

# Lesson 2 Action Programming

## 1. Project Outcome

Program an action group consisting of 9 actions to allow the xArm 1S to grip.

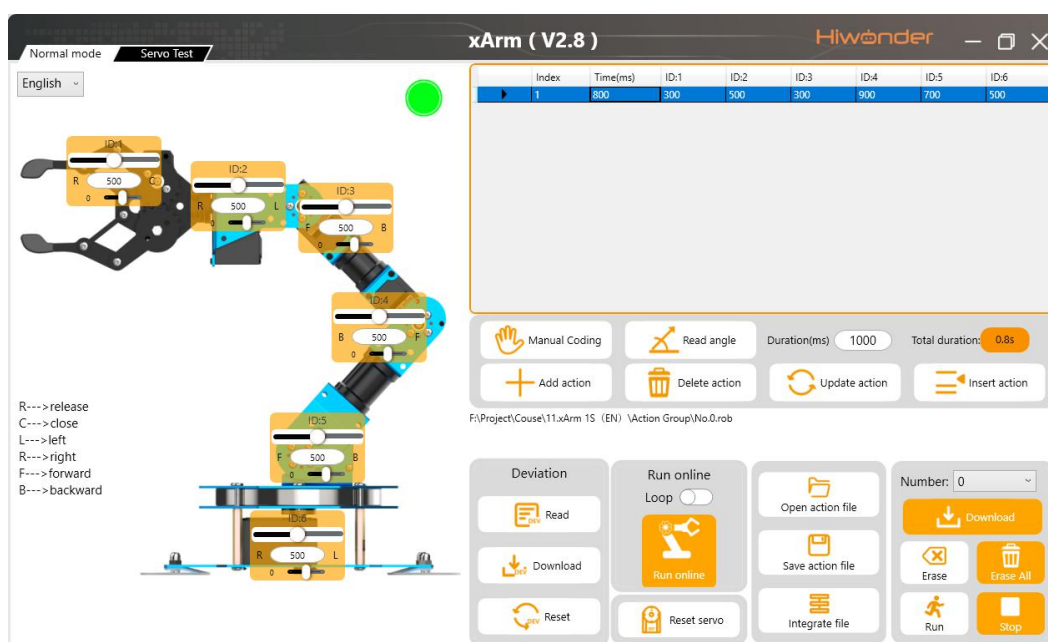
(Note: The action programmed in this section is only for the programming learning. If you need the standard actions, please go to the folder "Appendix/Action Group".)

