Lesson 17 Servo

Introduction

In this lesson, you will learn how to use the Servo. Servo is a type of geared motor that can only rotate 180 degrees. It is controlled by sending electrical pulses from your Mega 2560 board. These pulses tell the servo what position it should move to.

Hardware Required

✓ 1 * RexQualis Mega 2560

✓ 1 * Servo

✓ 3 * M-M Jumper Wires

Principle

SG90 Servo

Tiny and lightweight with high output power. Servo can rotate approximately 180 degrees (90 in each direction), and works just like the standard kinds but SMALLER. You can use any servo code, hardware or library to control these servos. Good for beginners who want to make stuff move without building a motor controller with feedback & gear box, especially since it will fit in small places. It comes with a 3 horns (arms) and hardware.
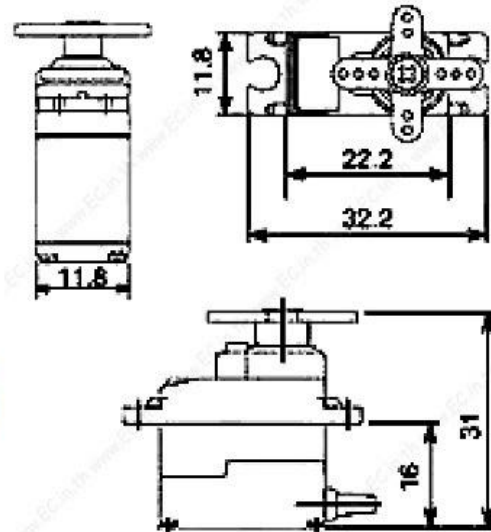
Specifications

•Weight: 9 g

•Dimension: 22.2 x 11.8 x 31 mm approx.

•Stall torque: 1.8 kgf·cm

•Operating speed: 0.1 s/60 degree

•Operating voltage: 4.8 V (~5V)

