

2 Building the Arduino Development Environment

2.1 Arduino Development Language

Arduino uses C/C++ to write programs, so before learning Arduino, you need to master the C/C++ language. Although C++ is compatible with the C language, these are two different languages. C is a process-oriented programming language, and C++ is an object-oriented programming language. The early Arduino core library was written in C language. Later, object-oriented ideas were introduced. At present, the latest Arduino core library is written in C and C++.

Generally speaking, the Arduino language refers to a collection of various Application Programming Interfaces (APIs) provided by the Arduino core library files. These APIs are formed by secondary packaging of the lower-level microcontroller support library. For example, the core library of Arduino using AVR microcontroller is the secondary packaging of AVR-Libc (GCC-based AVR support library).

In the traditional development method, multiple registers need to be configured to achieve the corresponding functions. In Arduino, the complicated registers are encapsulated into simple APIs, which can be intuitively controlled, enhancing the readability of the program and improving the development efficiency.

2.2 Arduino Program Structure

The Arduino program structure is different from the traditional C/C++ program structure-there is no main() function in the Arduino program. In fact, it is not that there is no main() function in the Arduino program, but that the definition of the main() function is hidden in the core library file of the Arduino. In the development of Arduino, the main function is not directly operated, but the two functions of setup() and loop() are used instead.

2.3 Arduino Development Language

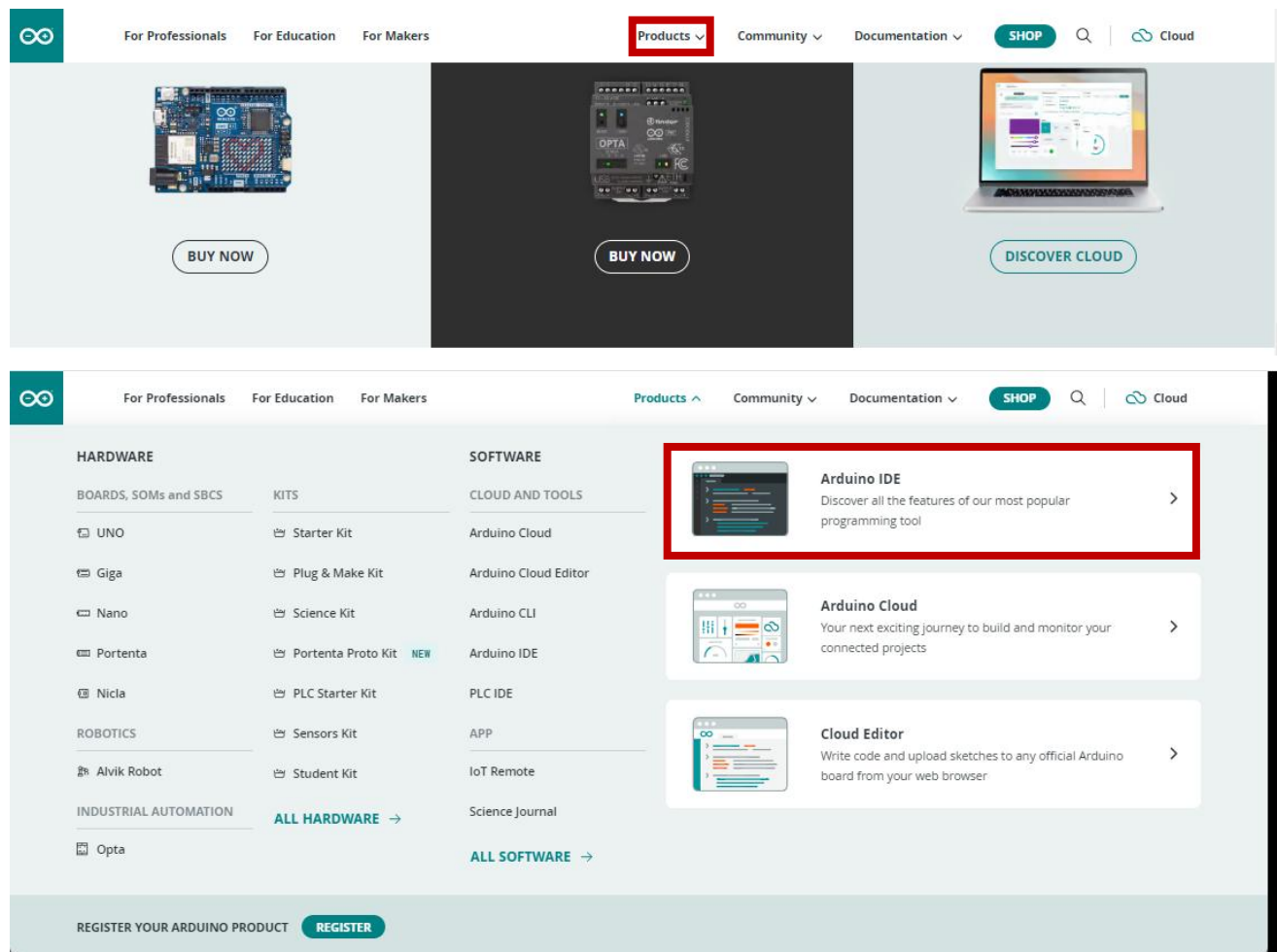
The IDE of the Arduino development environment can be downloaded from the official website. The download address of the Arduino IDE is:

(1) Install Arduino IDE under Windows

We will teach you how to download and install: <https://www.arduino.cc/>

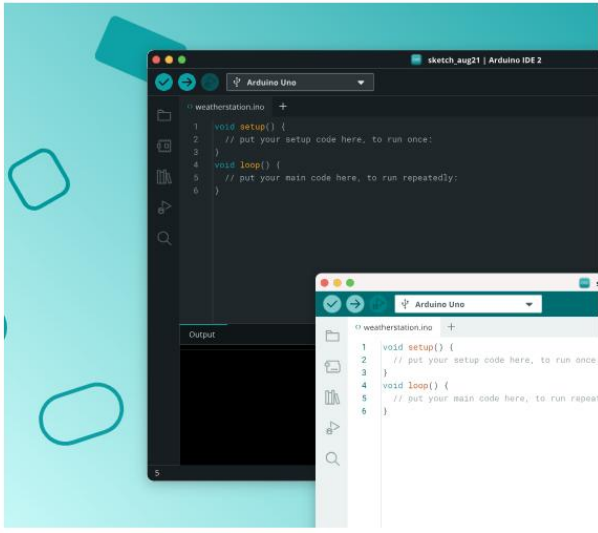
1. Open Google Chrome and enter the URL in the address bar: <https://www.arduino.cc/>

After successfully opening the interface shown in the figure below, we click on **Products**. Then select 'Arduino IDE'.



2. Select the appropriate Windows installation files to download for your computer. Then start downloading. The download status will be displayed in the top right corner of the Google Chrome browser. Then we wait for the download to complete.

Bring Your Projects to Life with Arduino Software



Arduino IDE 2.3.6

[Release notes](#)

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger. For more details, check the [Arduino IDE 2.0 documentation](#).

Windows Win 10 or newer (64-bit)

Windows Win 10 or newer (64-bit)

Windows MSI installer

Windows ZIP file

Linux Appliance (64-bit X86-64)

Linux ZIP file (64-bit X86-64)

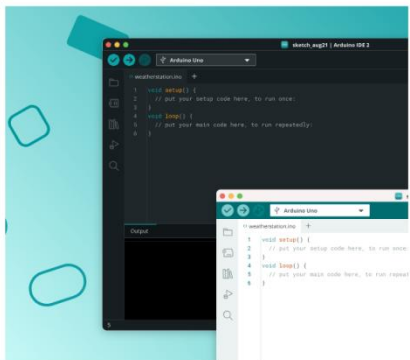
macOS Intel 10.15 Catalina or newer (64-bit)

macOS Apple Silicon 11 Big Sur or newer (64-bit)

DOWNLOAD

Legacy IDE (1.8.19)
Download a legacy version of the Arduino IDE.

Bring Your Projects to Life with Arduino Software



Arduino IDE 2.3.6

[Release notes](#)

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Windows Win 10 or newer (64-bit)

DOWNLOAD

Nightly Builds
Download a preview of the incoming release with the most updated features and bugfixes.