## 2. Complete Program

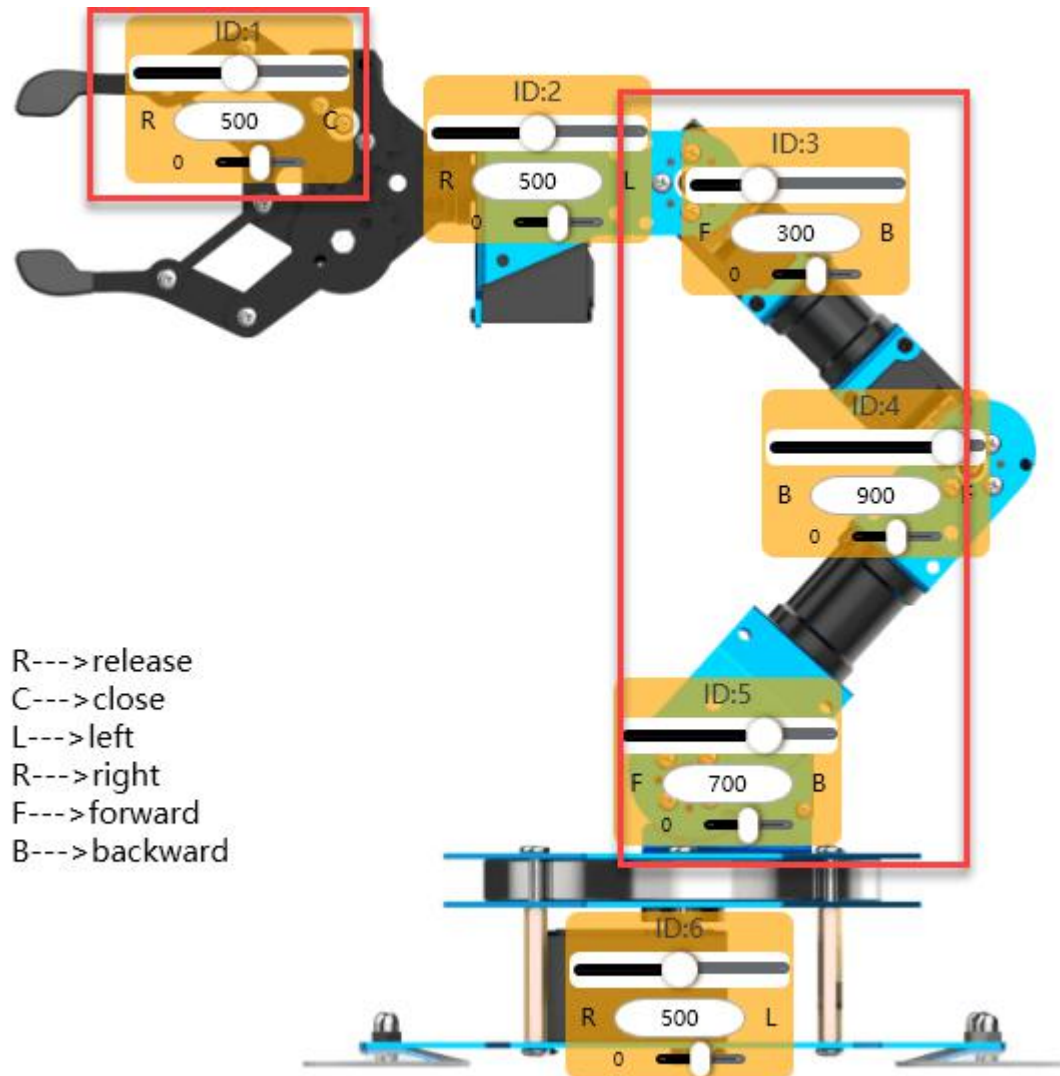
### 2.1 Action Programming

Step 1: Turn on robotic arm and connect to computer. Double click to open the PC software.

Step 2: Click "Action File" to open provided folder and select No.0 action group. Click "Run-online" to updated the servo data on the left side, which is the first action.



Step 3: Program the robotic arm to bend forward and open the gripper. Drag the sliders of servos of ID1, 3, 4, 5 to the value as shown in the figure:



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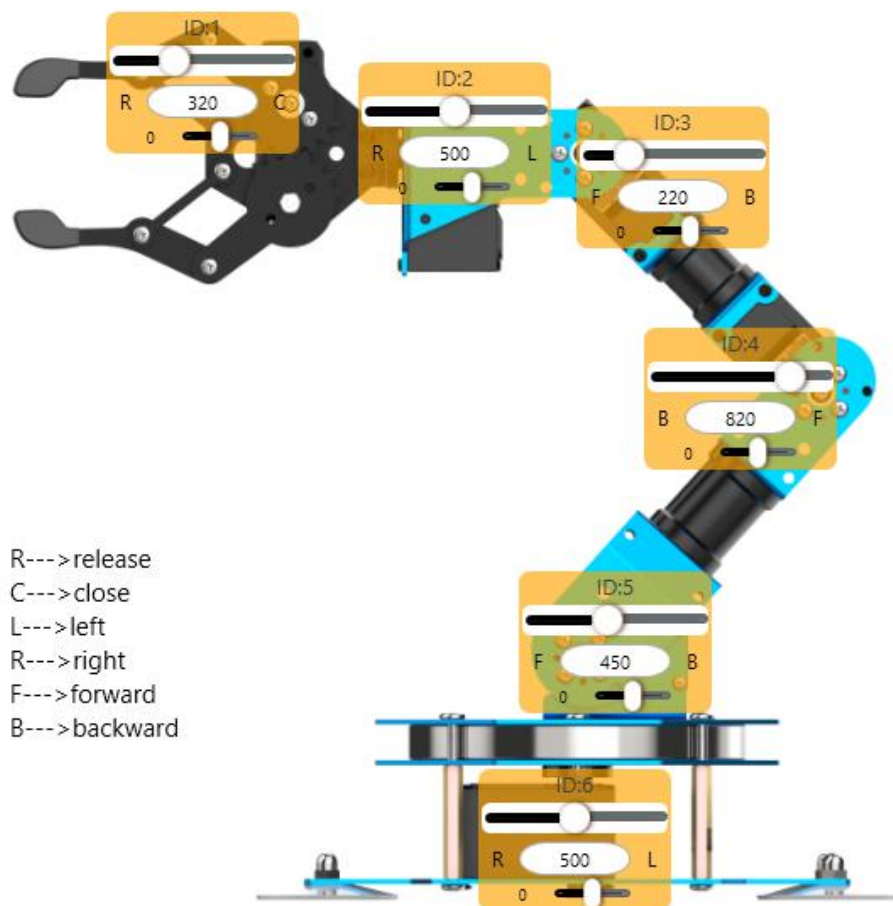
Hold down the left mouse button and quickly click the slider to make fine adjustments.

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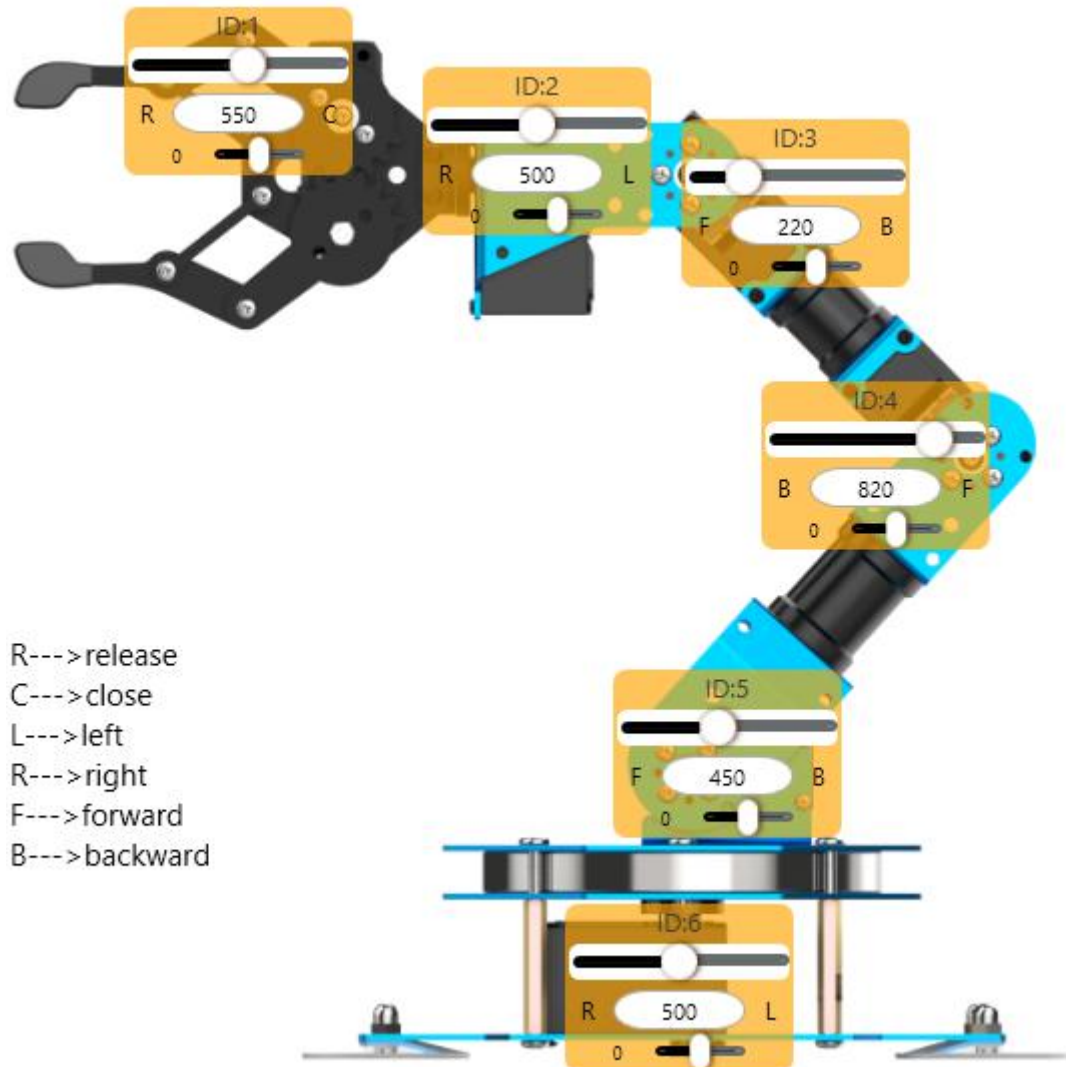
Step 4: Click “Add Action” to add the second action into the list.