•Dead band width: 10 µs

•Temperature range: 0 ºC – 55 ºC

Position "0" (1.5 ms pulse) is mi ddle, "90" (~2 ms pulse) is all the way to the right, "-90" (~1 ms pulse) is all the way to the left.
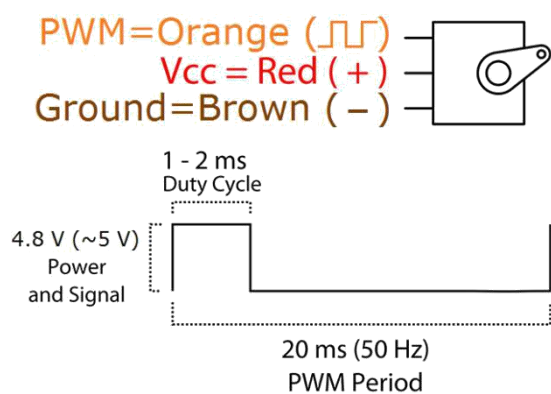
Code interpretation

```
#include <Servo.h>

Servo myservo;    // create servo object to control a servo,can get to eight

int pos = 0;       // variable to store the servo position

void setup() {

myservo.attach(9);    // attaches the servo on pin 9 to the servo object

}

void loop() {

for (pos = 0; pos <= 180; pos += 1) { // goes from 0 degrees to 180 degrees

// in steps of 1 degree

myservo.write(pos);

delay(15);                            // waits 15ms for the servo to reach the position

}

for (pos = 180; pos >= 0; pos -= 1) { // goes from 180 degrees to 0 degrees

myservo.write(pos);

delay(15);                            // waits 15ms for the servo to reach the position

}

}
```
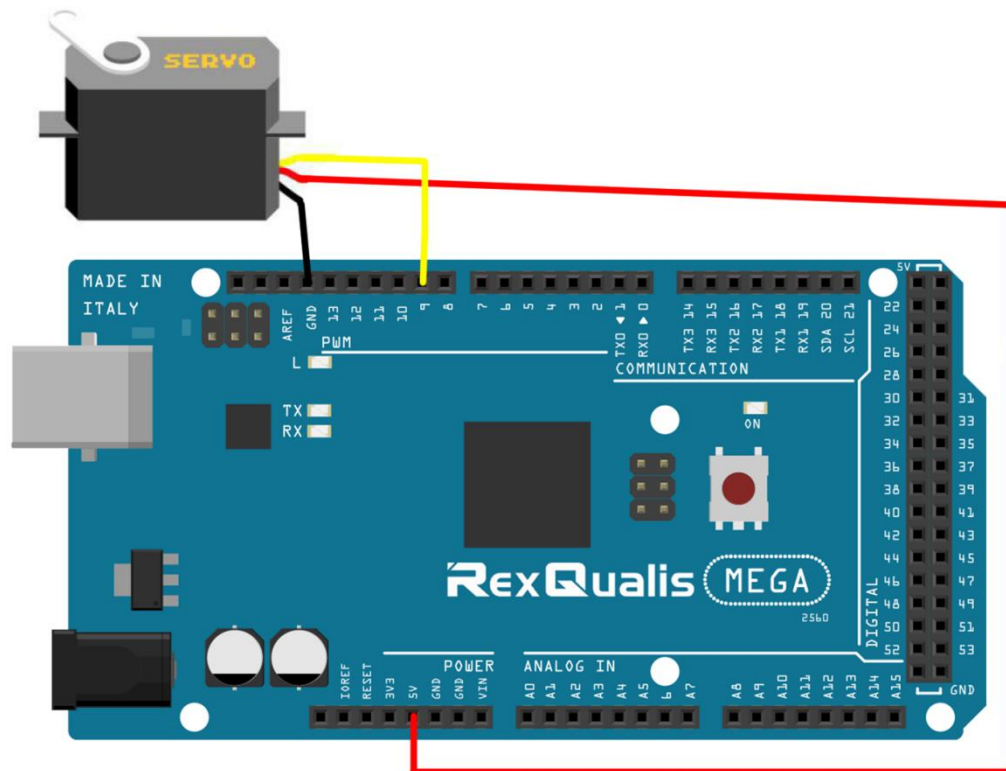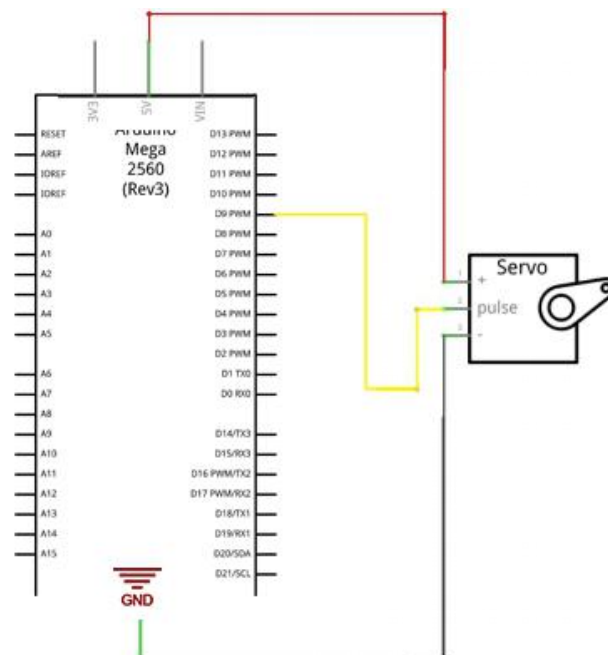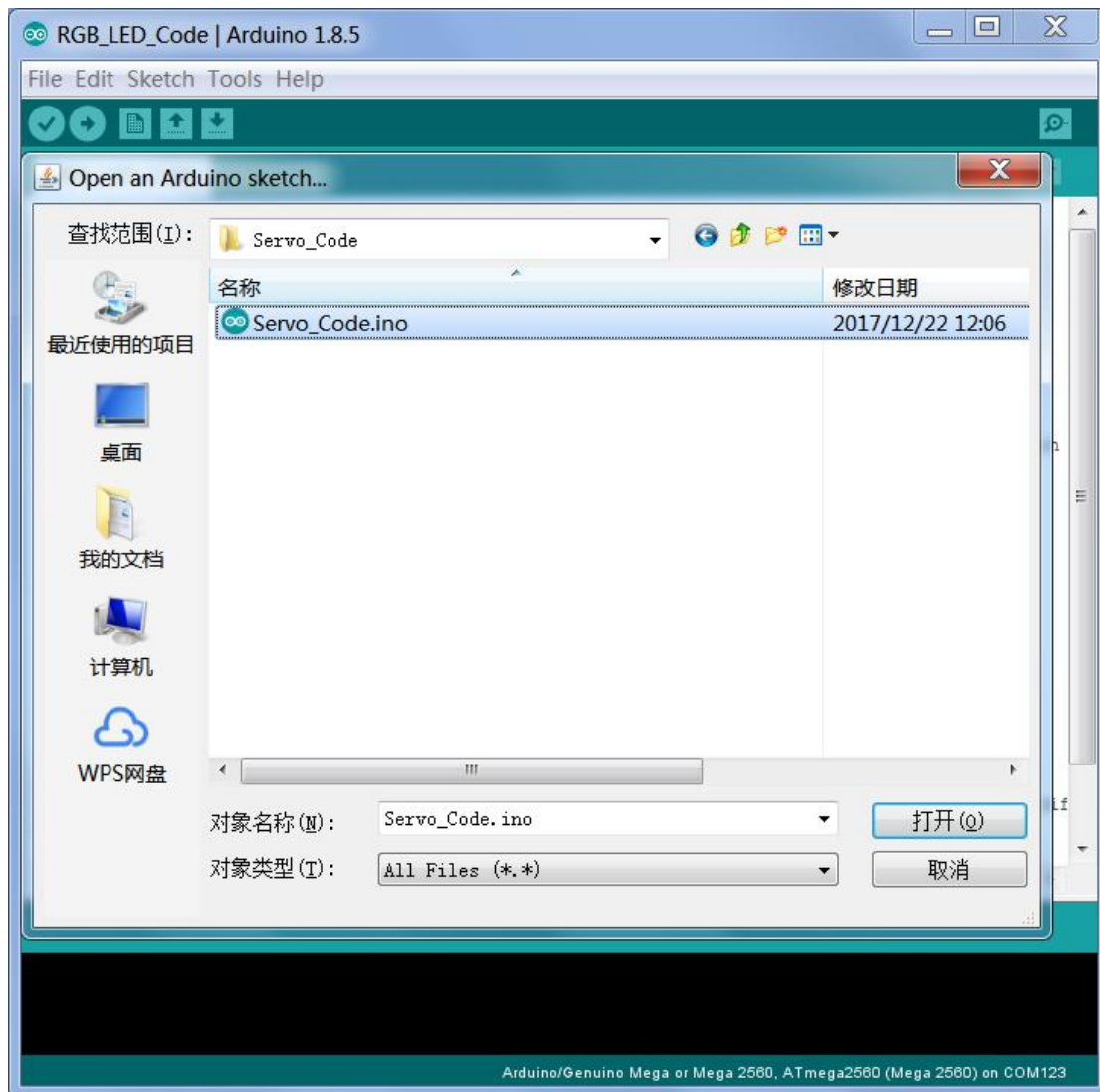
Experimental Procedures

