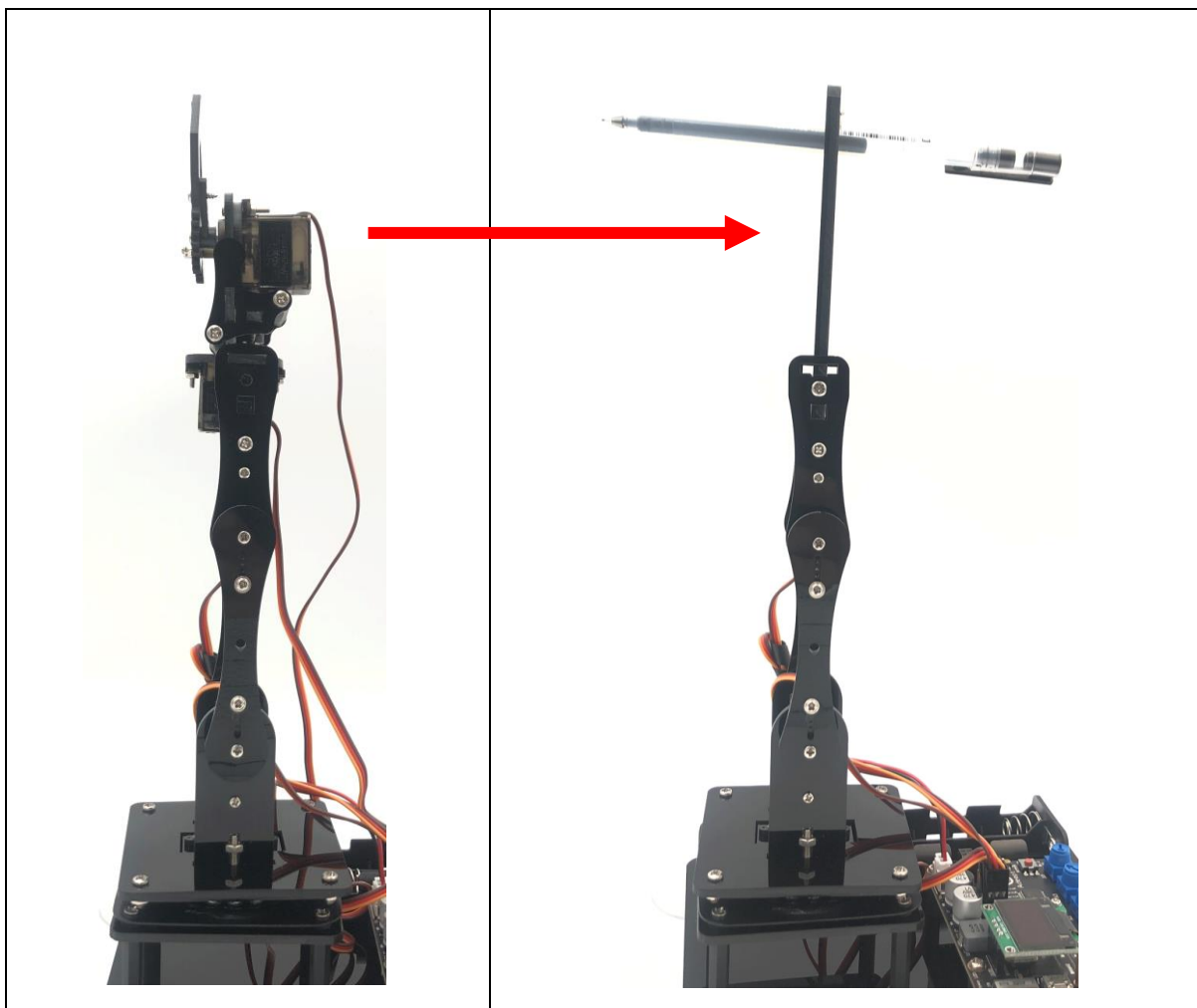# How to make Robotic Arm imitate people's pen writing

In this lesson, we will introduce the Imitation function mode of the robot arm.

