Lesson 2 Sliding Rail Control

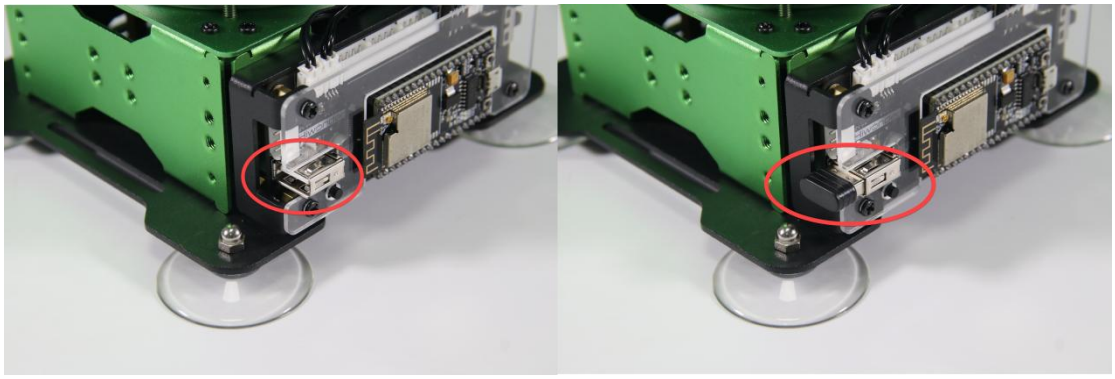
1. Preparation

1.1Rail Sliding Assembly

There are two cables including 4PIN and 3Pin on sliding rail. The 4PIN cable is required to connect to IIC interface of robot arm and 3PIN cable to 3PIN interface for supplying power. The specific wiring tutorial refers to “Lesson Sliding Rail Introduction and Assembly” under the same directory path.

1.2 Handle Receiver and Battery

1) Insert the handle receiver to the controller, as the figure shown below:



2) Prepare your own two tripe-A batteries. Remove the back shell of handle and load the batteries. Pay attention to the negative and positive poles of the batteries.

2. Operation

In this game, MaxArm will be assembled on sliding and controlled by wireless handle.

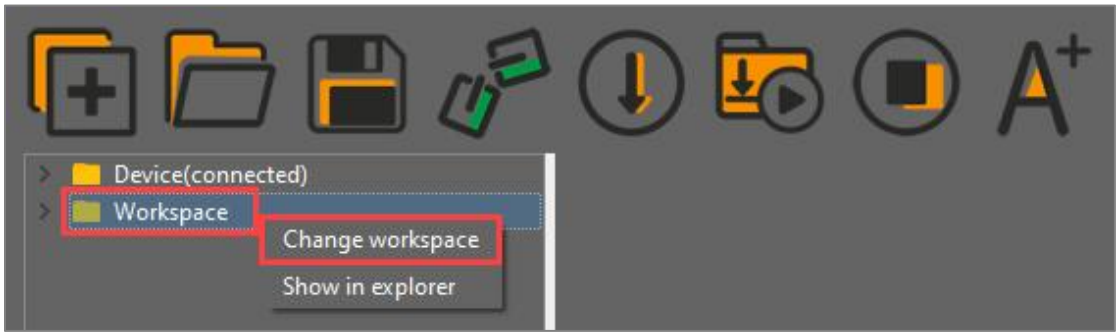
You can check the program in folder “9. Sliding Rail Control/ Program Files/ main.py”.

