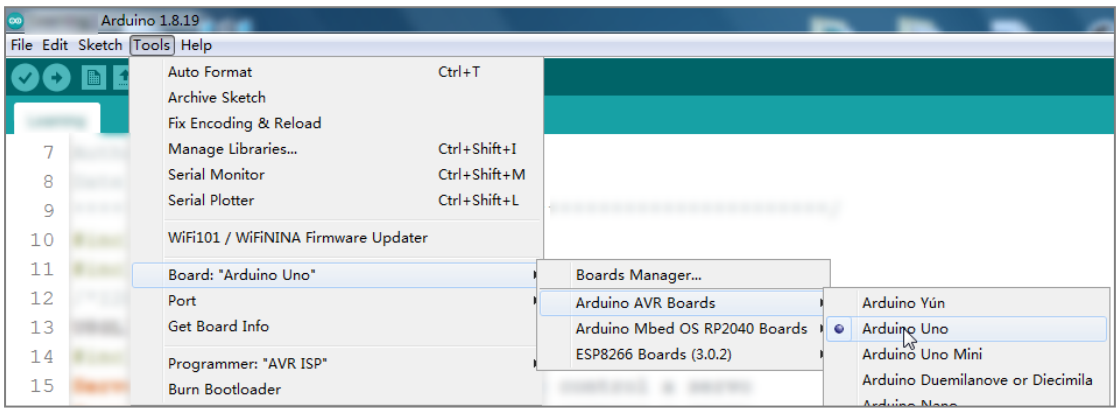
How does processing control the Robotic Arm to write

In this course, we will learn how to use Processing software to control Robotic Arms write and draw.