1. Prepare
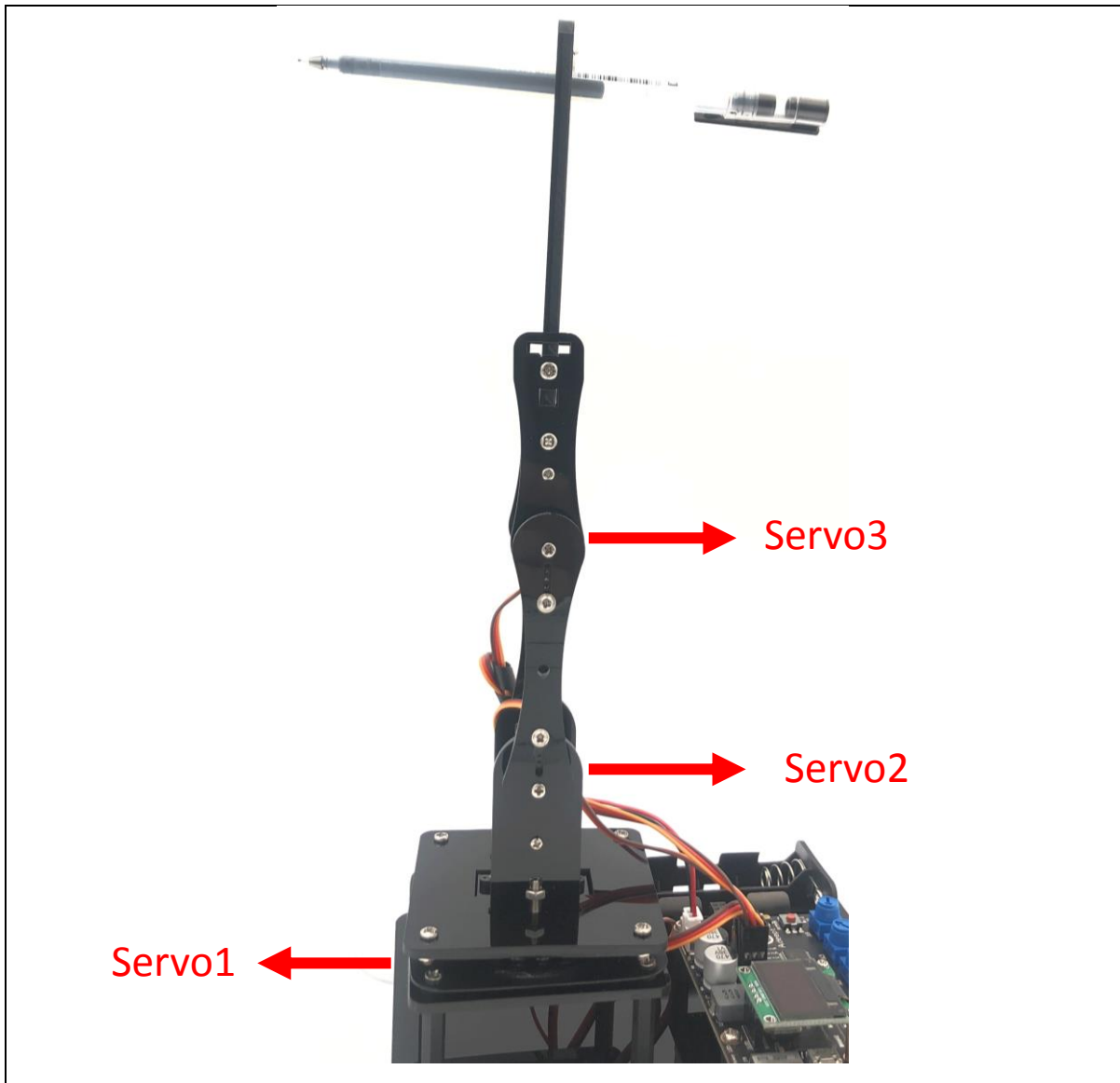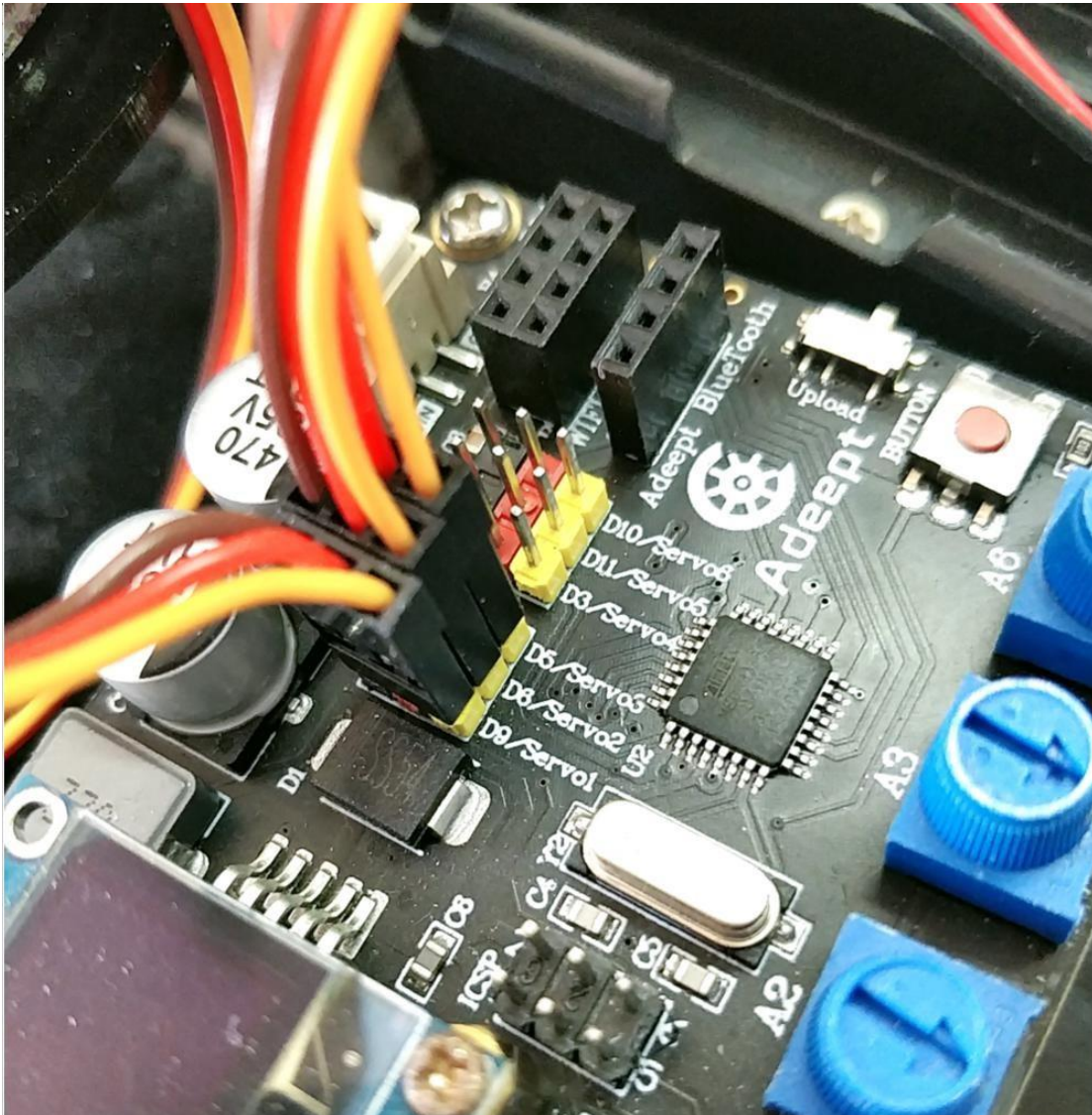
【**Refit**】：

You need to transform the Robotic Arm into the structure of the picture on the right: Replace the claws of the Robotic Arm with pens.

