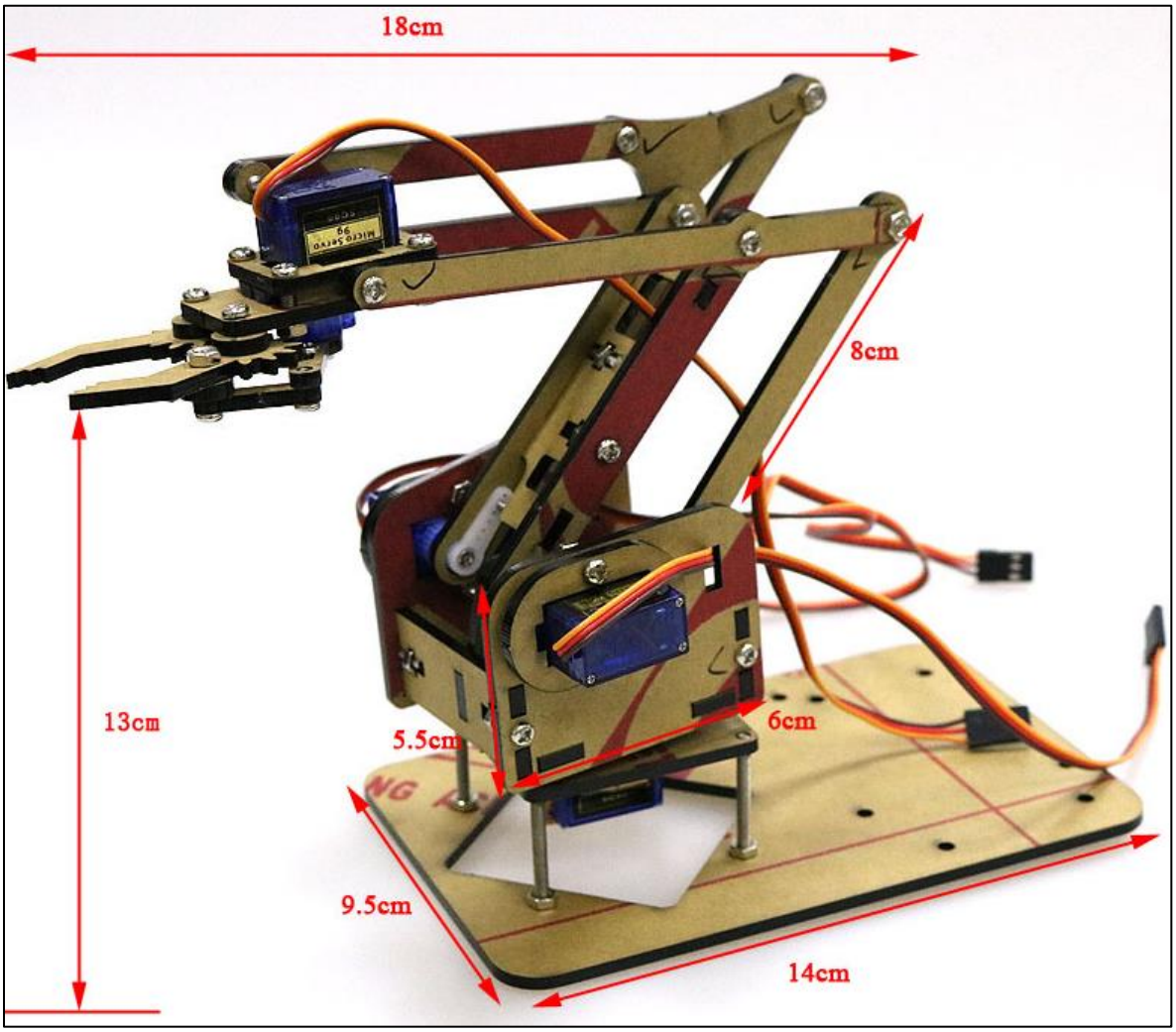
SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

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.

SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

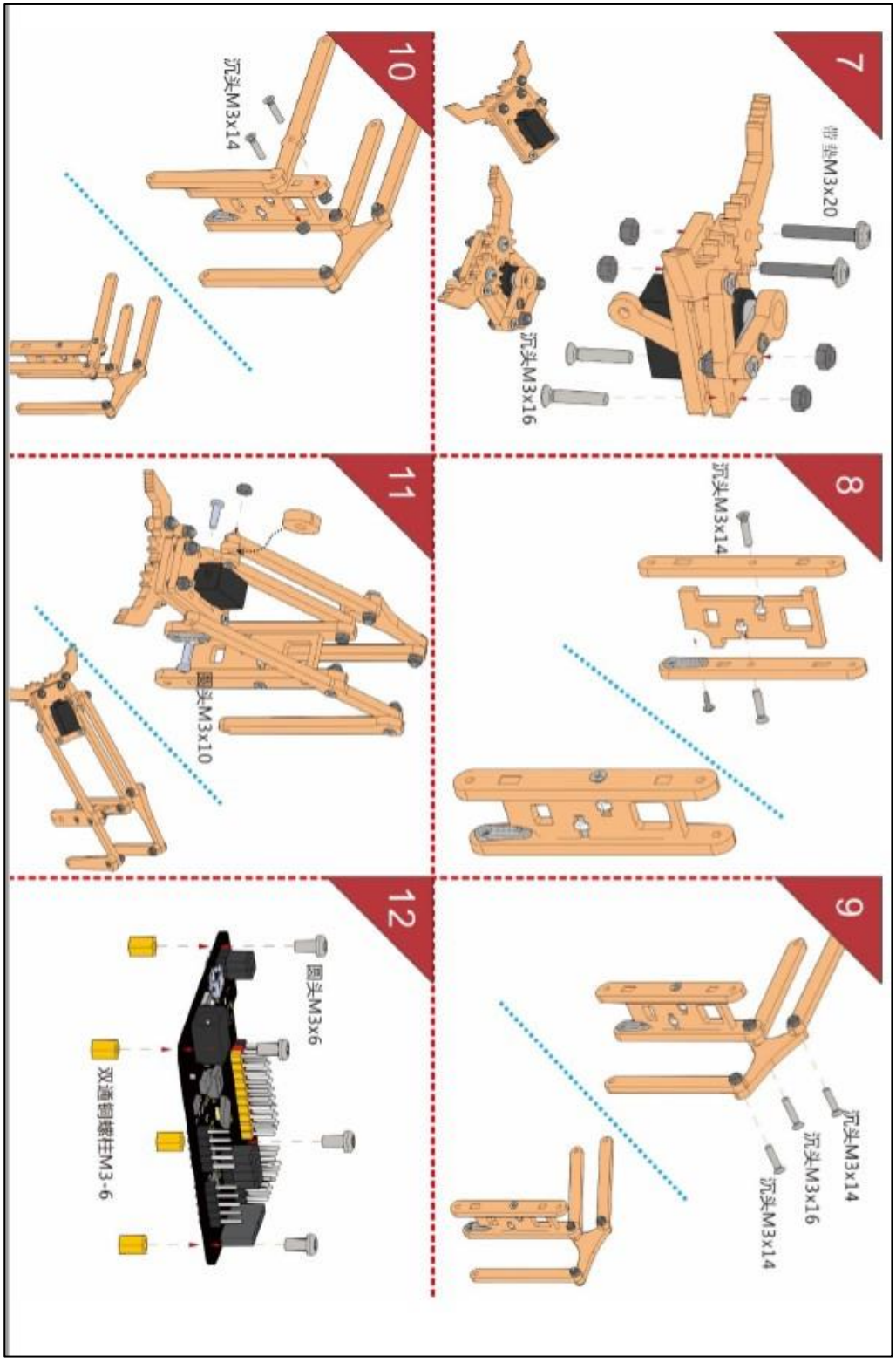
Component List

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

SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

Installation Manual

Reference: Assembly of MeArm Mechanical Arm (gitnova.com)

