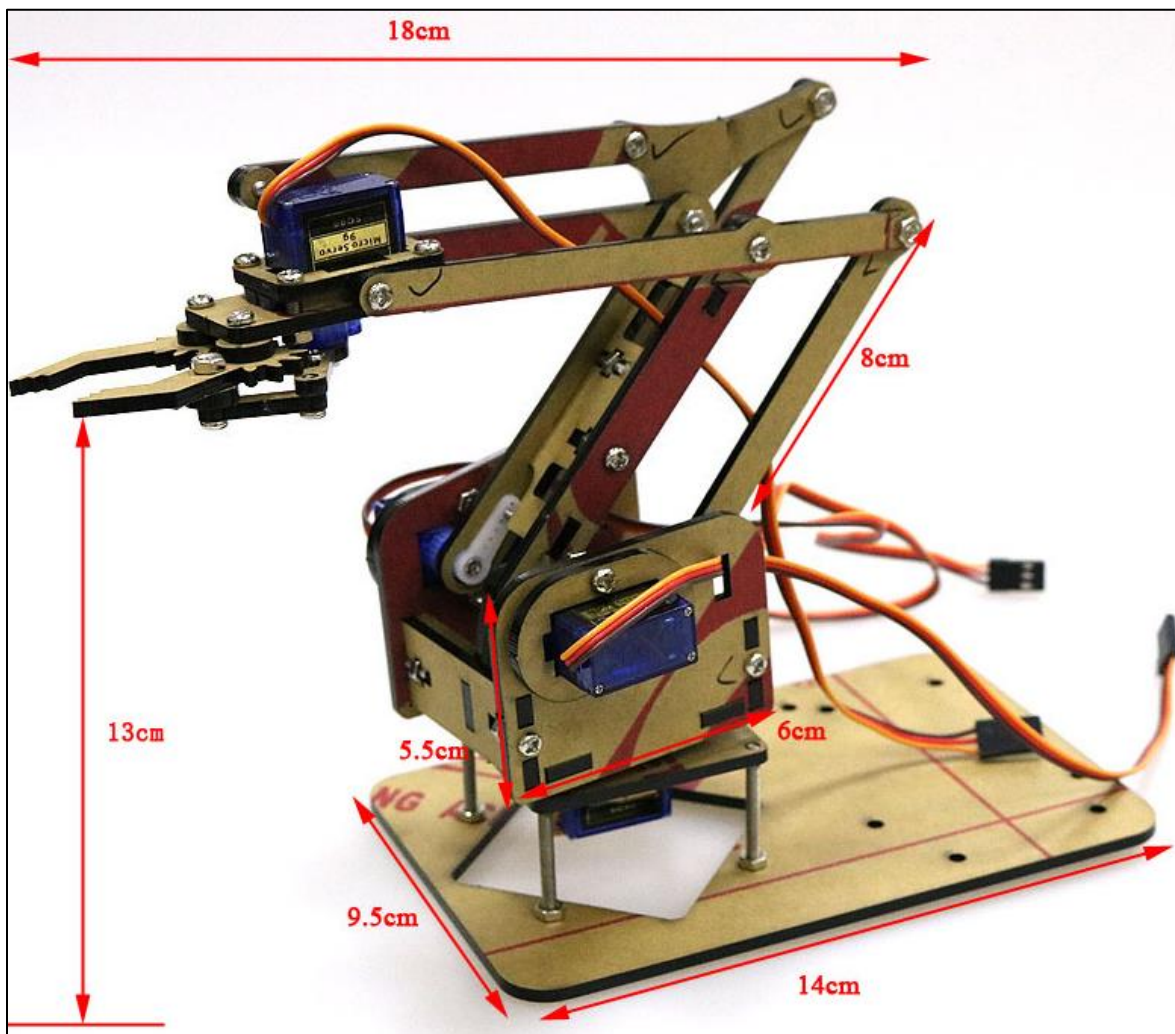


ARDUINO ROBOTIC ARM 4 DOF



Introduction

The MeArm project aims to bring a simple Robot Arm well within the reach and budget of the average educator, student, parent or child. The design brief that has been set out with was to build a full robot arm kit with standard low cost screws, low cost servomotors and using less than 300 x 200mm (~A4) of acrylic. While trying to solve the robotic problem, user also can get to learn about science, technology, engineering, arts and mathematics or STEM.

The more people who are involved with these STEM activities the more chance they have of solving all of life's problems. The MeArm is an Open Sourced Robot Arm. It's small, like pocket sized and that's for a reason. It can be cut entirely from an A4 (or more accurately 300x200mm) sheet of acrylic and built with 4pcs cheap hobby servos. It supposed to be an educational aid, or more accurately a toy. It still needs some tinkering but is at a good first draft state.