The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

近期的下载记录

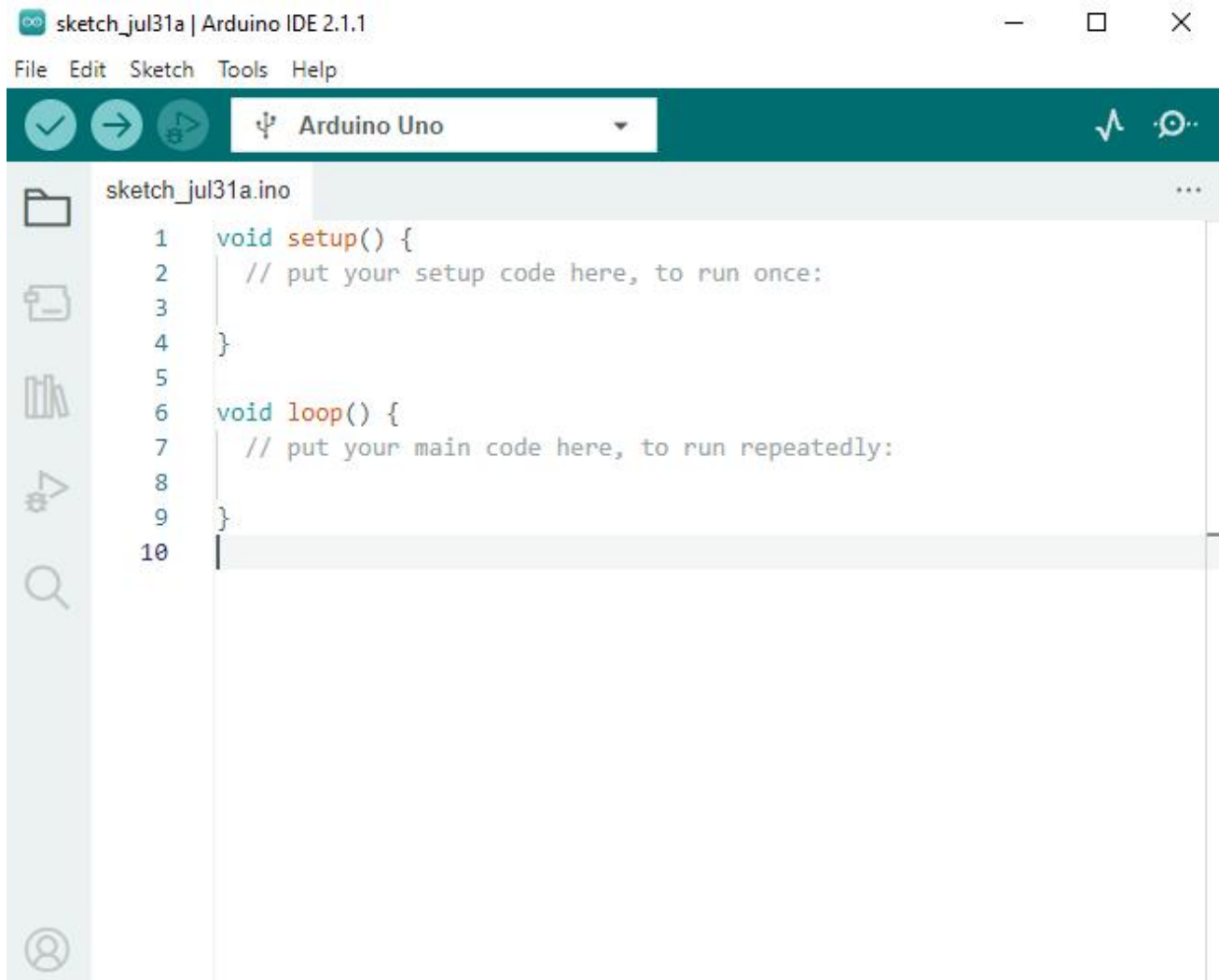
arduino-ide_2.3.6_Windows_64bit.exe	1.5.4/150 MB • 还剩 1 分钟
arduino-ide_2.3.6_Windows_64bit.exe	已取消
BBC_Microbit_Sensor.zip	47.2 MB • 3 小时前
AdeeptStarterKitForBBCMicrobitV1_1.zip	106 MB • 3 小时前

完整的下载记录

- After the download completes, run the installer. For Windows users, there may pop up an installation dialog during the installation. When it pops up, please allow the installation.
- After installation is completed, an Arduino Software shortcut will be generated in the desktop. Run the Arduino software.