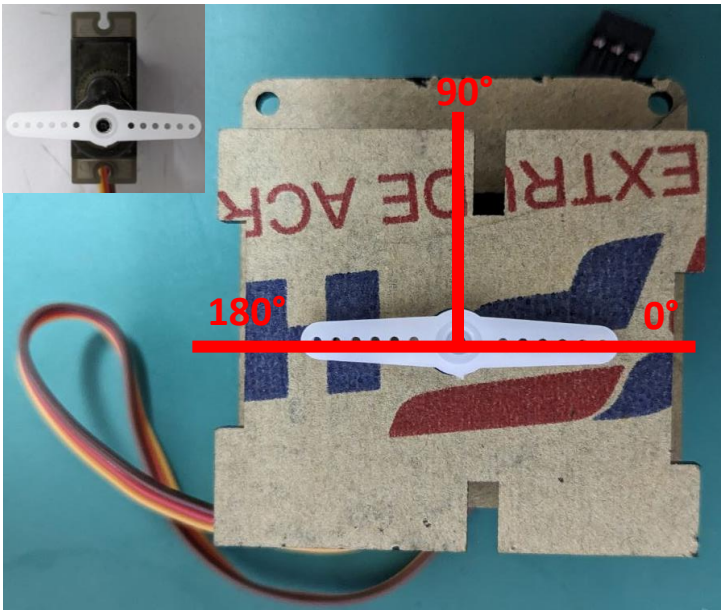


SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

Installing Servo

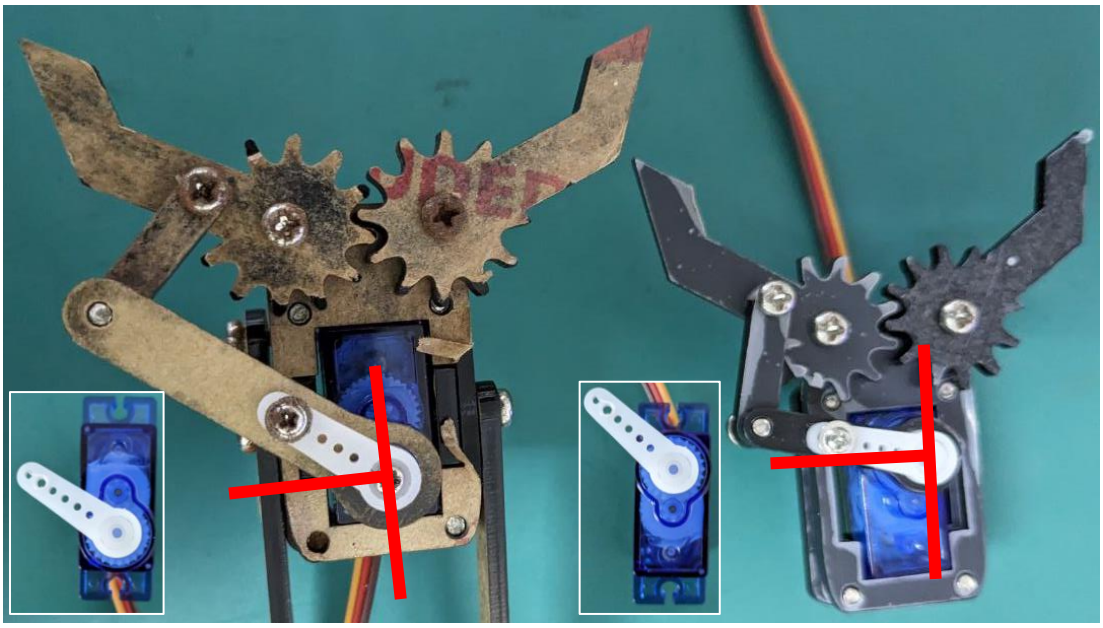
A. Base Servo (Black Servo MG90S)