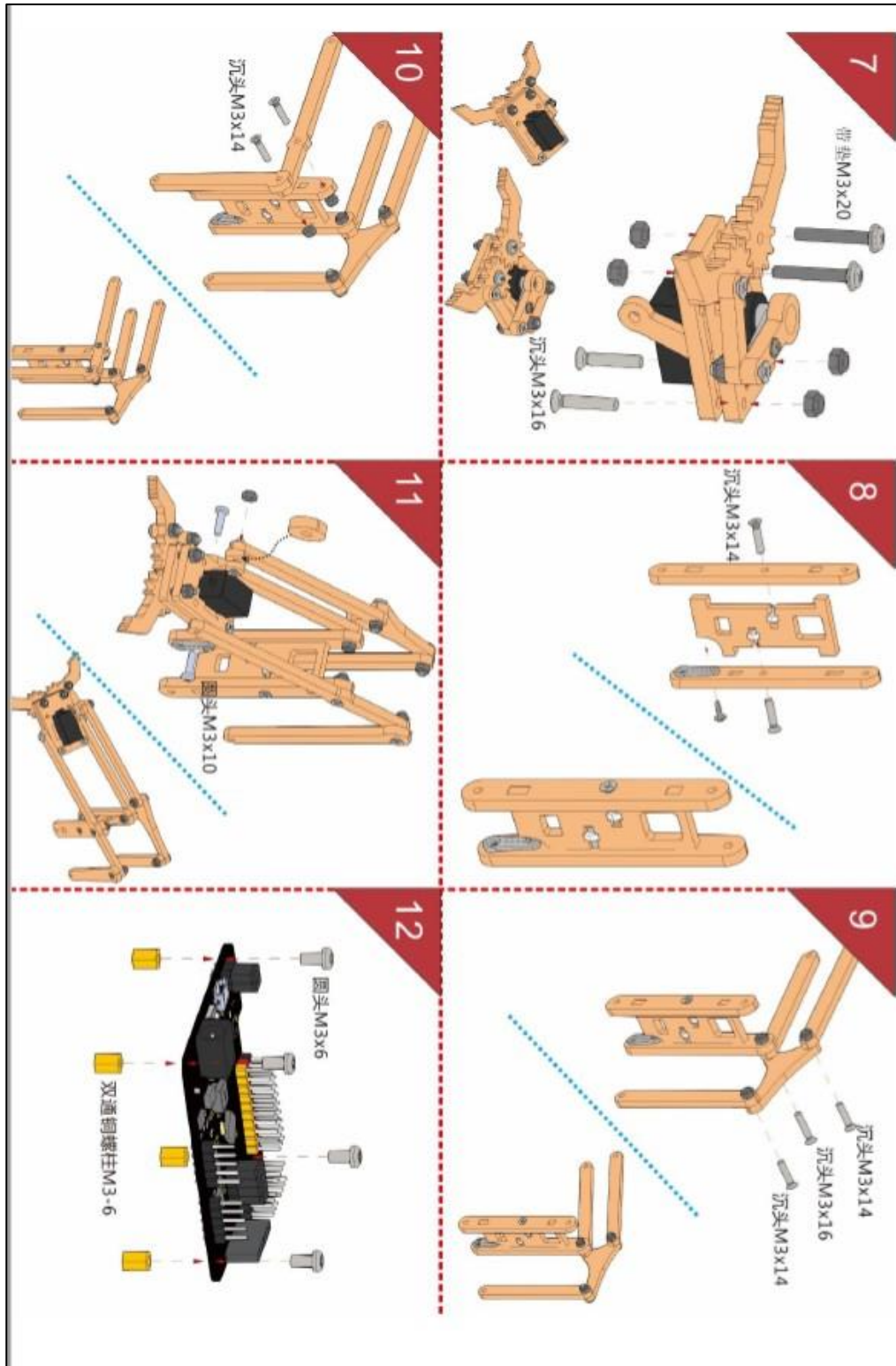
Component List

1. Servo Motor SG90S (Blue) - 3set
2. Servo Motor MG90S (Black) - 1set
3. Robotic Arm Acrylic Kit - 1set
4. Arduino UNO R3 (CH340) + Cable - 1pcs
5. Arduino Sensor Shield V5 - 1pcs
6. Joystick Module - 2pcs
7. Jumper Wire Female to Female - 10pcs
8. Power Adapter DC 5v 2A - 1pcs
9. DC Jack (Female) Plug Converter - 1pcs
10. Single Core Cable - 1m