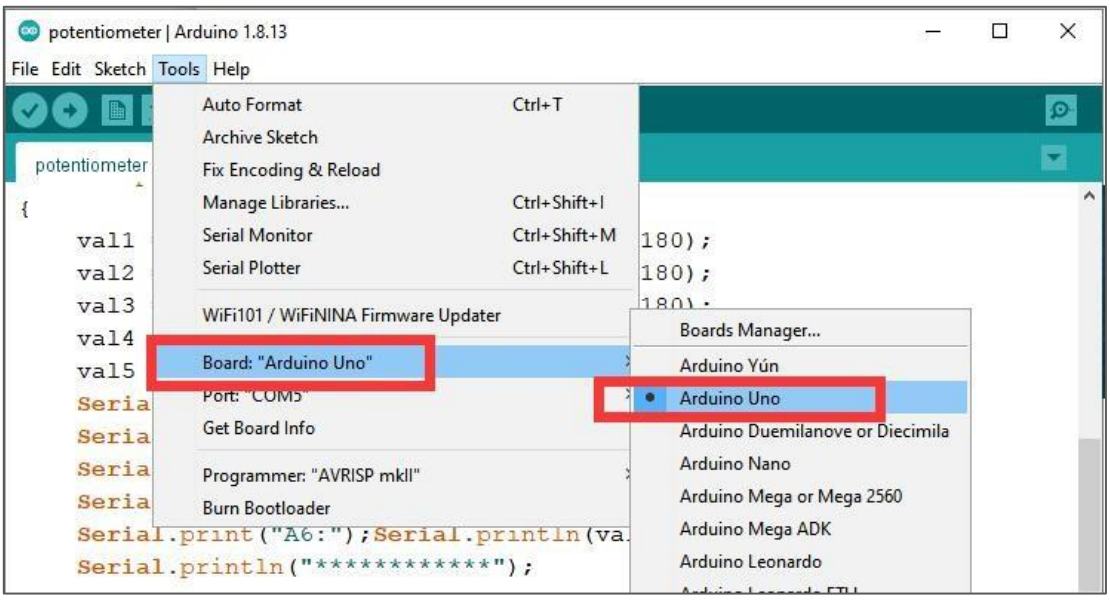
1. Upload the WritingAndDrawing.ino

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

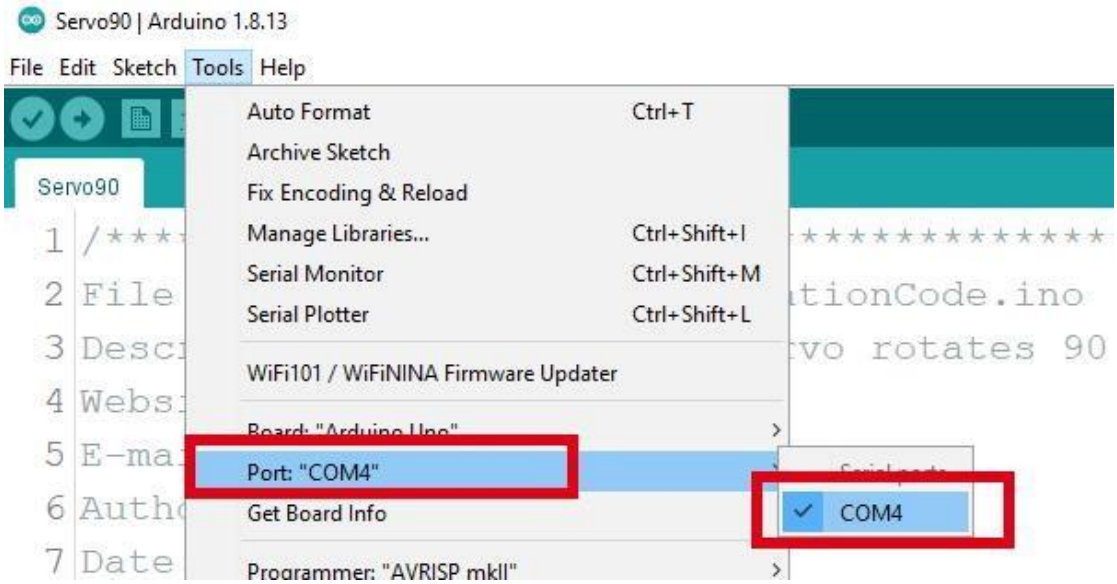
2. In the Tools toolbar, find Board and select Arduino Uno, as shown below:



Or：

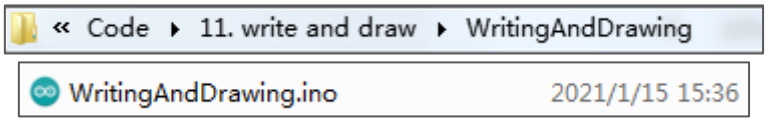


3. In the Tools toolbar, find “Port” and Select the port number of the Adeept Arm Drive Board, as shown below:

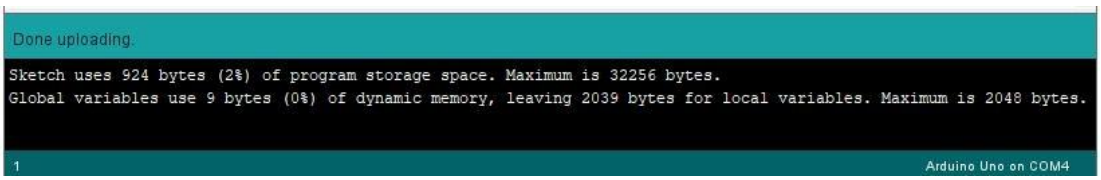


4. Click Open in the File drop-down menu:

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” -> “11. write and draw” -> “WritingAndDrawing”. Then select the code file "WritingAndDrawing.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. After downloading, close WritingAndDrawing.ino