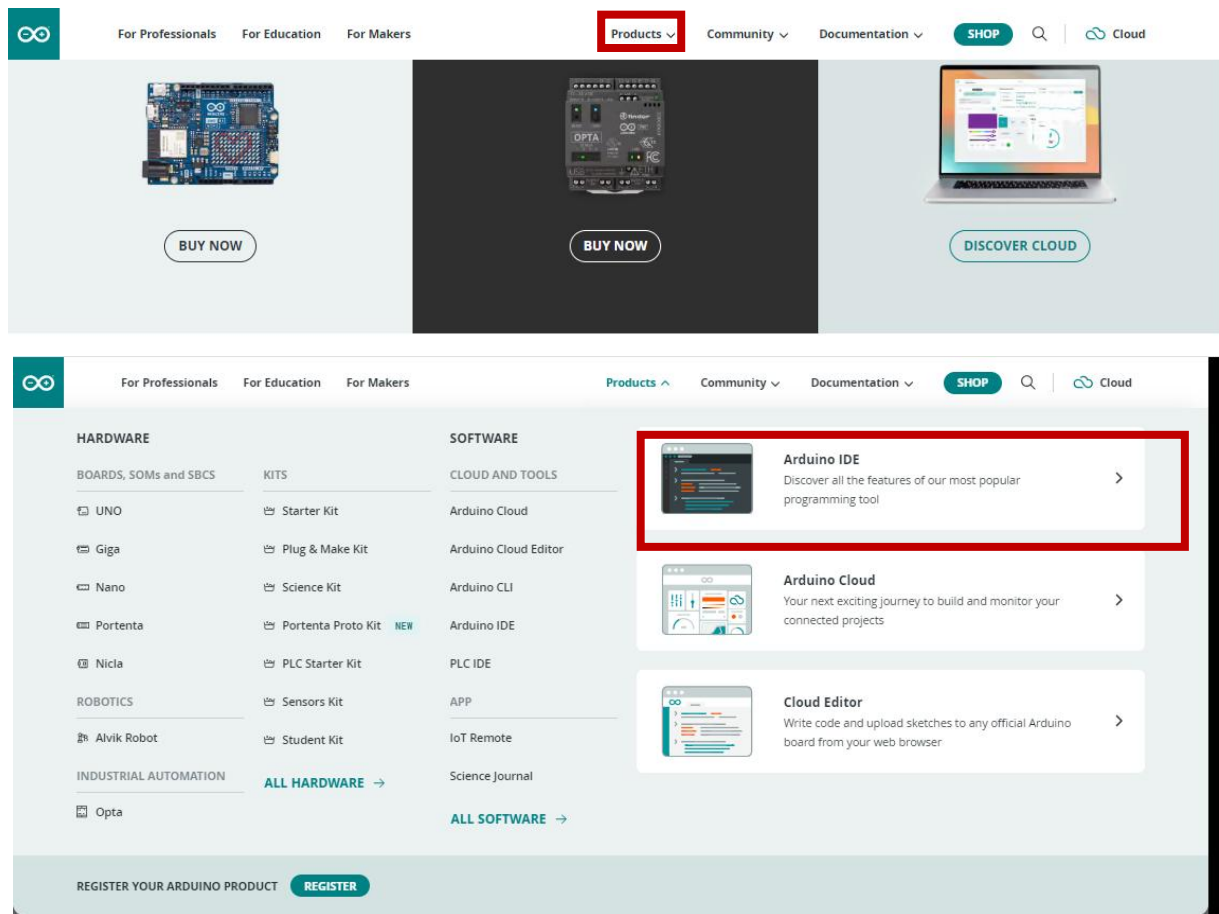


5. The interface will show as follows after the Arduino software is opened, indicating that our software has been downloaded and installed successfully.

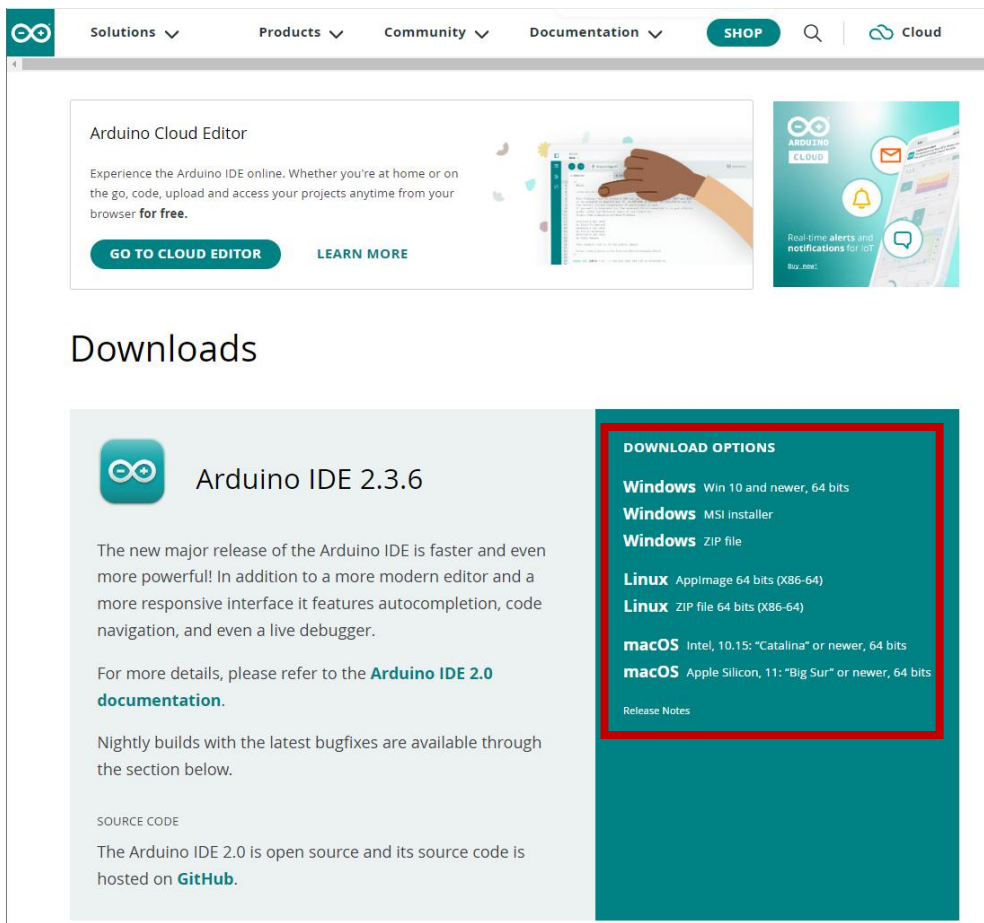


(2) Install Arduino IDE under MacOS

Enter the website URL: <https://www.arduino.cc/> in the address bar. After successfully opening the interface as shown below, click the list icon, then click "Products" to enter the product page. Then select 'Arduino IDE'.