Installation Manual

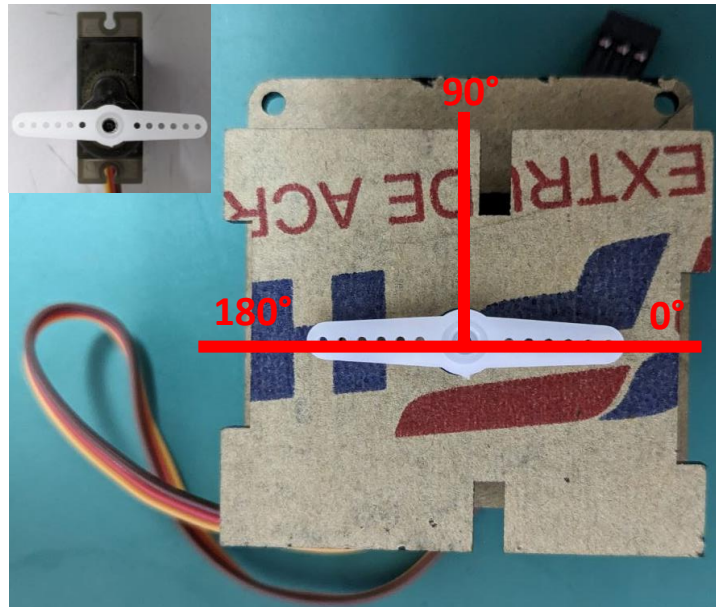
Reference: [Assembly of MeArm Mechanical Arm \(gitnova.com\)](http://gitnova.com)



Installing Servo

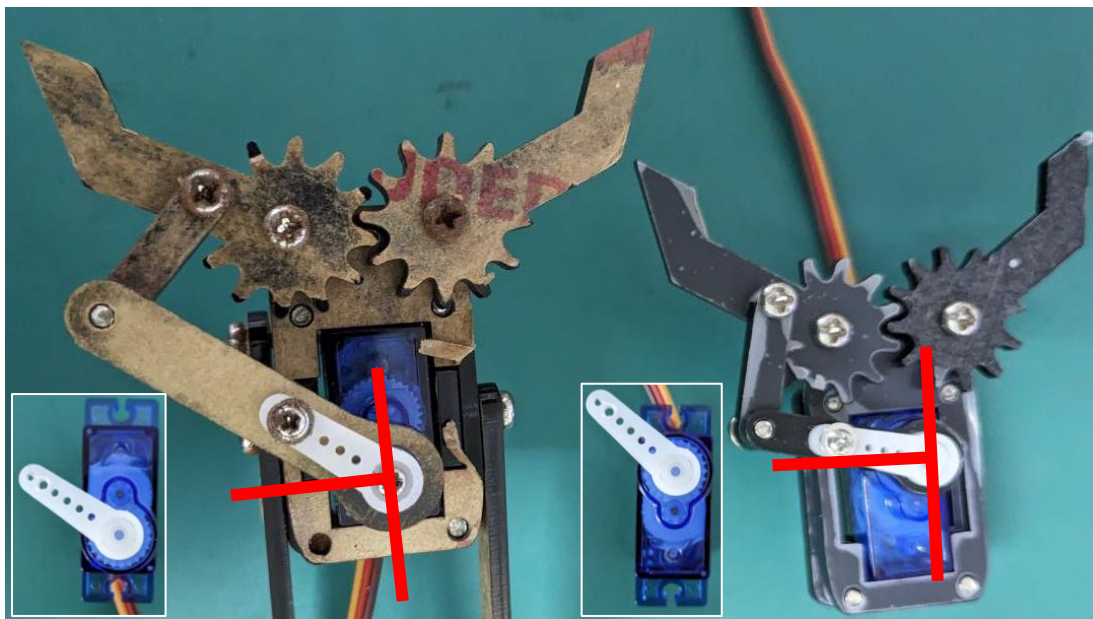
A. Base Servo (Black Servo MG90S)

- Make sure to set the servo angle to 90° before installing the servo.
- Align the servo arm as picture below.