	Index	Time(ms)	ID:1	ID:2	ID:3	ID:4	ID:5	ID:6
	1	800	300	500	300	900	700	500
▶	2	1000	300	500	360	720	470	500

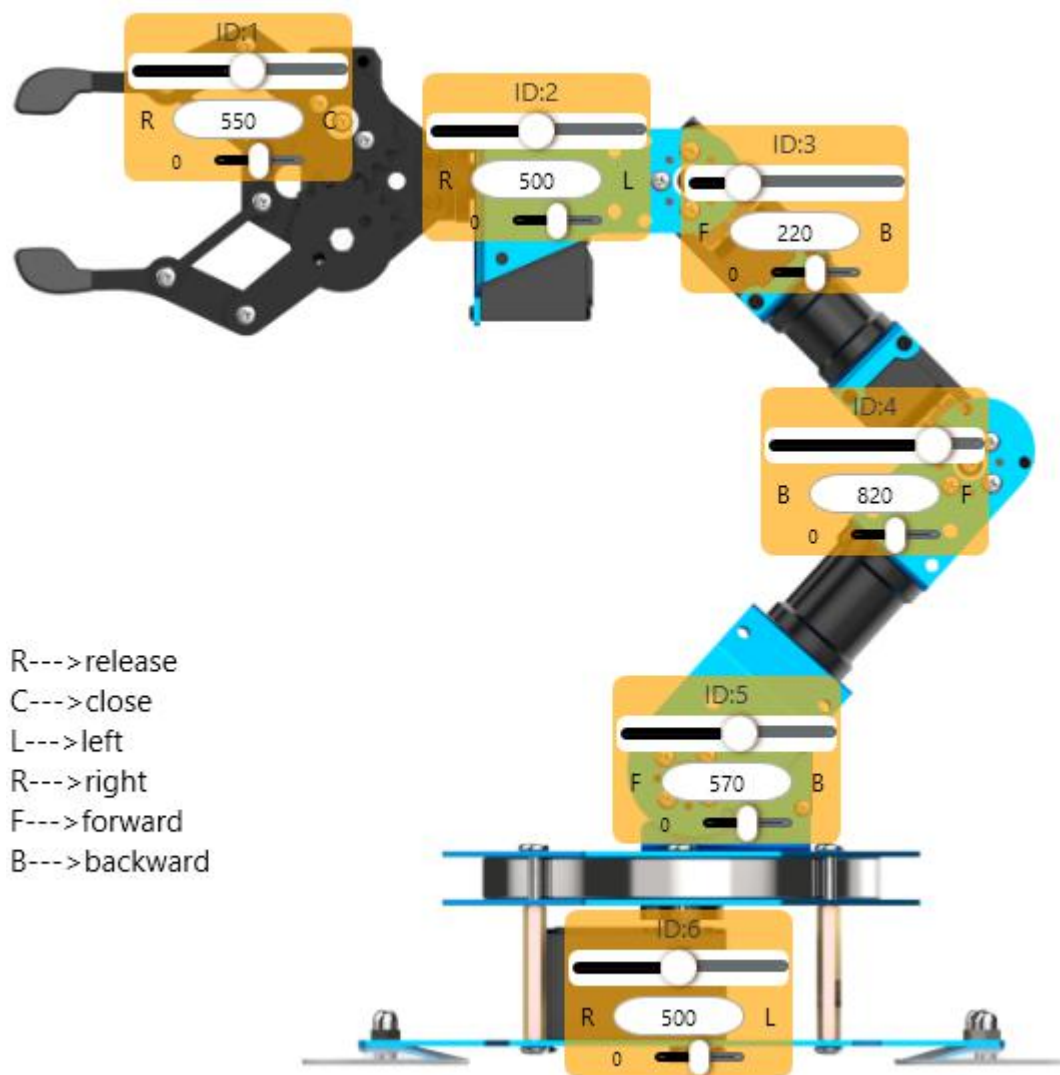
Step 5: Lower the robotic arm a little bit and make fine adjustment of the gripper, which are the preparation of the next step of gripping. Please drag the servos of ID 1, 3, 4 to the value in the figure.