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



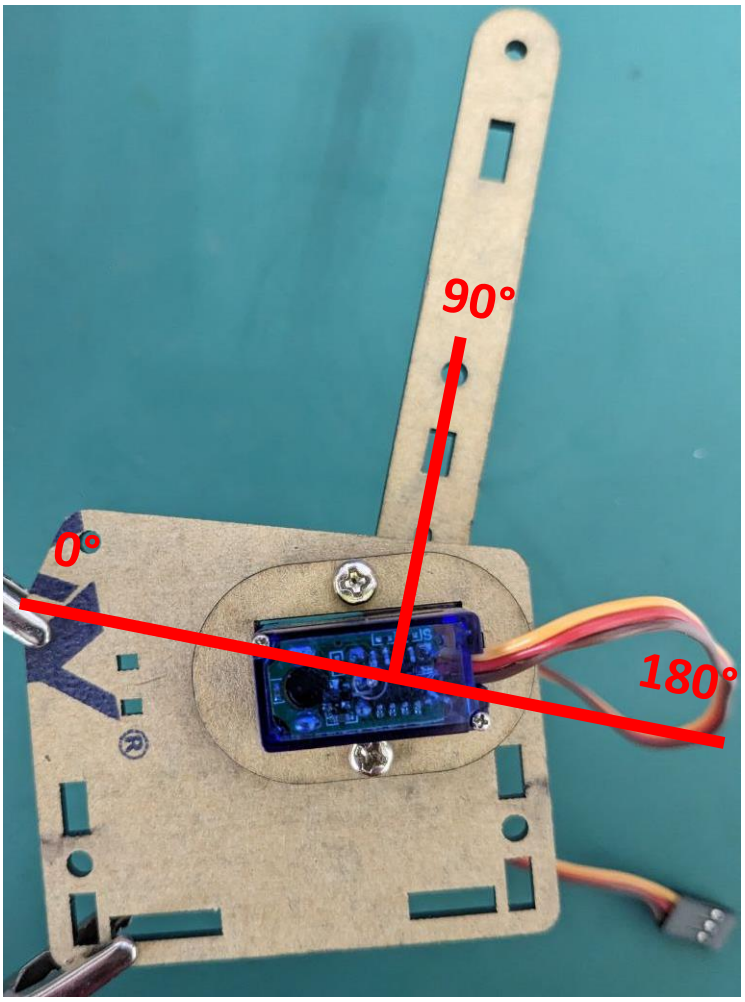
B. Gripper Servo (Blue Servo SG90S)

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



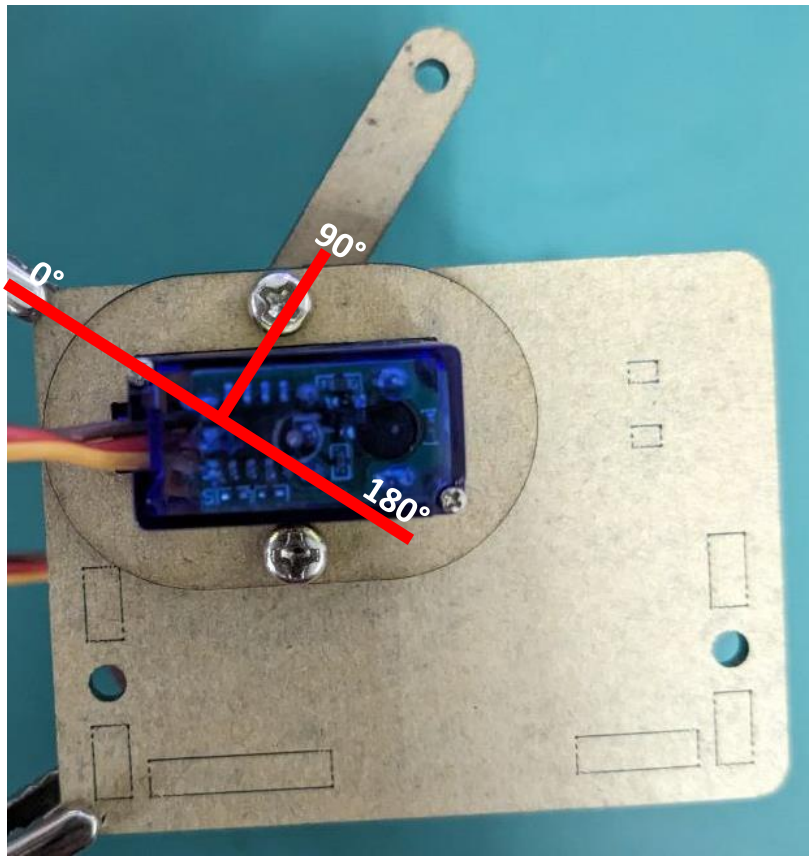
C. Shoulder Servo (Blue Servo SG90S)