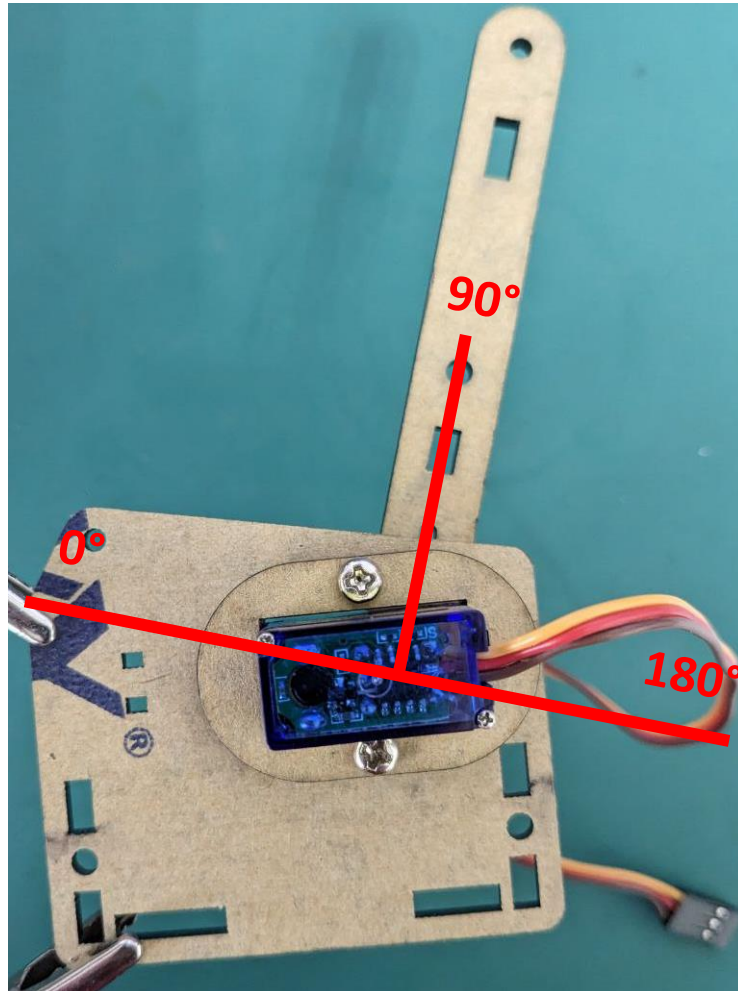
B. Gripper Servo (Blue Servo SG90S)

- Make sure to set the servo angle to 35° before installing the servo.
- Make sure the gripper is open state as picture below.



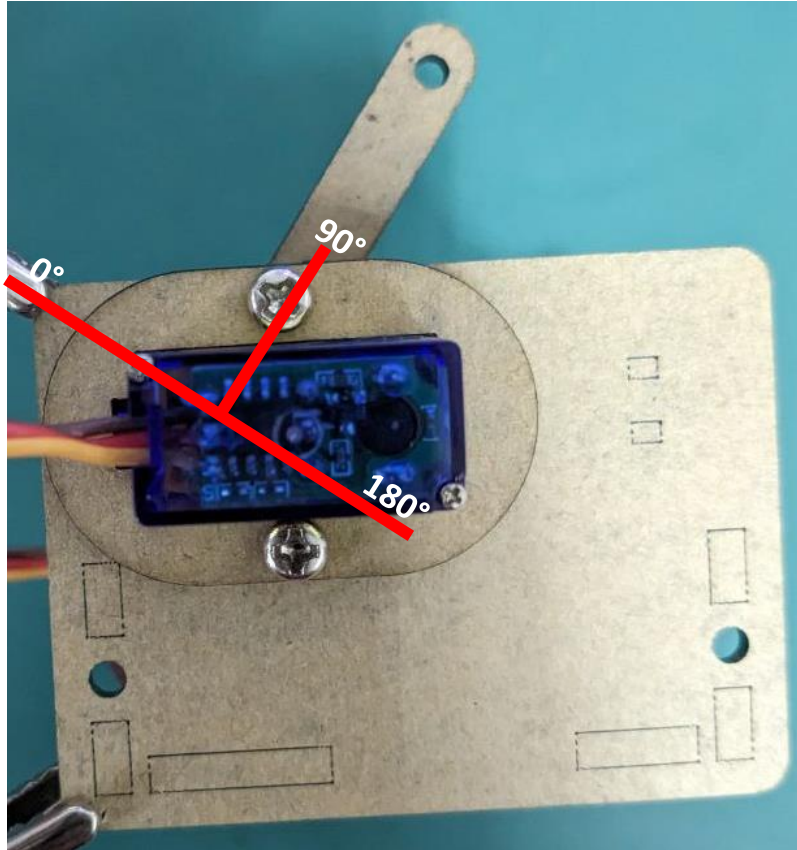
C. Shoulder Servo (Blue Servo SG90S)

- Make sure to set the servo angle to 90° before installing the servo.
- Align the servo arm as picture below.