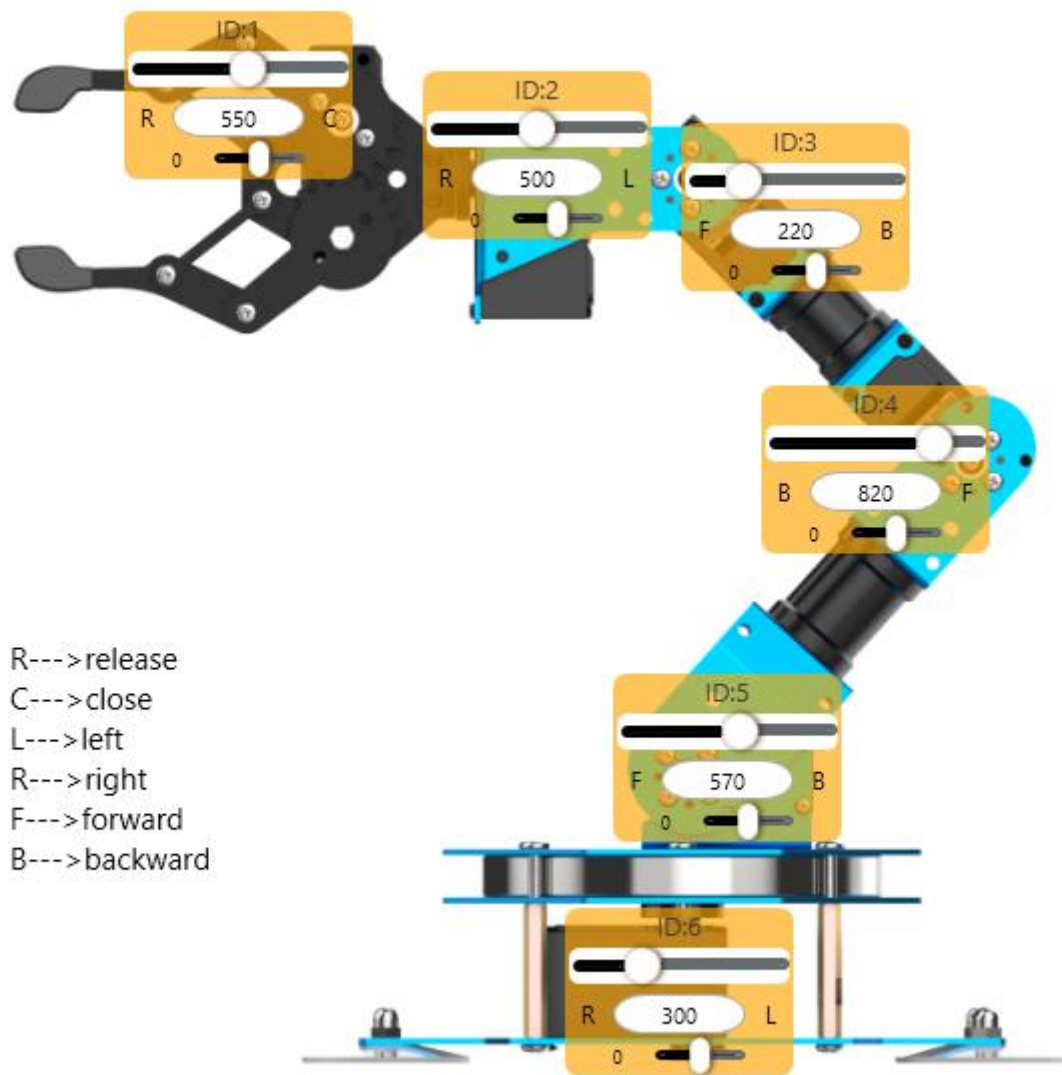
Step 6: Set the close the gripper to pick up. Do not forget to add the fourth action into the list.