8. Note that the arm is still connected to the computer with the USB cable. Turn

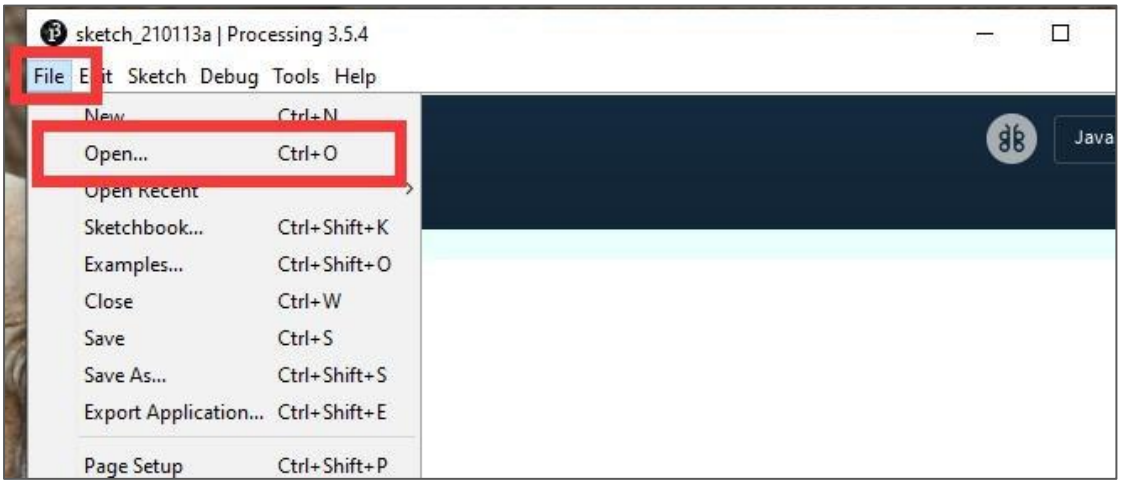
on the power supply.

2. Run the ProcessingWritingAndDrawing.pde

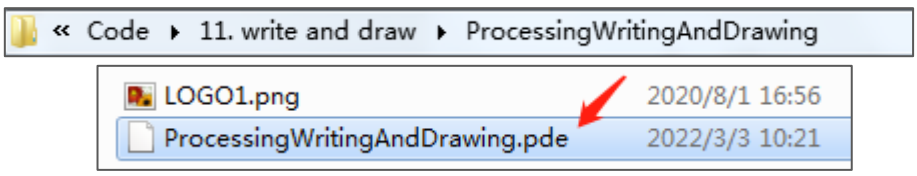
Note that the arm is still connected to the computer with the USB cable. Turn on the power supply.

1. Open the Processing software, as shown below:

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



3. Find **the Package of Documentation** (Reference: Chapter 4, near Page 12 of this section, subsection 5, step (4)) that we provide to the user. Open the directory in sequence: “Code” -> “11. write and draw” -> “WritingAndDrawing”. Then select the code file "processingwritinganddrawing.pde" and click the "Open" button.



4. After opening, click to run the code, as shown below:

Note:

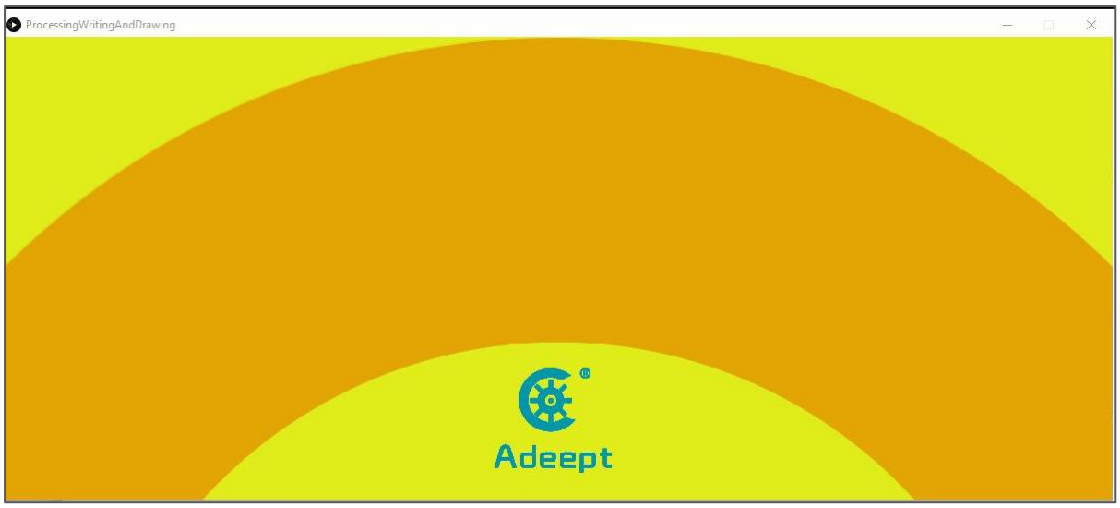
If you run the program with the following code, an error occurs and “COM9” cannot be found：

```
// List all the available serial ports:
printArray(Serial.list());
// Open the port you are using at the rate you want:
port1 = new Serial(this, Serial.list()[1], 115200);
// port1 = new Serial(this, Serial.list()[3], 9600);
port1.bufferUntil('\n');
```