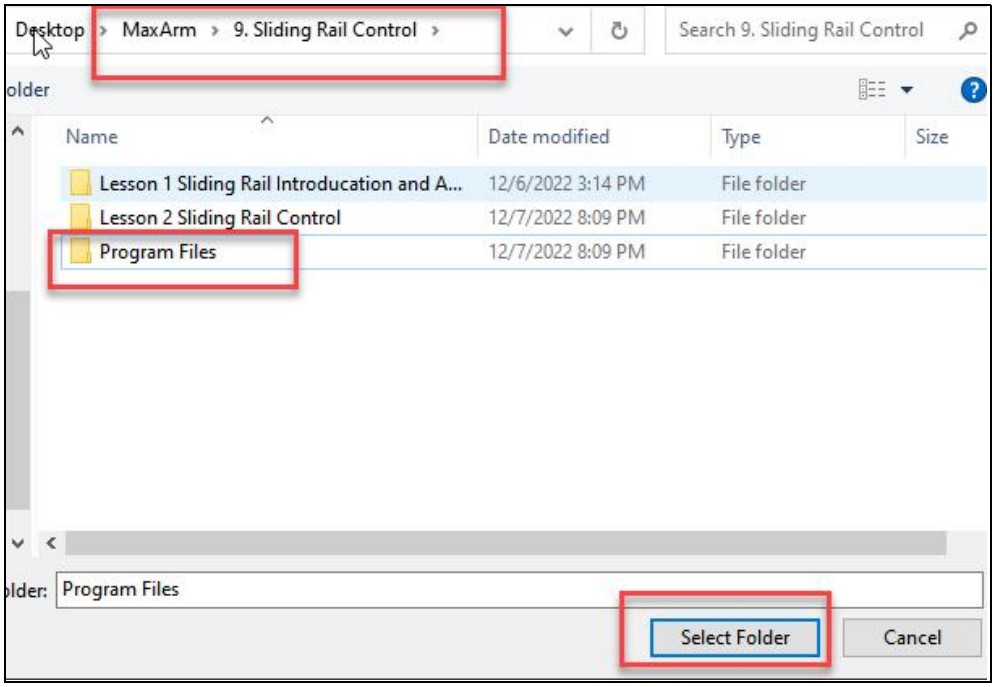
```
145     elif msg == PSB_UP | PSB_PRESS:
146       if arm.set_position((x, y+de, z),s):
147         y += de
148         which_button_press = msg
149       else: buzzer.setBuzzer(20)
150
151     elif msg == PSB_DOWN | PSB_PRESS:
152       if arm.set_position((x, y-de, z),s):
153         y -= de
154         which_button_press = msg
155       else: buzzer.setBuzzer(20)
156
157     elif msg == PSB_LEFT | PSB_PRESS:
158       if arm.set_position((x-de, y, z),s):
159         x += de
160         which_button_press = msg
161       else: buzzer.setBuzzer(20)
162
163     elif msg == PSB_RIGHT | PSB_PRESS:
164       if arm.set_position((x+de, y, z),s):
165         x -= de
166         which_button_press = msg
167       else: buzzer.setBuzzer(20)
168
169     elif msg == PSB_L1 | PSB_PRESS:
170       if arm.set_position((x, y, z+de),s):
171         z += de
172         which_button_press = msg
173       else: buzzer.setBuzzer(20)
174
175     elif msg == PSB_L2 | PSB_PRESS:
176       if arm.set_position((x, y, z-de),s):
177         z -= de
178         which_button_press = msg
179       else: buzzer.setBuzzer(20)
```

3. Program Download

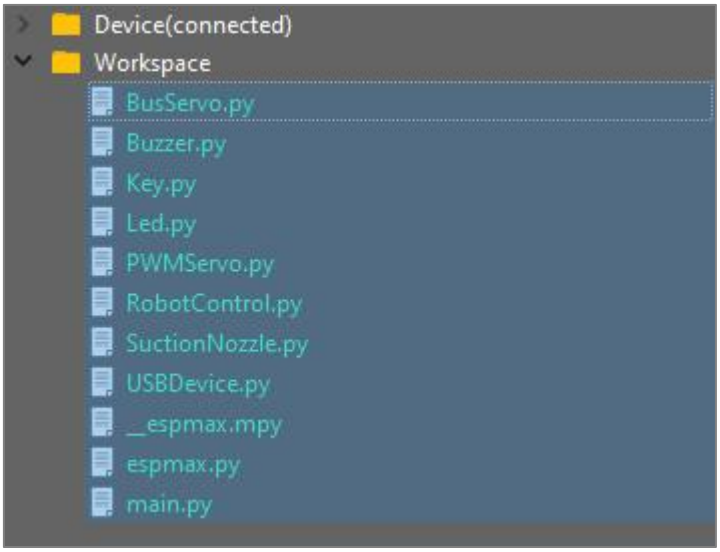
Please connect MaxArm to Python editor according to the tutorial in folder “4. MaxArm Underlying Program/Python Development/Lesson 1 Set Development Environment”.

1) After connecting, change the path of Workspace to “9. Sliding Rail Control” and select the folder “Handle Control Program”..

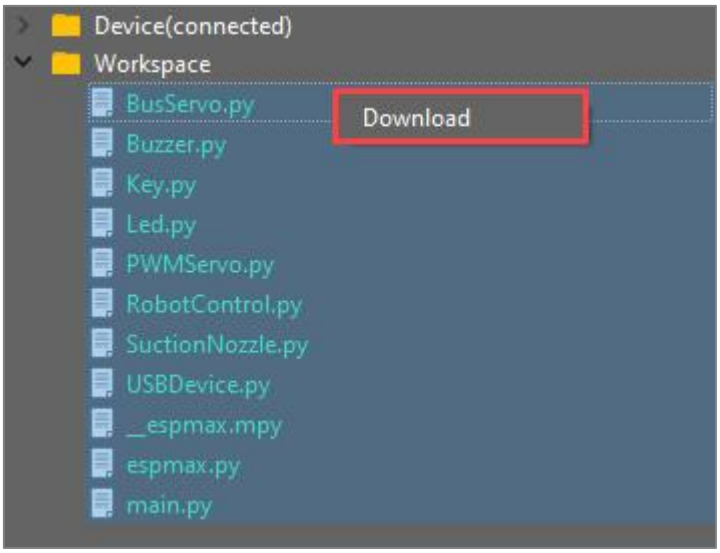




2) First click the folder “Handle Control Program” and then select all the program files in the folder.