1. After jumping to the following interface, slide the mouse to the middle to find the part marked in the red circle. You can find that the official website provides us with installation files for Windows, Mac OS X, and Linux systems.



Arduino Cloud Editor

Experience the Arduino IDE online. Whether you're at home or on the go, code, upload and access your projects anytime from your browser **for free**.

[GO TO CLOUD EDITOR](#) [LEARN MORE](#)

Downloads

 **Arduino IDE 2.3.6**

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

SOURCE CODE

The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits
Windows MSI installer
Windows ZIP file

Linux AppImage 64 bits (X86-64)
Linux ZIP file 64 bits (X86-64)

macOS Intel, 10.15: "Catalina" or newer, 64 bits
macOS Apple Silicon, 11: "Big Sur" or newer, 64 bits

[Release Notes](#)

2. Fill in information such as your email address, and then click **"JUST DOWNLOAD"** to download the software.

Stay in the Loop: Join Our Newsletter!

As a beginner or advanced user, you can find inspiring projects and learn about cutting-edge Arduino products through our **weekly newsletter**!

email *

☒ I confirm to have read the [Privacy Policy](#) and to accept the [Terms of Service](#) *

☐ I would like to receive emails about special deals and commercial offers from Arduino.

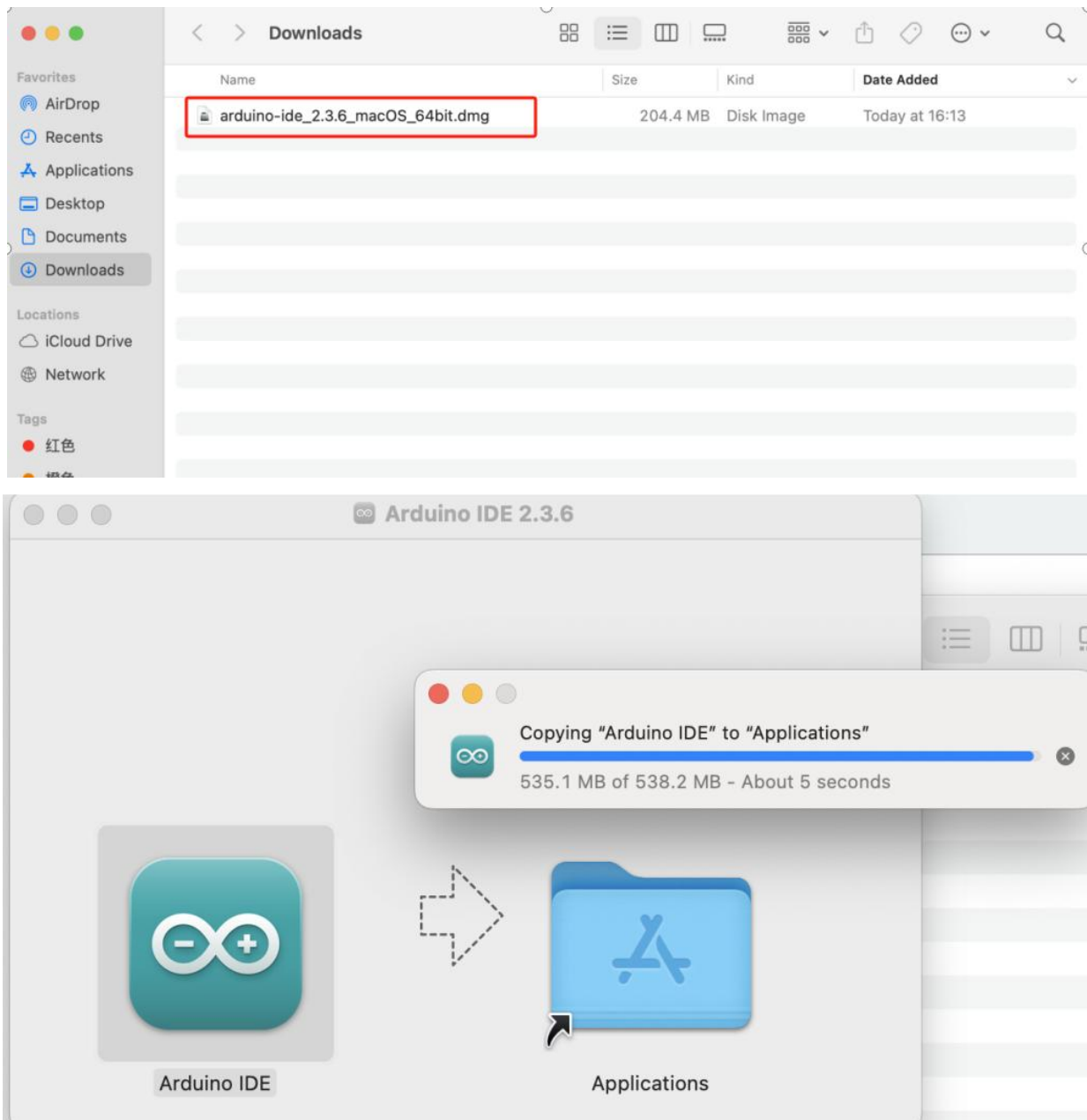
[SUBSCRIBE & DOWNLOAD](#)