D. Elbow Servo (Blue Servo SG90S)

- Make sure to set the servo angle to 90° before installing the servo.
- Align the servo arm as picture below.



Sample Servo Degree Code

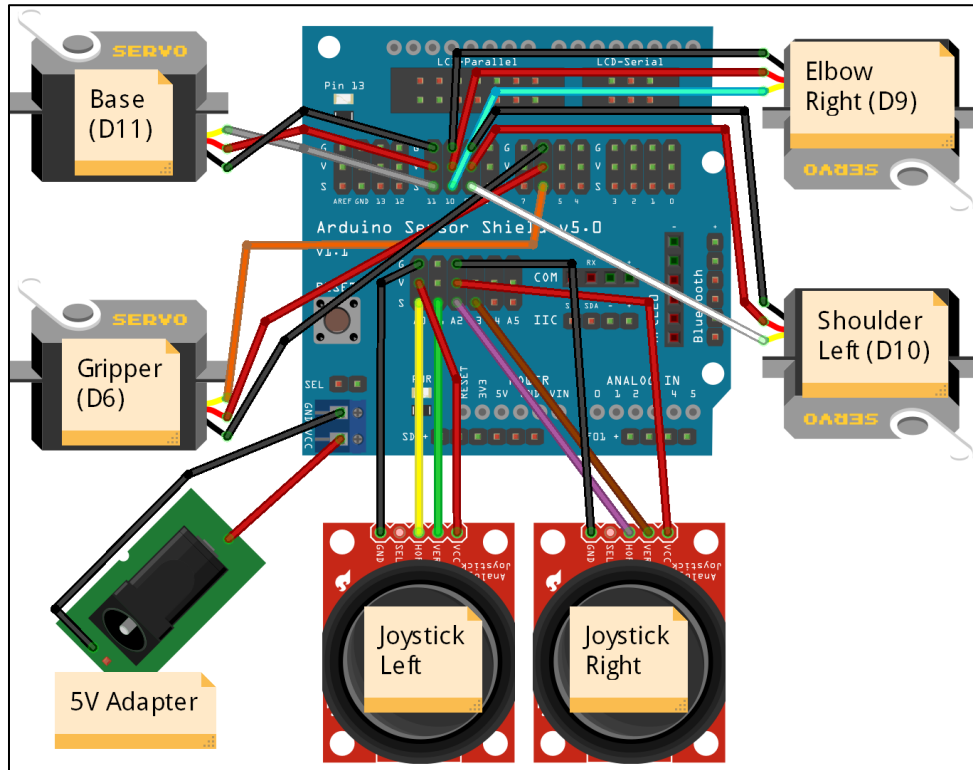
- Upload the code & open serial monitor to control Servo.

```
Servo_Degree_Input | Arduino 1.8.19
File Edit Sketch Tools Help

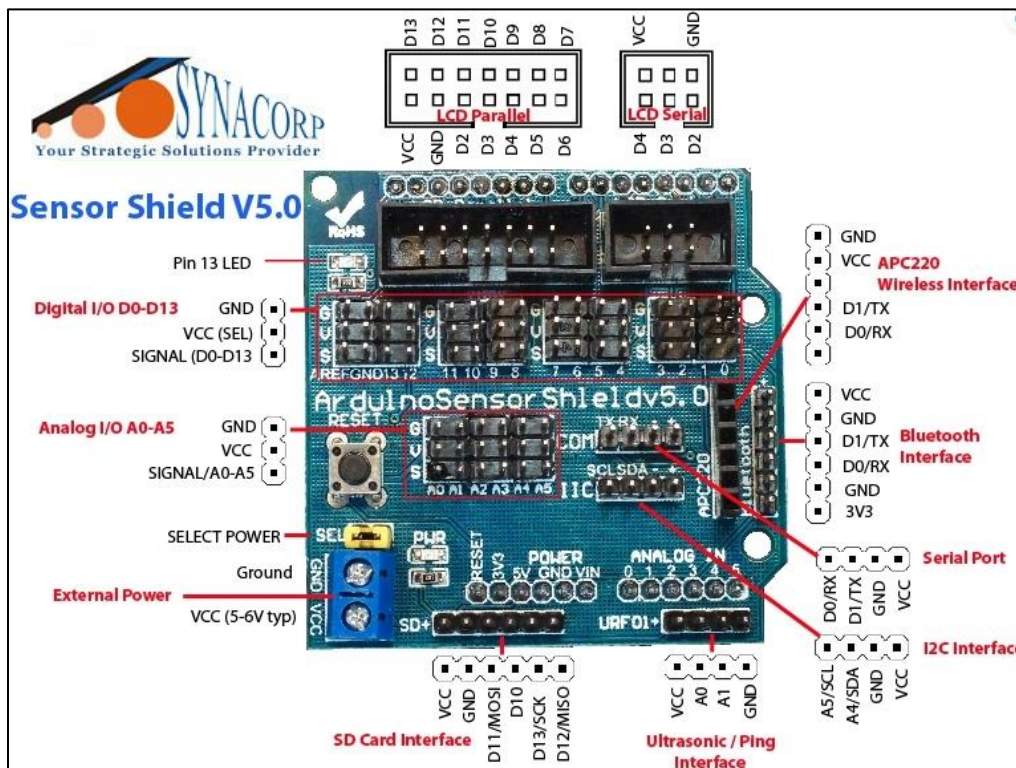
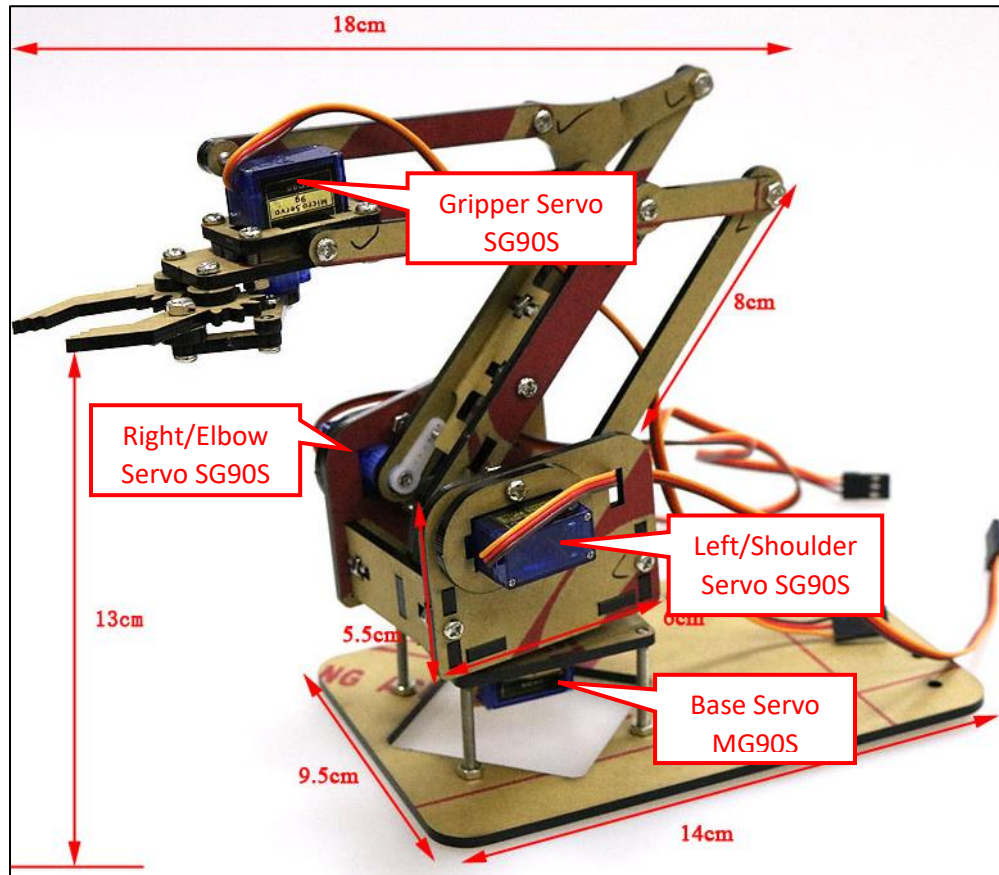
Servo_Degree_Input
1 #include <Servo.h>
2
3 Servo myservo; // Create servo object to control a servo
4
5 // UNCOMMENT ONLY ONE SERVO AT A TIME !!!
6
7 //int servoPin = 11; // set the control pin of servo 1 to D11 (BASE)
8 int servoPin = 9; // set the control pin of servo 2 to D9 (ELBOW)
9 //int servoPin = 10; // set the control pin of servo 3 to D10 (SHOULDER)
10 //int servoPin = 6; // set the control pin of servo 4 to D6 (CLAW)
11
12 void setup() {
13   Serial.begin(9600); // Start serial communication
14   myservo.attach(servoPin); // Attach the servo to the specified pin
15   Serial.print("Please input Degree angle ");
16 }
```

```
COM15
15:31:21.638 -> Please input Degree angle
15:31:25.317 -> Moving servo to
15:31:25.317 -> 0
15:31:30.203 -> Moving servo to
15:31:30.203 -> 90
```