【Circuit】：

Connect Servo1, Servo2 and Servo3 on the Robotic Arm to Servo1 (D9), Servo2 (D6) and Servo3 (D5) ports on the Adeept Arm Drive Board.
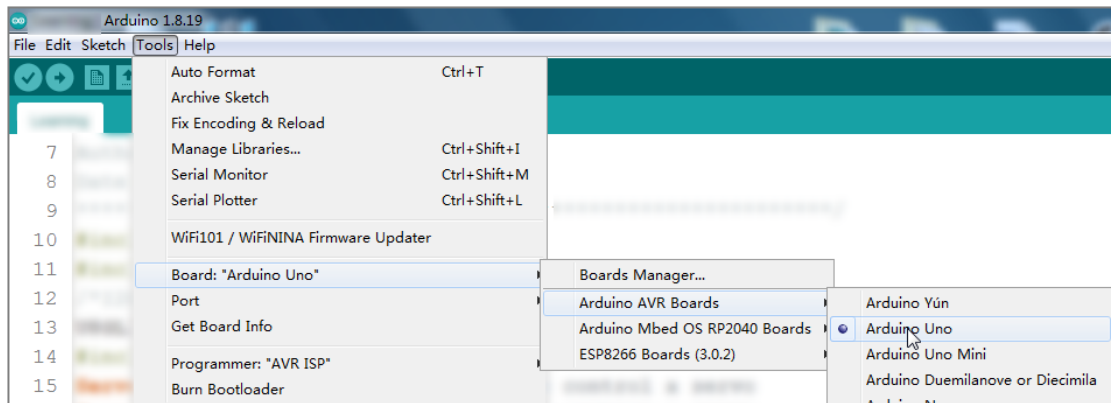
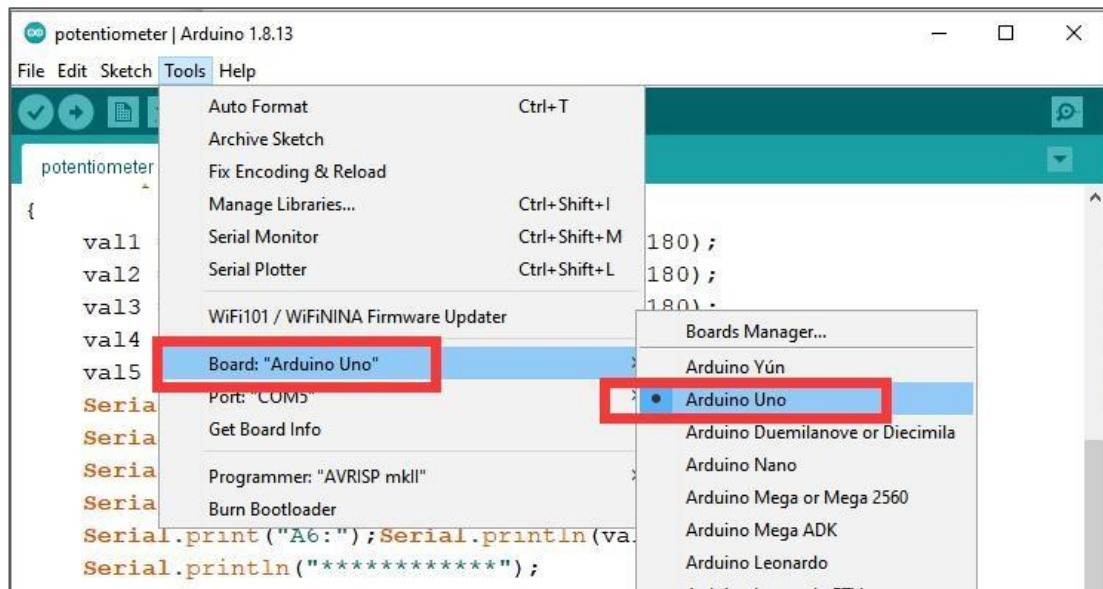## 2. Upload the AdeeptSimulation.ino

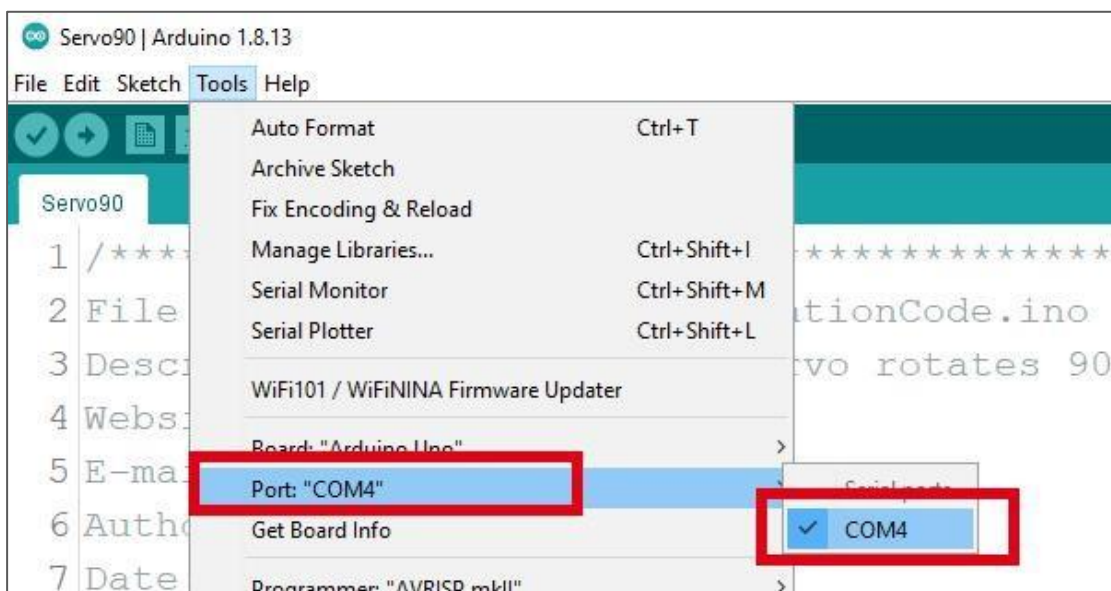1. Open the Arduino IDE software, as shown below:

2. In the Tools toolbar, find Board and select Arduino Uno, as shown below:

Or：

3. In the Tools toolbar, find "Port" and Select the port number of the Adeept Arm

Drive Board , as shown below:

4. Click Open in the File drop-down menu:

5. Find **the Package of Documentation** (Reference: Chapter: "_4 build Arduino development environment", step 2 under subsection (3) under subsection 5) that we provide to the user. Open the directory in sequence:"Code" -> "10. Imitation_function" -> "AdeeptSimulation". Then select the code file "AdeeptSimulation.ino" and click the "Open" button.
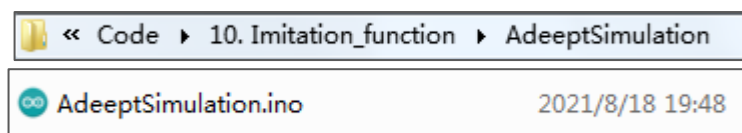
6. After opening, click [→] to upload the code program to the Adeept Arm Drive Board. If there is no error warning in the console below, it means that the Upload is successful.
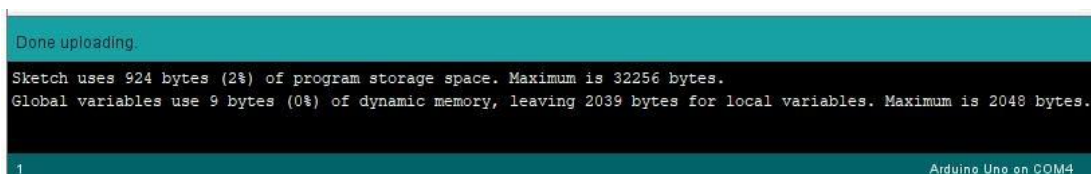
7. Next, unplug the USB cable connected to the Robotic Arm.Powered by a fully

charged battery.

8.   After completing the above preparations, gently support the Robotic Arm and then turn on the power. You will see the working status of the current situation and the number of the remaining motions the Robotic Arm needs to be record display on the OLED.At this point, the robot arm goes into imitation mode.

【Note】:

When learning this lesson, you must first do some configuration according to part 8 of chapter "_4 Building the Arduino Development Environment", otherwise you will encounter many errors when you download the program to the Adeept Arm Drive Board.

3. How to start the imitation mode of Robotic Arm

3.1. Introduction to imitation Mode

In the imitation mode, the robot arm can record different motion track or actions (up to 333 can be recorded, the recorded can be written into EEPROM), After re-powering, press the "BUTTON" for more than 8 seconds to enter the sport mode. In the motion mode, the working status of each servo will be displayed on the OLED, and the manipulator will automatically perform the previously recorded motion track or actions.
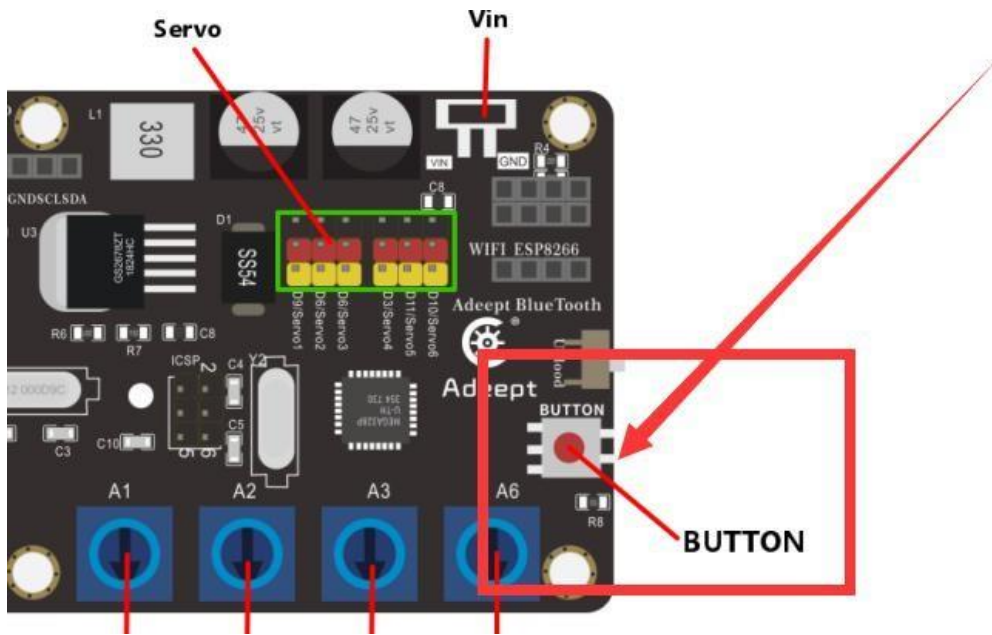
The specific operation method is as follows:

(1) Rotate the potentiometer（A0、A1、A2） on the drive board to control the mechanical arm in the X track of motion, press the "BUTTON" button on the drive board for about 2-3 seconds and release it. , The number of "remaining steps: 3" on the OLED screen will decrease by 1, which means that the robot arm successfully recorded the motion track in X.

(2) Continue to rotate the potentiometer（A0、A1、A2） on the drive board to control the Robotic Arm in the Y track of motion, press the "BUTTON" button on the drive board for about 2-3 seconds to release it, at this time, the "remaining steps: 2" item on the OLED screen The number will decrease by 1, indicating that the robot arm has successfully recorded the motion track in Y.

(3) Repeat the operation of step 1 until the number of "remaining steps: 1" on the OLED screen will be reduced to 0, and the Robotic Arm will complete the recording and automatically run all the motion track just recorded.

(4) Press the "RESET" button on the Adeept Arm Drive Board to restart the

Robotic Arm to exit the automatic motion mode. At this time, the Robotic Arm is in the imitation mode, so you can continue to repeat step 1 to re-record other motion track or actions.

(5) After the Robotic Arm is re-powered or restarted, press the "BUTTON" button for more than 8 seconds to enter the automatic motion mode, and the Robotic Arm will automatically run the motion track or action recorded last time.

【Note】：

1. The Robotic Arm product we provide is used for learning and experimentation. It cannot complete difficult imitation actions. It is recommended that you use it to complete some simple imitations, such as drawing triangles and line segments. Because everyone's abilities are different, errors will occur during operation. You often practice it. After you are familiar with it, you will find it very interesting. The important thing is that you can get other inspirations through the features of this product.

2. Please use a fully charged battery.

3. If you turn any of the potentiometers, the corresponding servo does not work, then you need to restart the Robotic Arm

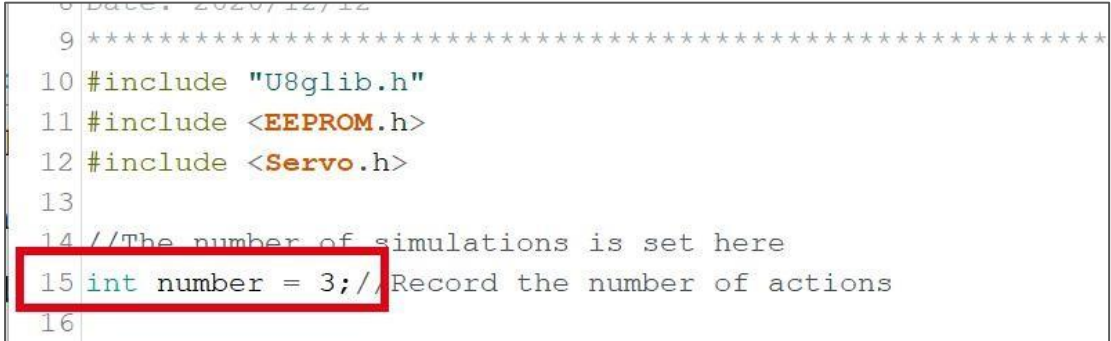## 3.2. How to modify the number of recorded exercise states

1. Use the Arduino IDE to open the program "AdeeptSimulation.ino" of this lesson (in the folder "10. Imitation_function"):

2. Find the 15th line of code, where "number = 3" means that the Robotic Arm can record up to 3 motion track or actions. You can modify the number to the number you want to record, and the maximum should not exceed 333.

3. Save the modified program, and then upload it to the Adeept Arm Drive Board again.