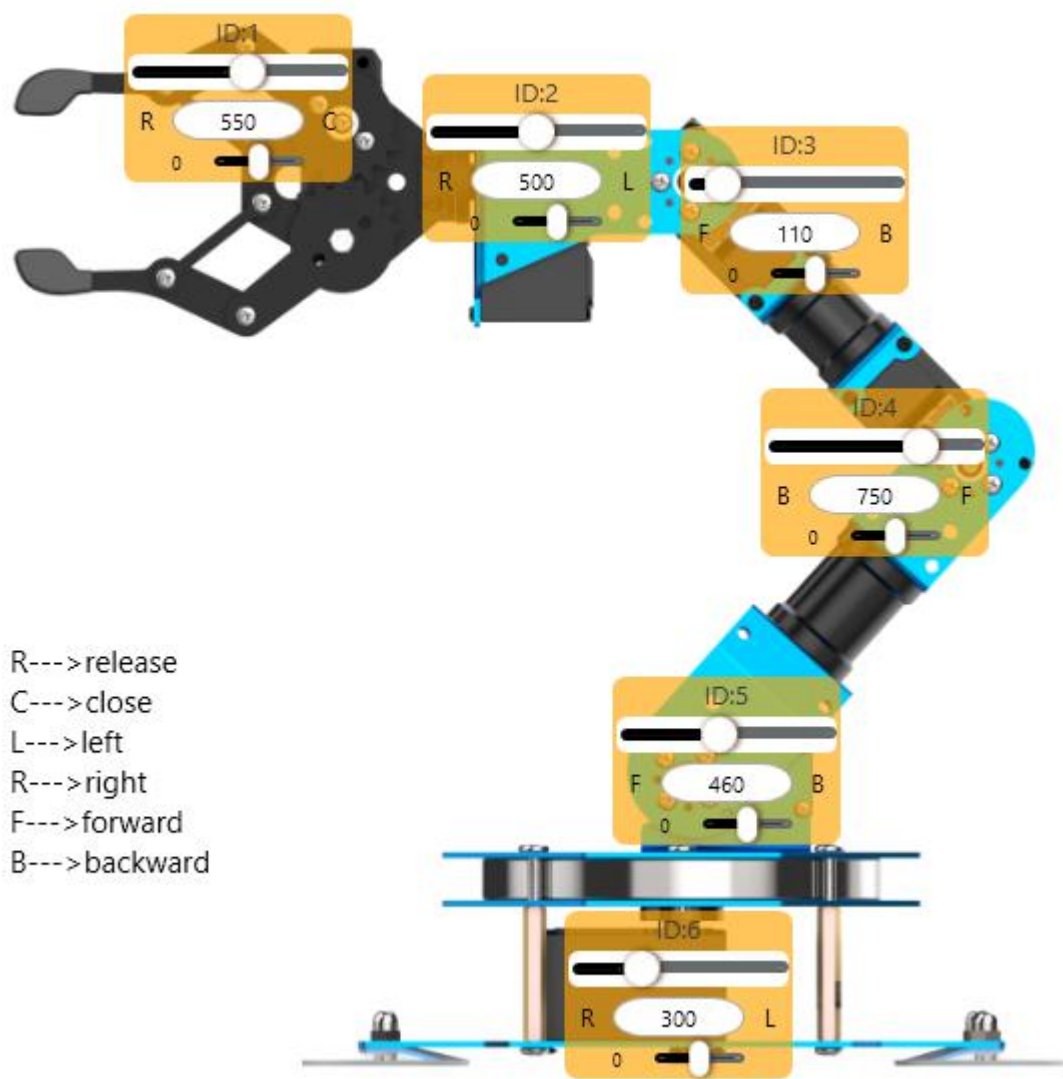
Step 7: Hold the block and then raise the arm. Please adjust the position of servo 5.