or

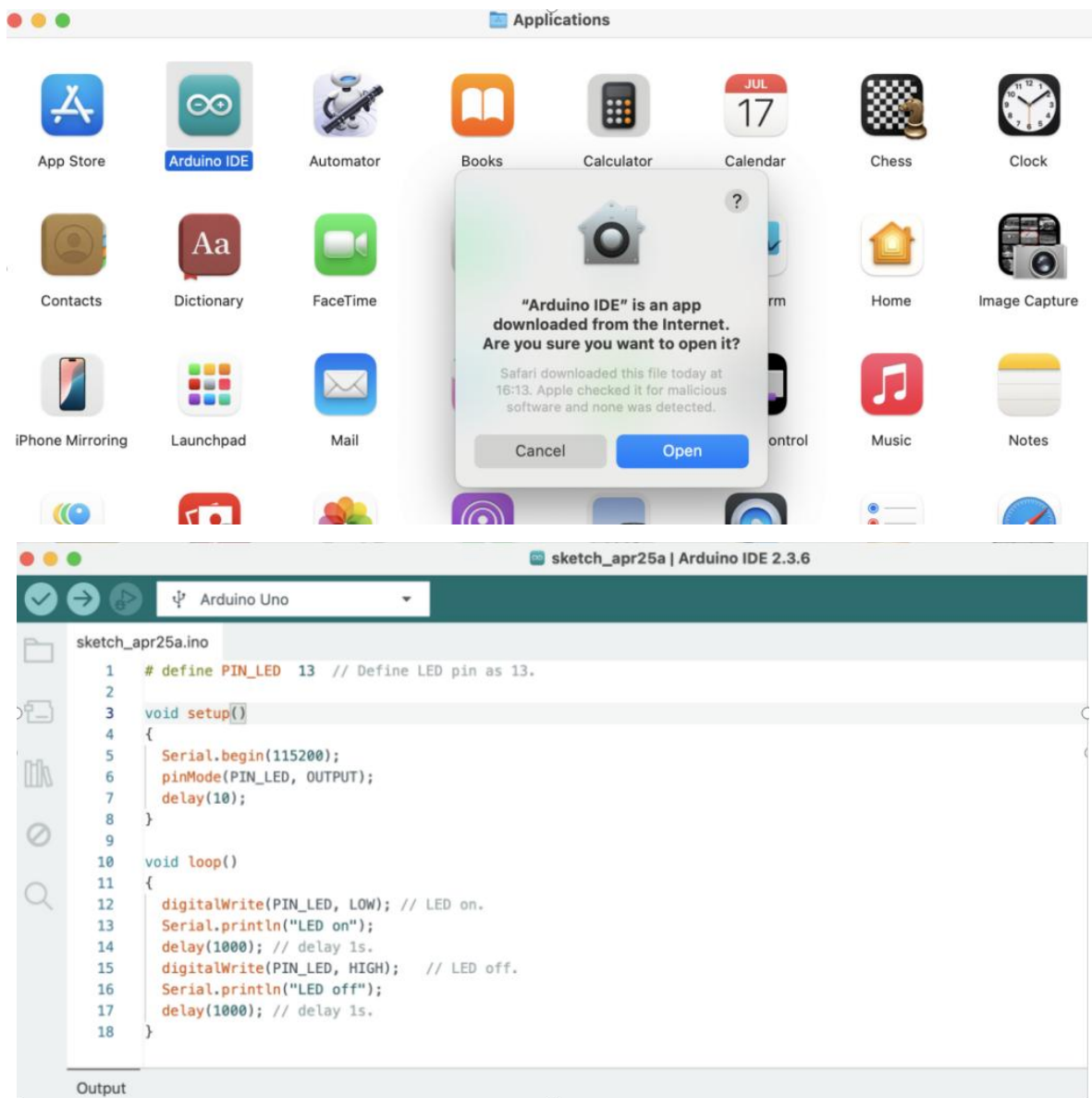
[JUST DOWNLOAD](#)