Circuit Diagram

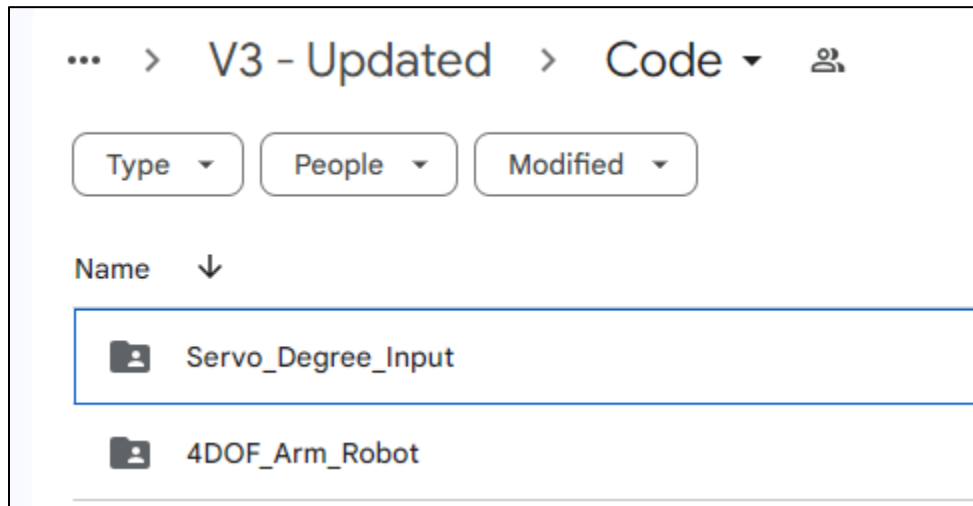


Arduino Sensor Shield V5	Servo MG90S (Base) *Black Color*	Arduino Sensor Shield V5	Joystick Module Left
Data 11 (D11)	Signal (S)	Analog 0 (A0)	VRX
VCC	VCC	Analog 1 (A1)	VRY
GND	GND	VCC	VCC
Arduino Sensor Shield V5	Servo SG90S (Gripper)	GND	GND
Data 6 (D6)	Signal (S)	Arduino Sensor Shield V5	Joystick Module Right
VCC	VCC	Analog 2 (A2)	VRX
GND	GND	Analog 3 (A3)	VRY
Arduino Sensor Shield V5	Servo SG90S (Shoulder/Left)	VCC	VCC
Data 10 (D10)	Signal (S)	GND	GND
VCC	VCC	Arduino Sensor Shield V5	DC Power Jack
GND	GND	VCC	Positive Terminal (+)
Arduino Sensor Shield V5	Servo SG90S (Elbow/Right)	GND	Negative Terminal (-)
Data 9 (D9)	Signal (S)		
VCC	VCC		
GND	GND		



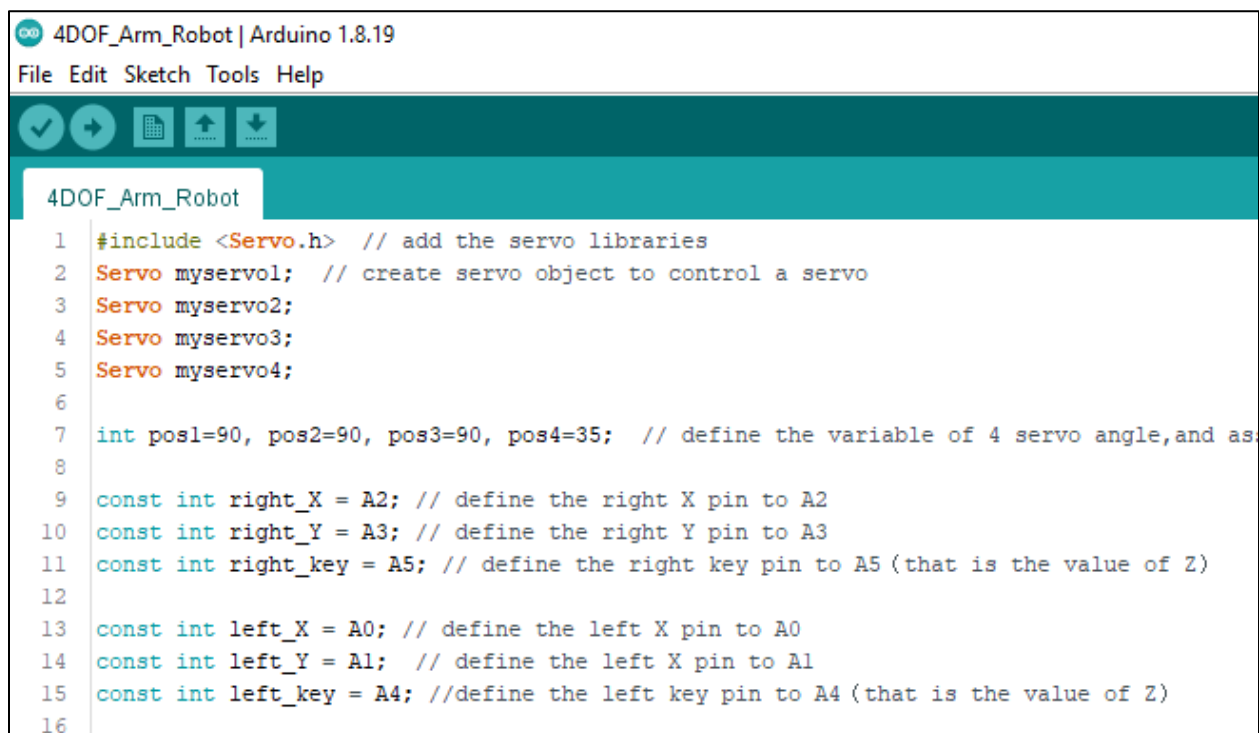
[Sample Code](#)