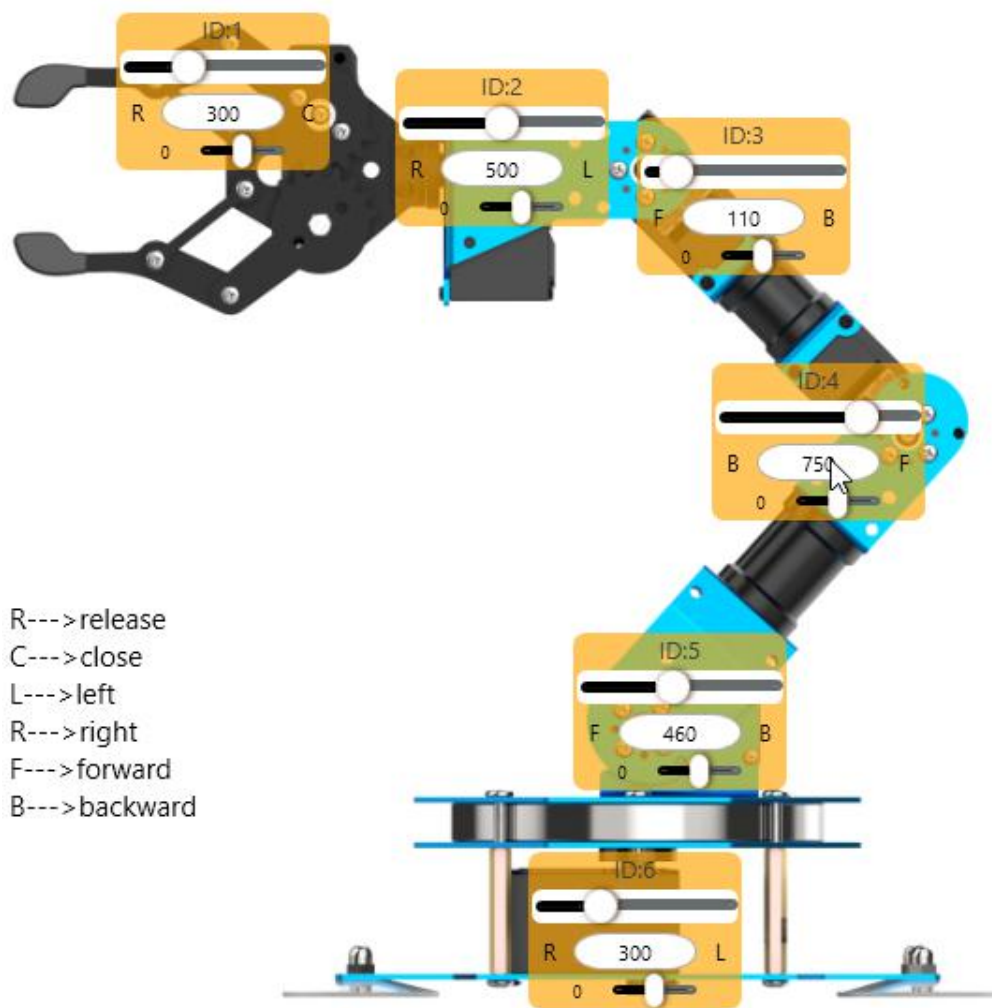
Step 8: Adjust the servo 6 to rotate the base.