You can comment the port1 above and add a line of port1, changing COM9 to the corresponding port number:

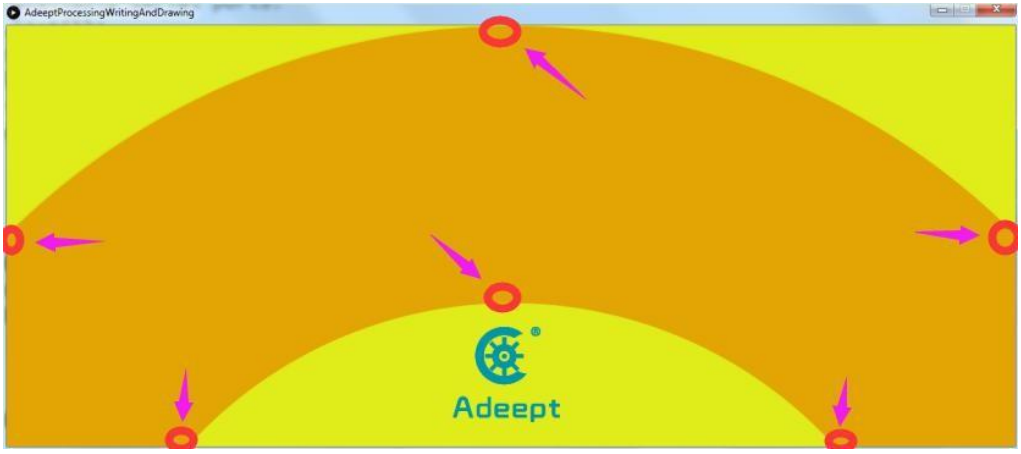
```
// Or you can use the port number directly:
// COM9 is port number, the port number can be obtained from the Arduino tools
port1 = new Serial(this,"COM9", 115200);
```

5. The interface after the program run， as shown below:



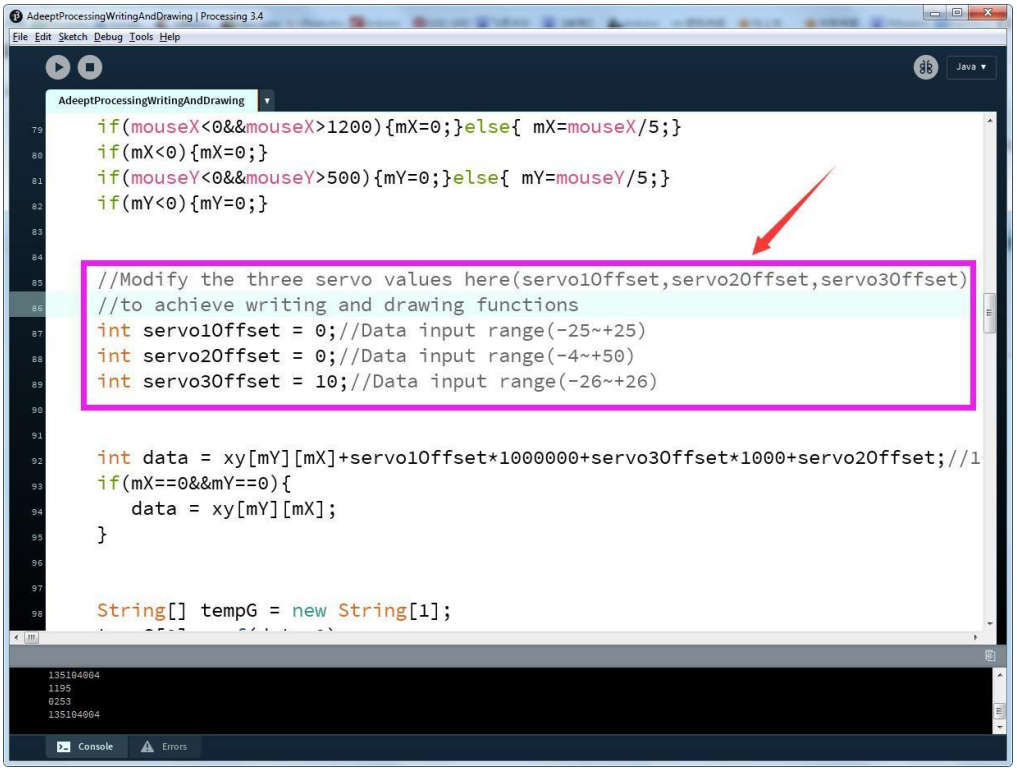
6. Draw or write in the yellow area with the mouse, you will see that the Robotic Arm paints what we depict on the control panel on the paper. Note that due to errors in the servo, etc., the content depicted by the arm will be slightly biased.