(<https://drive.google.com/drive/folders/1Z7JmC-jB0DCIawvgztPx6U4AWh0Y7-Xd?usp=sharing>)



4DOF_Arm_Robot

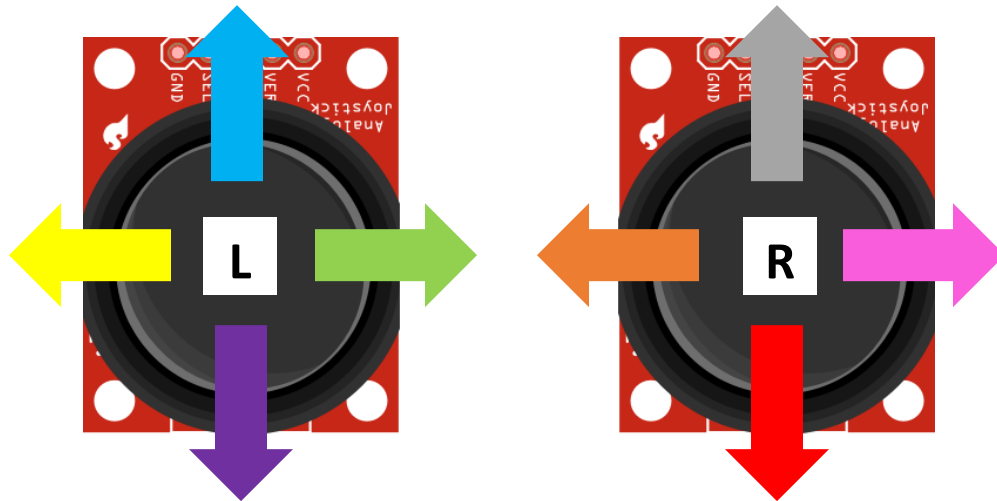
Upload the provided code & control using the Left & Right Joystick



```
4DOF_Arm_Robot | Arduino 1.8.19
File Edit Sketch Tools Help

4DOF_Arm_Robot
1 #include <Servo.h> // add the servo libraries
2 Servo myservo1; // create servo object to control a servo
3 Servo myservo2;
4 Servo myservo3;
5 Servo myservo4;
6
7 int pos1=90, pos2=90, pos3=90, pos4=35; // define the variable of 4 servo angle, and as
8
9 const int right_X = A2; // define the right X pin to A2
10 const int right_Y = A3; // define the right Y pin to A3
11 const int right_key = A5; // define the right key pin to A5 (that is the value of Z)
12
13 const int left_X = A0; // define the left X pin to A0
14 const int left_Y = A1; // define the left X pin to A1
15 const int left_key = A4; //define the left key pin to A4 (that is the value of Z)
16
```

Control / Movement Set



Color	Servo	Action
L	Gripper	Close
L	Gripper	Open
L	Elbow/Right	Move Backward
L	Elbow/Right	Move Forward
R	Base	Turn Base to Right
R	Base	Turn Base to Left
R	Shoulder/Left	Move Upward
R	Shoulder/Left	Move Downward