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



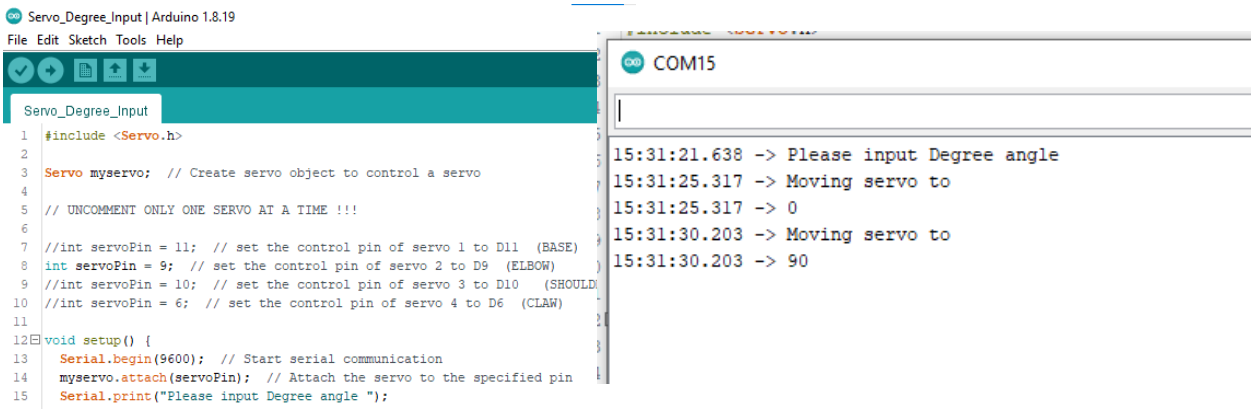
D. Elbow Servo (Blue Servo SG90S)