Step 1:Build the circui
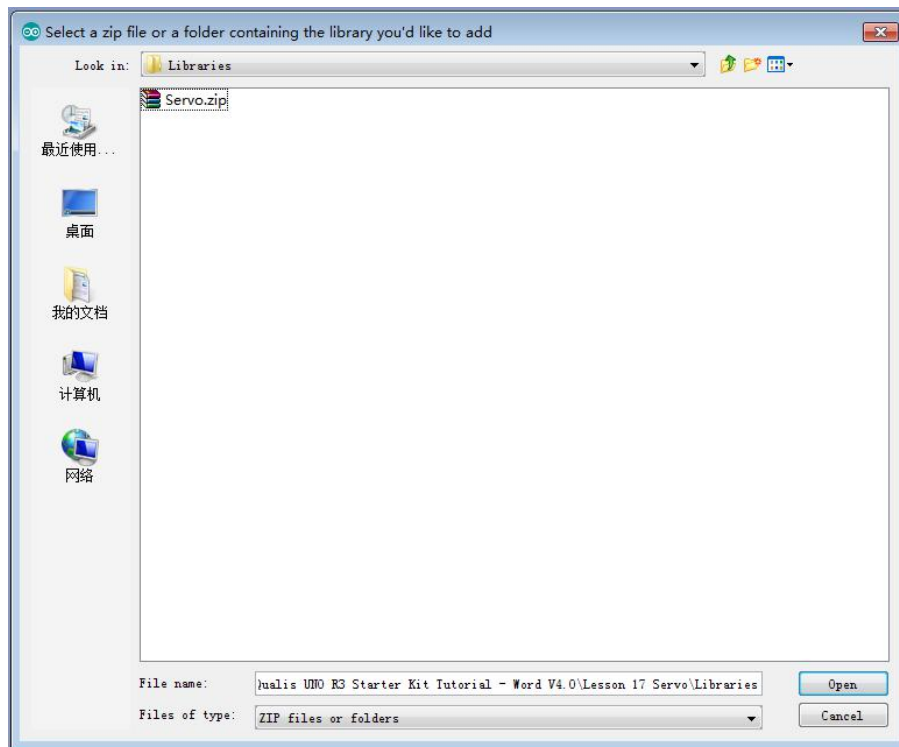

Schematic Diagram
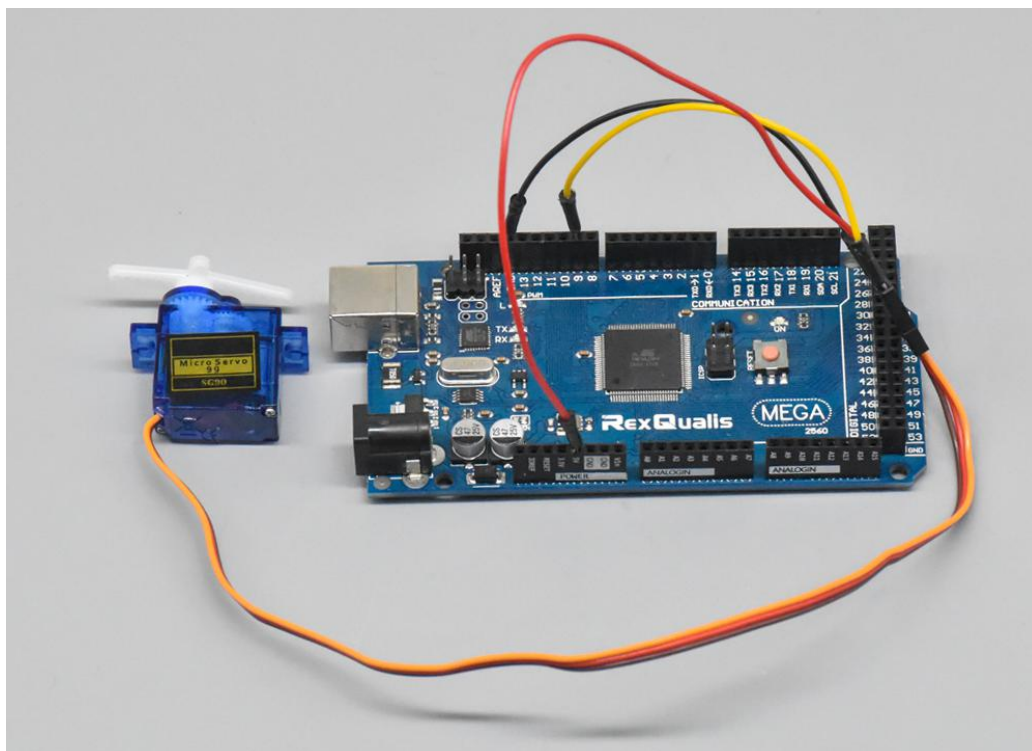
Step 2:Open the code:Servo_Code

Step 3:Attach Arduino Mega 2560 board to your computer via USB cable and check that the 'Board Type' and 'Serial Port' are set correctly.

Step 4:Load the Library:Servo

Step 5:Upload the code to the RexQualis Mega 2560 board.

Then, You can see the servo turns anticlockwise and then turns clockwise.

You can see the video of the experiment results on YouTube:

https://youtu.be/FxrDPXG_xQs

If it isn't working, make sure you have assembled the circuit correctly, verified and uploaded the code to your board.For how to upload the code and install the library, check Lesson 0 Preface.