3. Open the downloaded software and drag "Arduino IDE" to "Applications" to install the software.

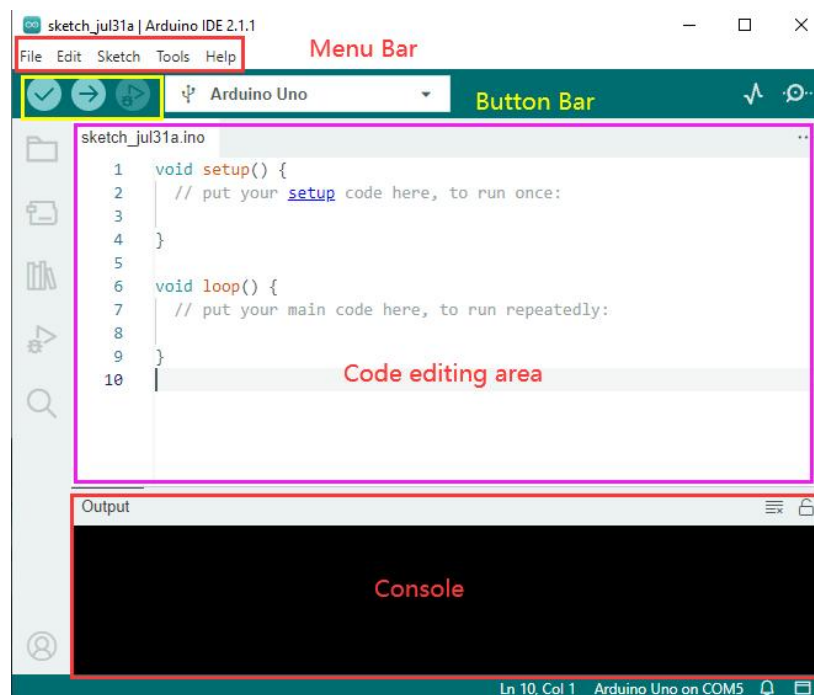


4. After the installation is successful, Arduino IDE can be opened normally.



2.4 Introduction of Arduino Software Interface

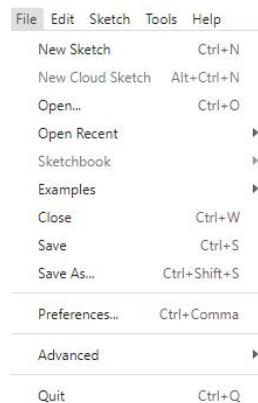
The following figure is the interface introduction of Arduino software



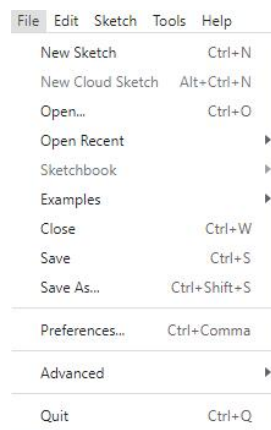
(1) Menu bar

Menu bar contains File, Edit, Sketch, Tools and Help.

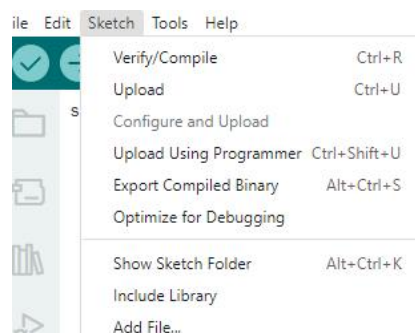
(1) "File" can operate new file, open file, save file, close file, save, etc. For the Examples, you can check the official sample program.



(2) "Edit" has the functions for the program code of editing, copying and pasting, commenting, indenting, searching, etc.

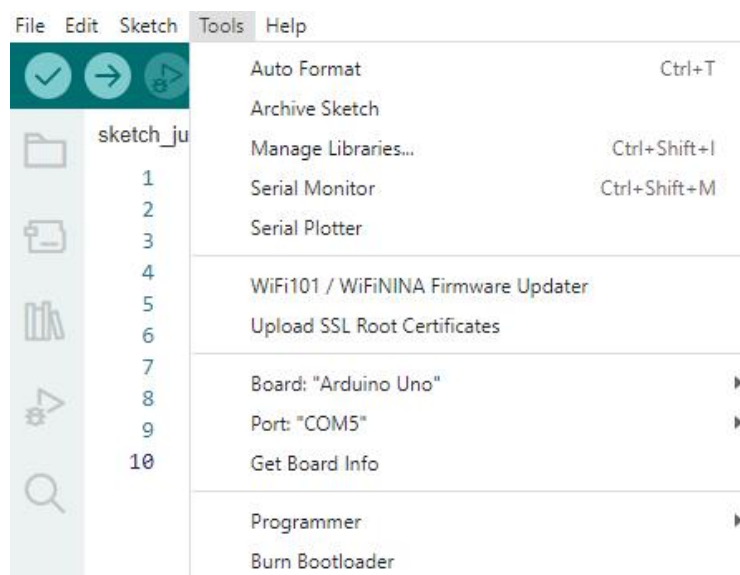


(3) Sketch can perform Verify/Compile, Upload and other operations on the written project.



