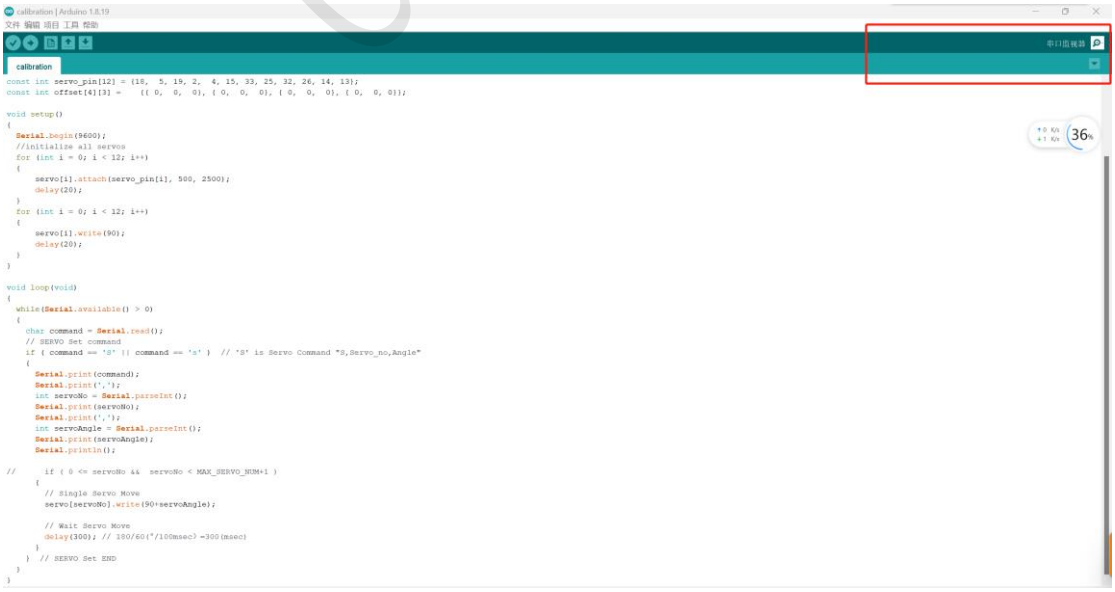
1.

```
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
  }
}
```

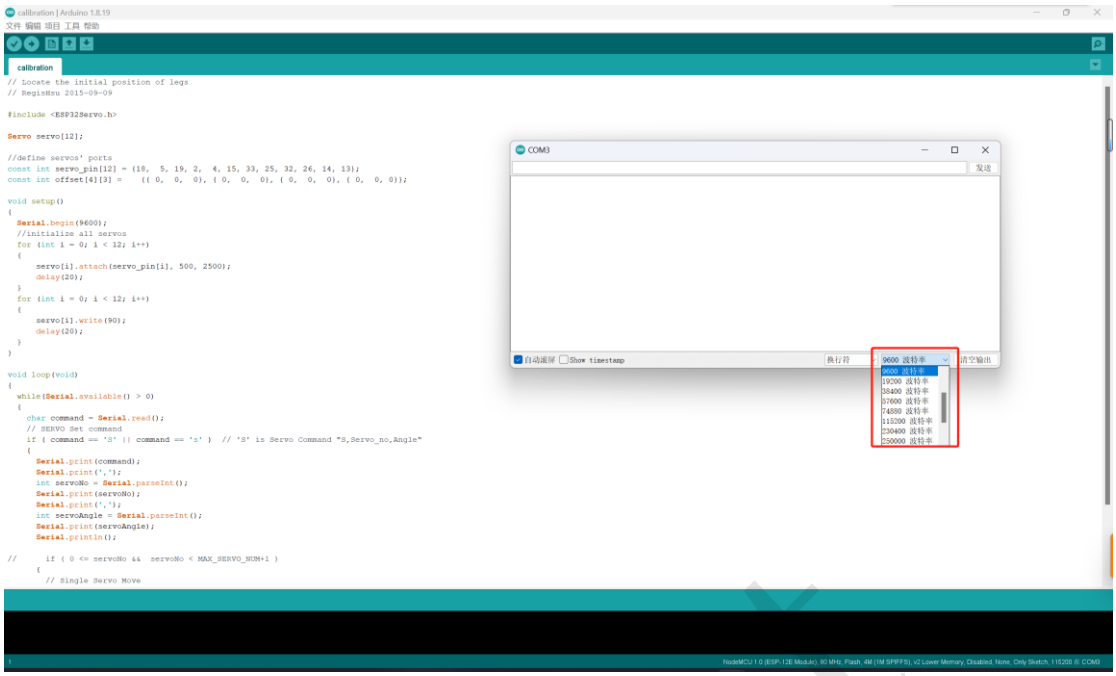
1.首先我们定义一个“S”