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



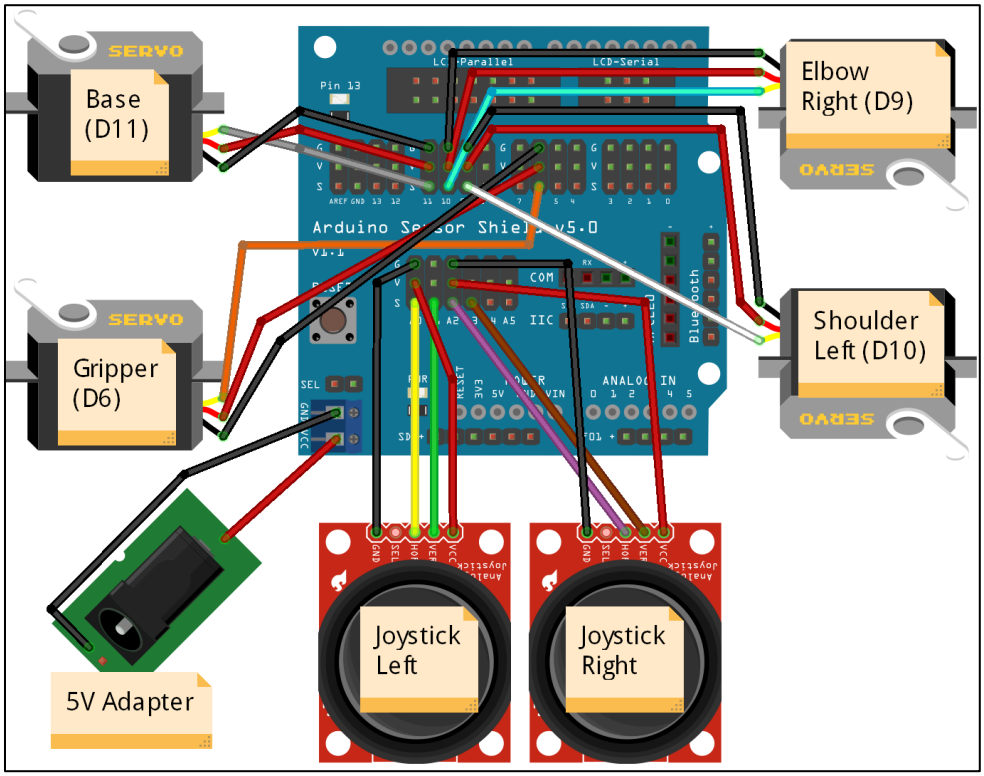
Sample Servo Degree Code

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



SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

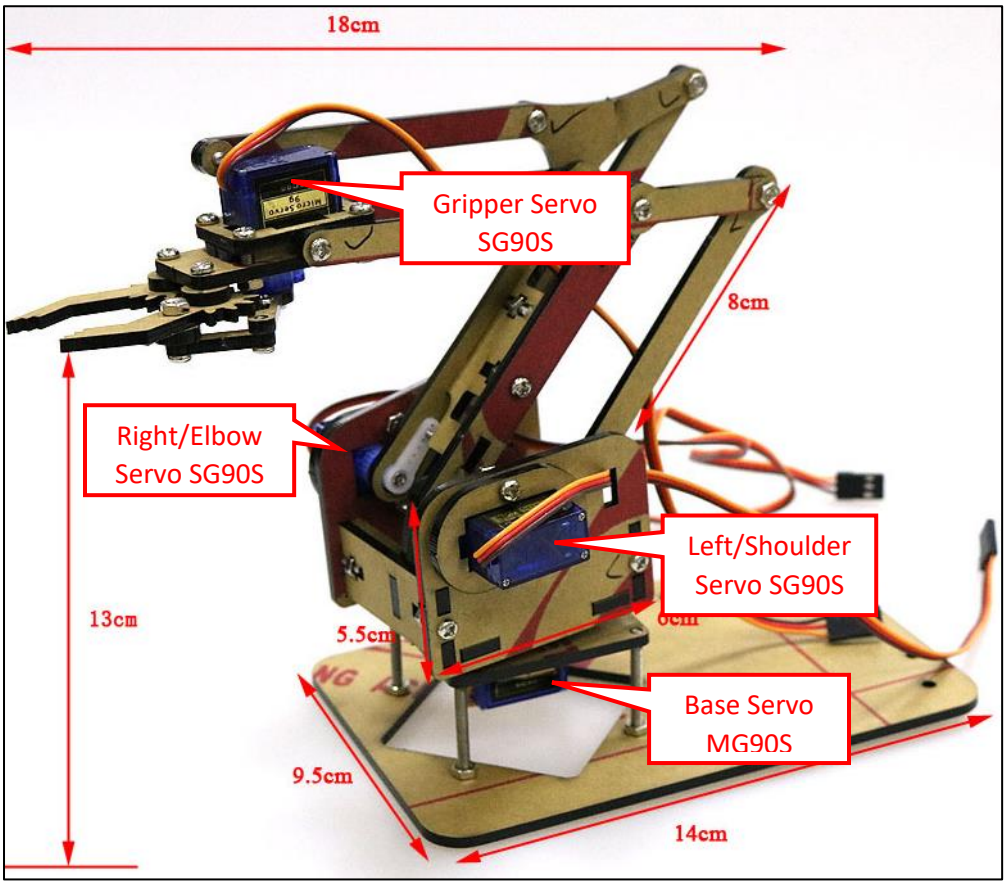
Circuit Diagram

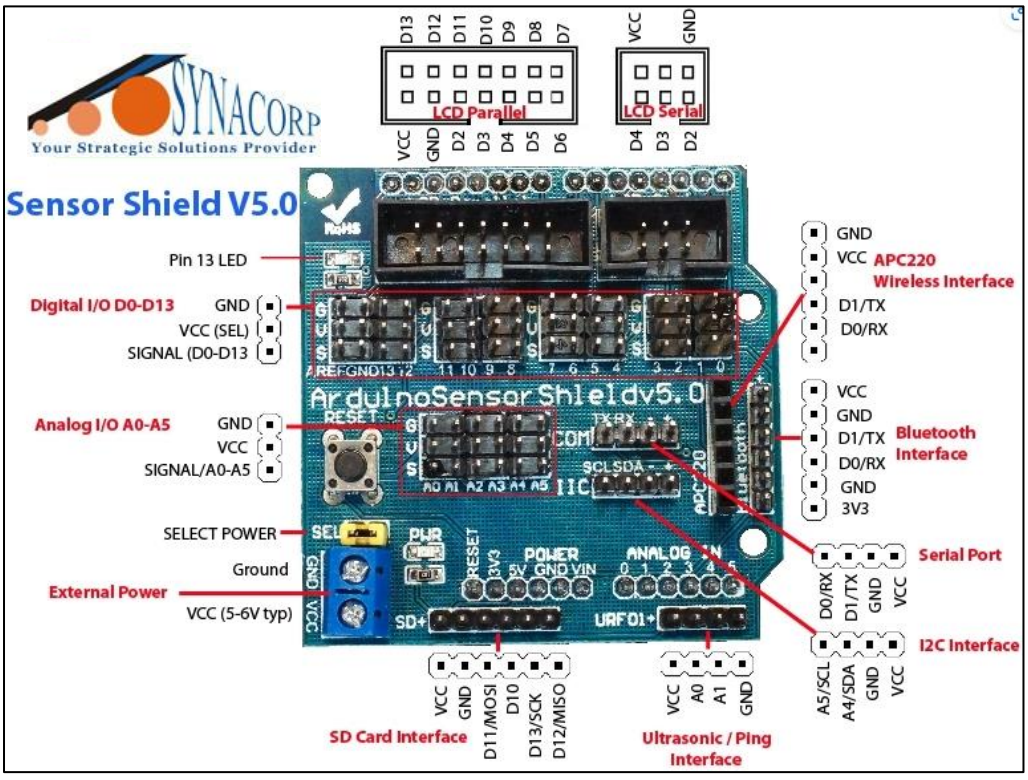


Arduino Sensor Shield V5	Servo MG90S (Base) *Black Color*
Data 11 (D11)	Signal (S)
VCC	VCC
GND	GND
Arduino Sensor Shield V5	**Servo SG90S (Gripper)**
Data 6 (D6)	Signal (S)
VCC	VCC
GND	GND
Arduino Sensor Shield V5	**Servo SG90S (Shoulder/Left)**