7. Click the dots as shown below：

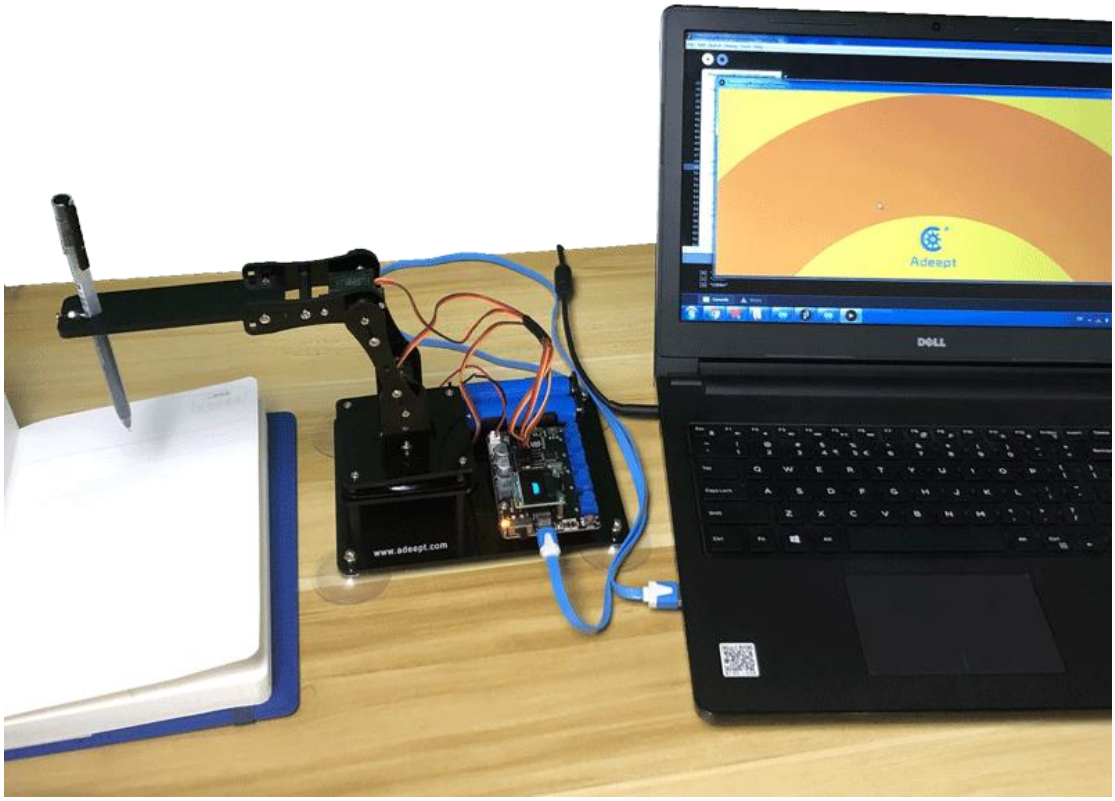


8. Click on each point to see if the pen tip falls on the paper. If it is not or is suspended in the air, three parameters need to be modified. These three parameters are to fine-tune the offset of the servo. In this experiment, three servo systems need to be adjusted initially. Otherwise, the pen may not be able to write and draw, or produce bad fonts (note that there is a certain error, these three parameters do not need to be precise). In the process of debugging, you will find that there are several sets of data that can make the robot work

normally.



9. After modifying the three parameters to make the tip of the pen reach to the paper (do not make the tip press against the paper), click "Run" to run the control panel program. The Robotic Arm will paint as you write or draw in the dark yellow area with the mouse.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