2.输入的值保存在command里然后逗号隔开

3. Next, open the serial port monitor



4. Adjust the baud rate to 9600



5. After adjusting to 9600, enter s, 0,10 on it

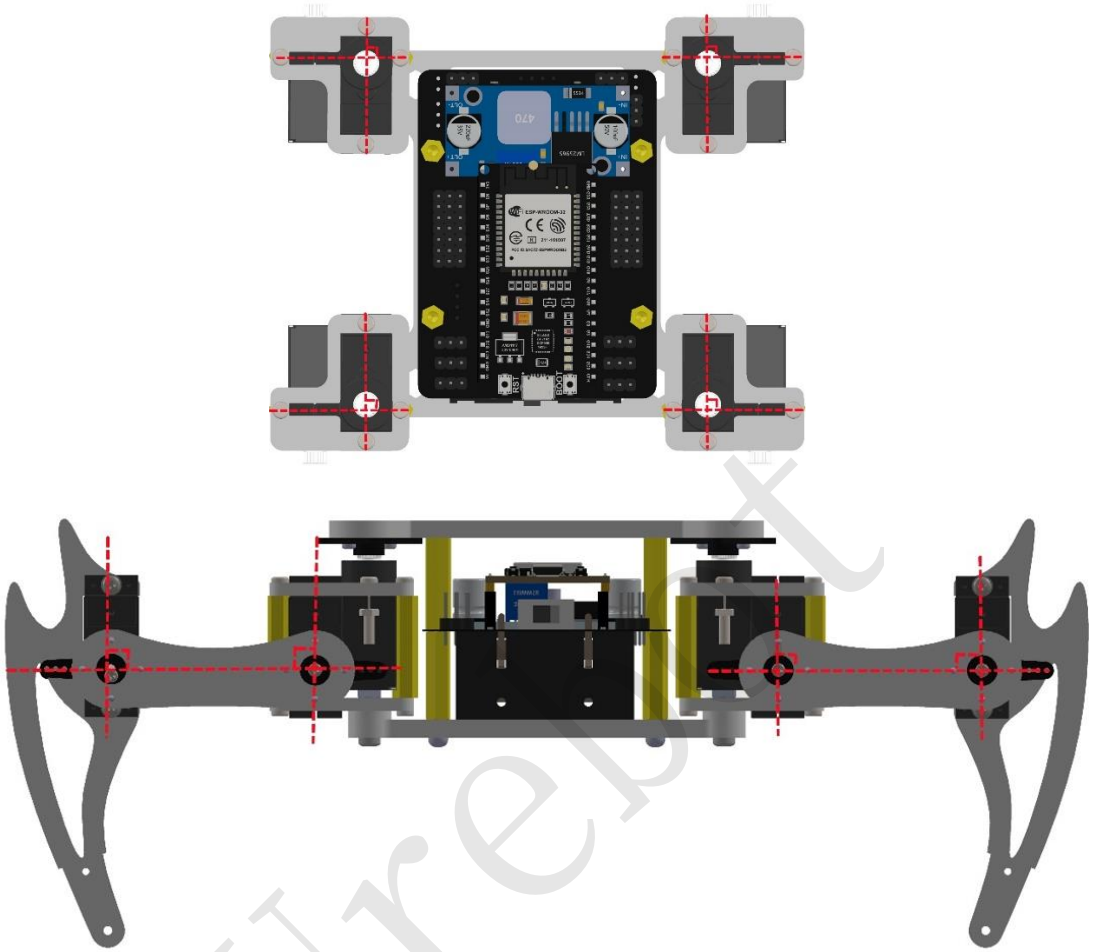
(The 0 between s, 0, 10 represents port 18 in the first string array, input 1 represents port 5, and so on)

(The 10 after s, 0, and 10 represents the adjusted angle, and generally the input value is between 20 and -20)

(Enter s, 0, 10, and then click send. You will notice that the servo motor inserted in port 18 has rotated a bit, and then slowly adjust the angle (keeping parallel) by inputting the correct number again, and then record the final number.)

For example, the final number recorded below s, 0, xx is -5, s, 1, xx, and the final parallel value is -10 (the values for each device are different, and the pictures are for reference only)

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

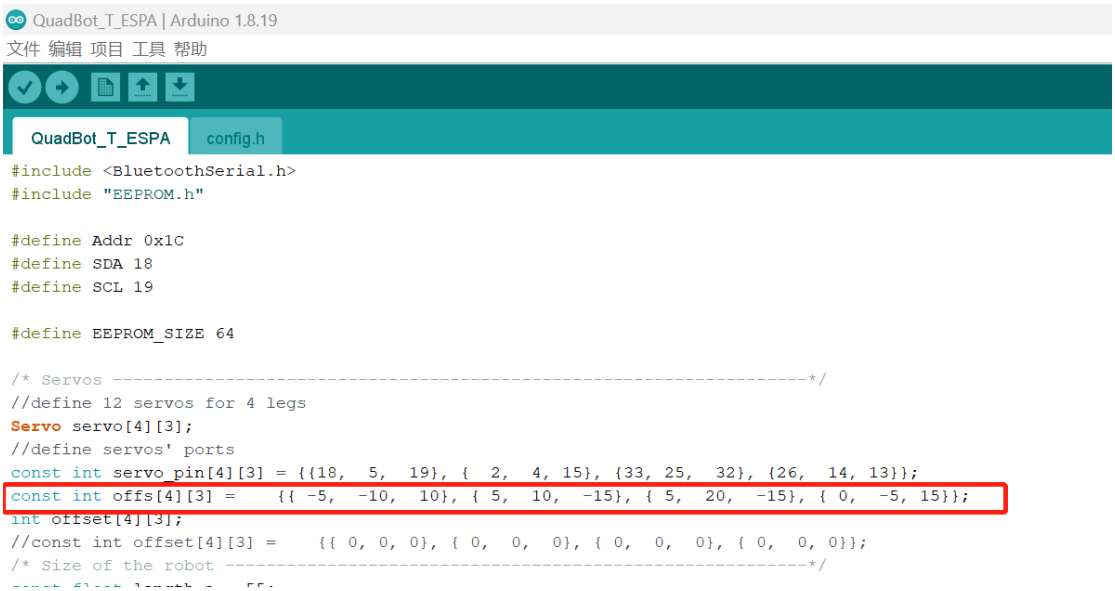


Then download the mobile app control program or webpage control program

(When downloading the program, it is necessary to maintain the shutdown state, otherwise the servo will rotate randomly.)

(Use the same method to manipulate the downloaded program)

Then replace the twelve numbers previously recorded with the numbers in the second string array below



And then burn the control program into the robot