Data 10 (D10)	Signal (S)
VCC	VCC
GND	GND
Arduino Sensor Shield V5	**Servo SG90S (Elbow/Right)**
Data 9 (D9)	Signal (S)
VCC	VCC
GND	GND

Arduino Sensor Shield V5	Joystick Module Left
Analog 0 (A0)	VRX
Analog 1 (A1)	VRY
VCC	VCC
GND	GND
Arduino Sensor Shield V5	**Joystick Module Right**
Analog 2 (A2)	VRX
Analog 3 (A3)	VRY
VCC	VCC
GND	GND
Arduino Sensor Shield V5	**DC Power Jack**
VCC	Positive Terminal (+)
GND	Negative Terminal (-)

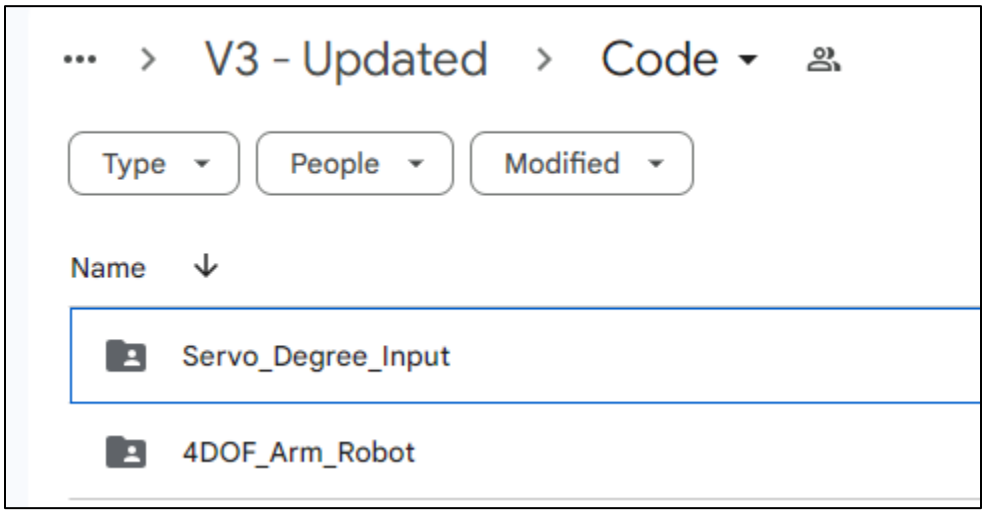
SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my