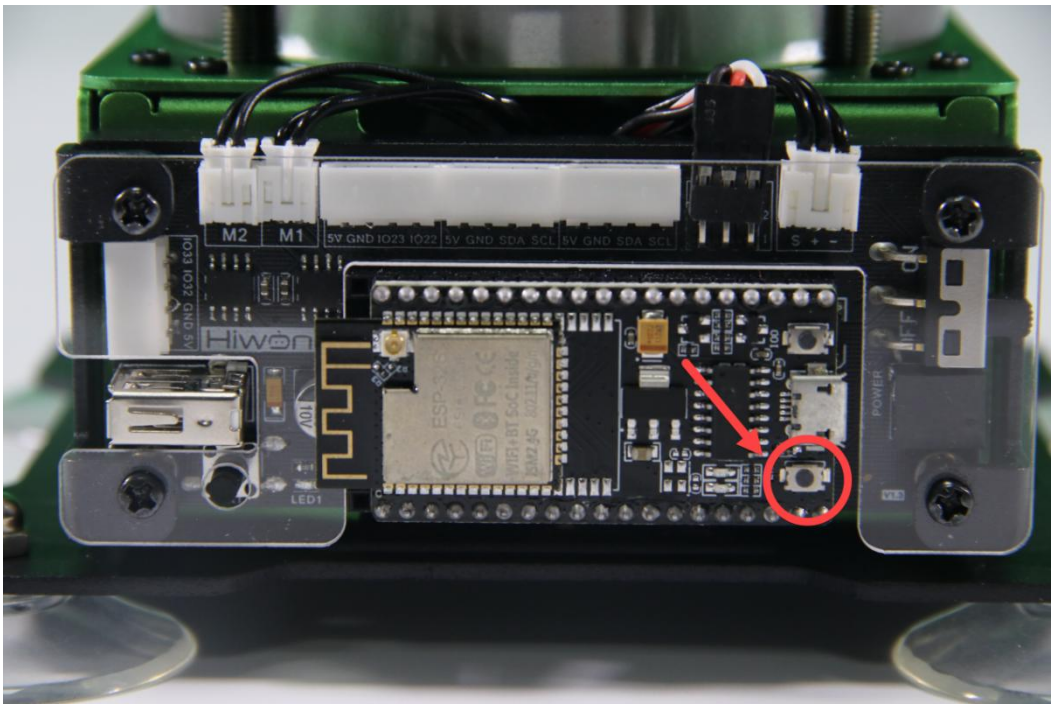


3) Right click your mouse, and click “Download” to download all program files into the controller.



4) When the terminal prints the following prompt, it means download completed.

5) After downloading, click on the reset icon or press the reset button on ESP32 controller to run program.



4. Wireless Handle Instruction

1) Turn on MaxArm.

2) Turn on handle. In the meantime, two LED lights (red and green) on the handle will flash simultaneously.

3) Wait for a moment, MaxArm will pair with the handle automatically, and then LED light keeps on.

4) If fail to connect, please turn off the robotic arm and handle, and then repeat the steps above.

Sleep Mode: Do not connect with the handle after turning on within 30s or no operation on the handle within 5 min after connecting, it will enter the sleep mode. If want to “wake it up”, please press “Start” button.

The following list is the corresponding function of handle button (take robotic arm as the first person view).

Button	Function	Servo
START	Return to the initial position	—
L1	Suction nozzle moves up along z axis	ID2, ID3 servo
L2	The suction nozzle moves down along z axis	
R1	Turn on air pump	—
R2	Turn off air pump	
↑	Suction nozzle moves forwards along y axis	ID2, ID3 servo
↓	Suction nozzle moves backwards along y axis	
←	suction nozzle moves to the left along x axis	ID4 servo
→	Suction nozzle moves to the	

	right along x axis	
□	The suction nozzle moves to the right	—
○	Robotic arm moves to the left	
△	Air pump rotates clockwise	ID1 servo
×	Air pump rotates counterclockwise	ID1 servo

Note:

1. The buttons in the left side (up, down, left, right) have same control effect as the left joystick. The buttons in the right side (□○△×) have same control effect as the right joystick.

2. When robotic arm moves to the limit position, the buzzer will make sound to remind you. At this time, you need to reset MaxArm or control it to move in the opposite direction, otherwise, the device may be damaged.