Step 9: After reaching the designated position, lower the robotic arm and open the gripper to put down the block.



Step 10: Release the gripper and then put down the block.



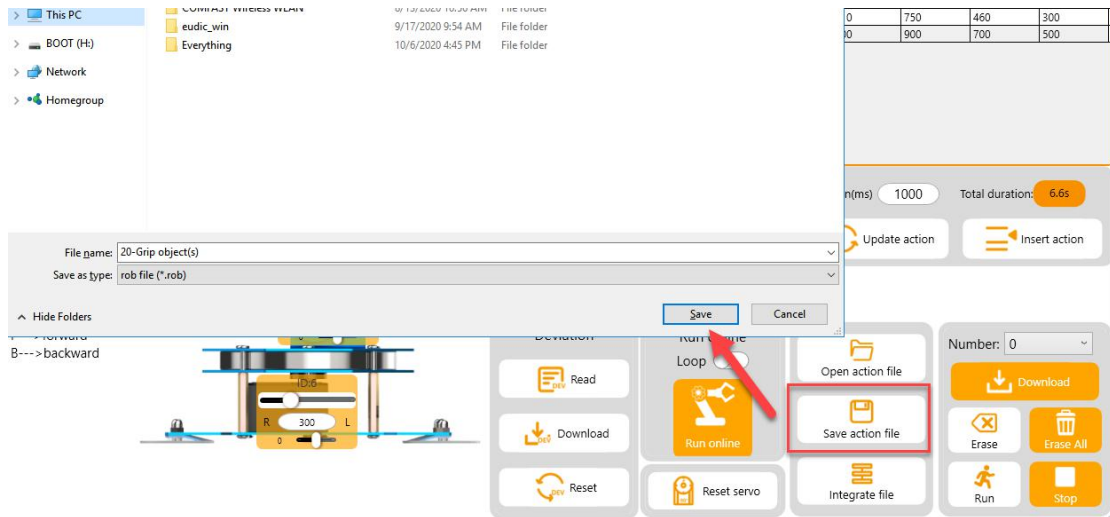
Step 11: Set the robotic arm to the initial position. Right-click the No.1 action, select “Copy” and then right-click the No.8 action to paste down.


	Index	Time(ms)	ID:1	ID:2	ID:3	ID:4	ID:5	ID:6
	1	800	300	500	300	900	700	500
	2	1000	300	500	300	900	700	500
	3	1000	320	500	220	820	450	500
	4	400	550	500	220	820	450	500
	5	1000	550	500	220	820	570	500
	6	1000	550	500	220	820	570	300
	7	1000	550	500	110	750	460	300
	8	1000	300	500	110	750	460	300
▶	9	800	300	500	300	900	700	500

Copy  
Paste upward  
**Paste down**  
Replace copy with current  
Run online from current index

## 2.2 Download Action Group

Step 1: After programming, please save the action group into your computer for later debugging. Click “Save action file” and fill in the file name then save it (see example below ).



Step 2: Download the action group into xArm 1S. Select number and click  **Download** button to download. There will be a beep sound if succeed to download the action group.