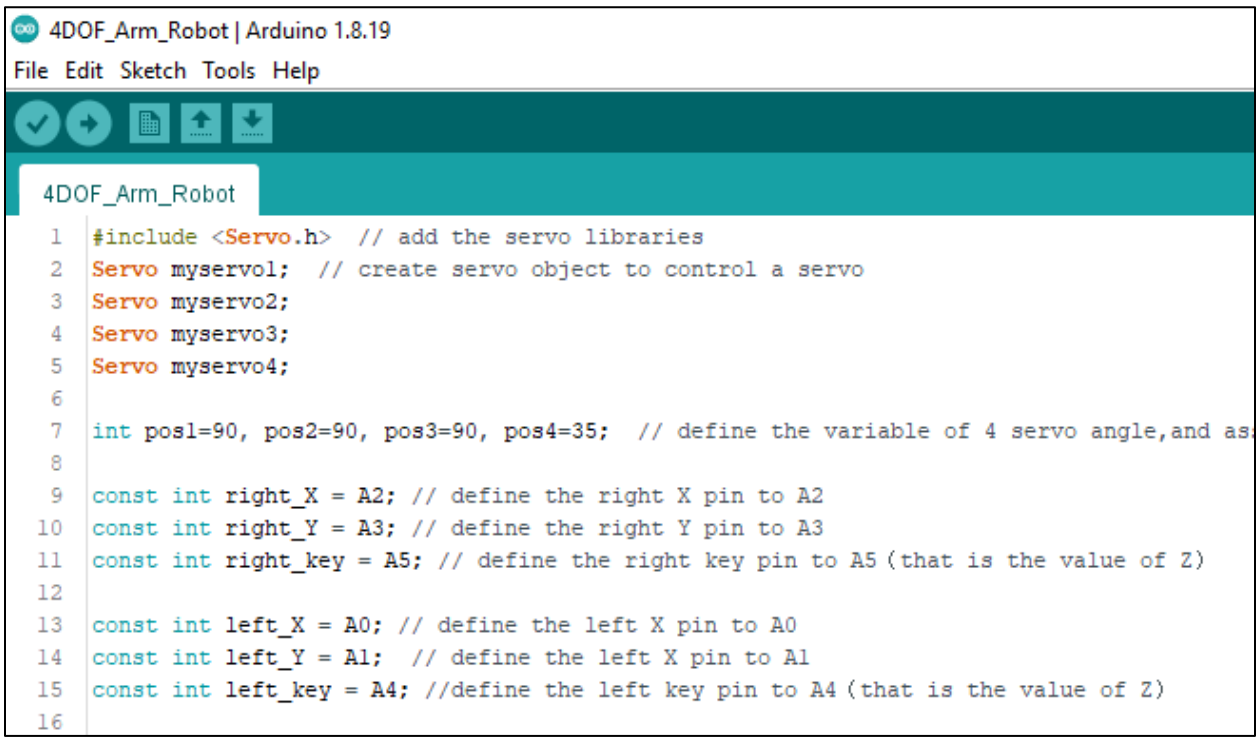
Sample Code

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



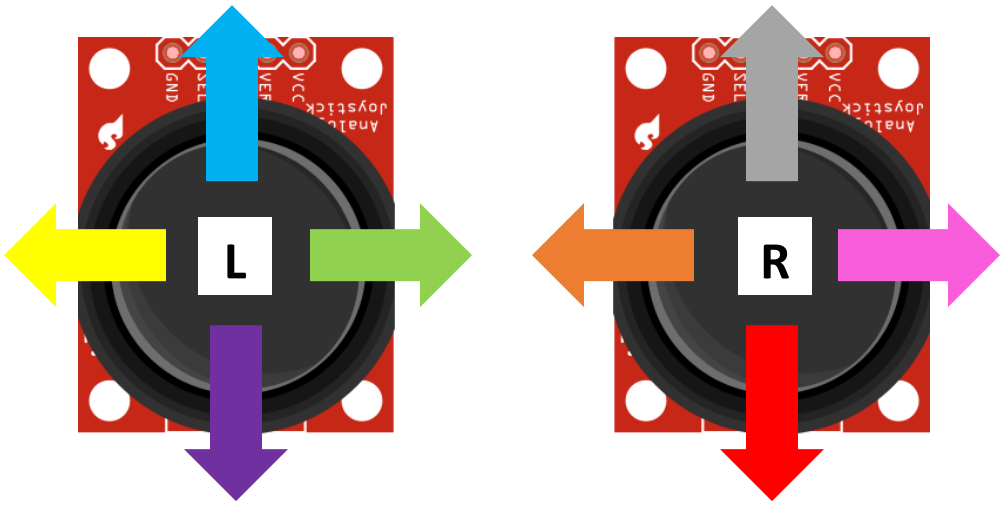
4DOF_Arm_Robot

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



SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong 1/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

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