The Include Library can load the library. After selecting the library file in the list, the relevant header files are automatically added in the code editing area.

(4) Board and Port are often used in "Tools".



Board can choose different development boards.

(2) Button bar

Button bar includes functions of Verifying, Uploading, Building New, Opening and Saving.

(1) Verify :

Checking and compilation. This button is used to check the correctness of your "syntax" or code. If your code has any syntax errors or undefined variables, an error message will appear at the bottom of the IDE screen. At the same time, the line of error code will be marked with a red background color for easy modification. But if it is correct, you will see the message that the compilation is complete.

(2) Upload :

Download the program code to the Arduino development board. It is better to click Verify first, and then click Upload.

(3) Code editing area

The code editing area is where to write program code and code comments.

(4) Console

The debug window will output information showing various compilation and debugging results. For example, if your code is written incorrectly, you will be prompted about what went wrong.

2.5 Install CH340 Driver

Connecting the Adeept Pixie Board and the computer

You need to use a USB cable to connect the Adeept Pixie board to the computer and turn on the power switch on the Adeept Pixie board.

Install CH343 driver

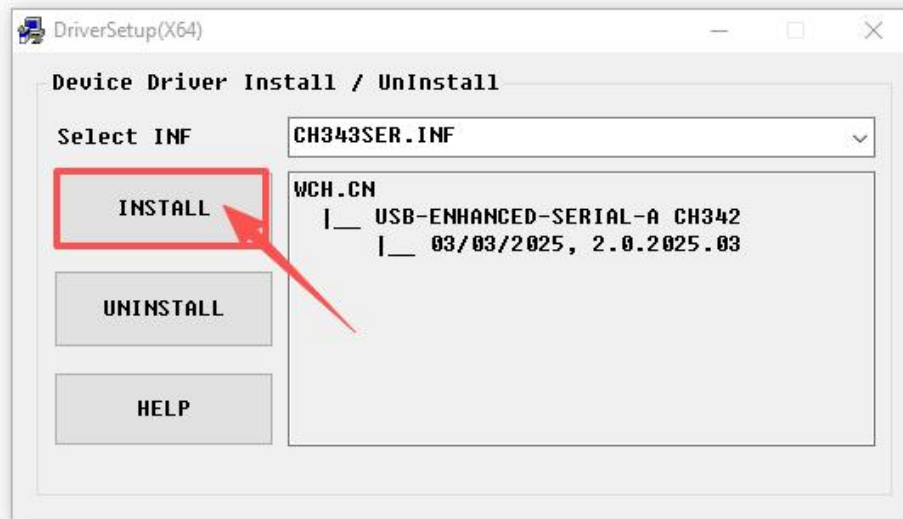
Find and open the "Driver" folder. If you are using a Windows system, you can directly double-click to open **CH343SER.EXE**, install corresponding driver according to the computer operating system.

For MAC and Linux systems, you need to decompress the file corresponding to the system name, and then install the CH341 driver.

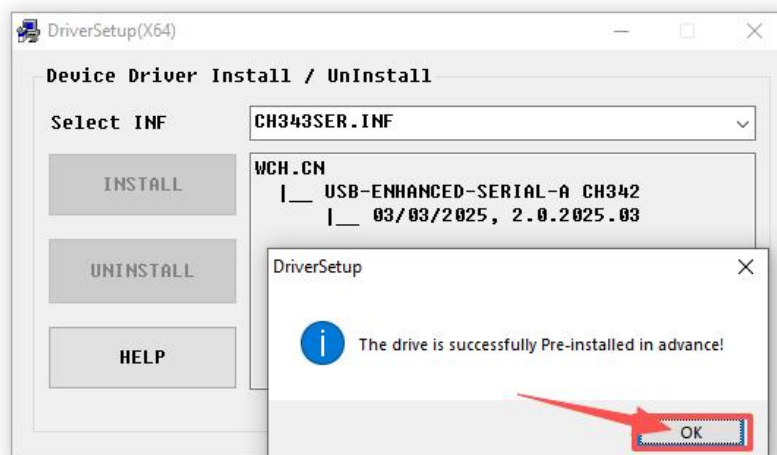
Windows:

1. Enter the driver folder, select **CH343SER.EXE**, and double-click to open it.

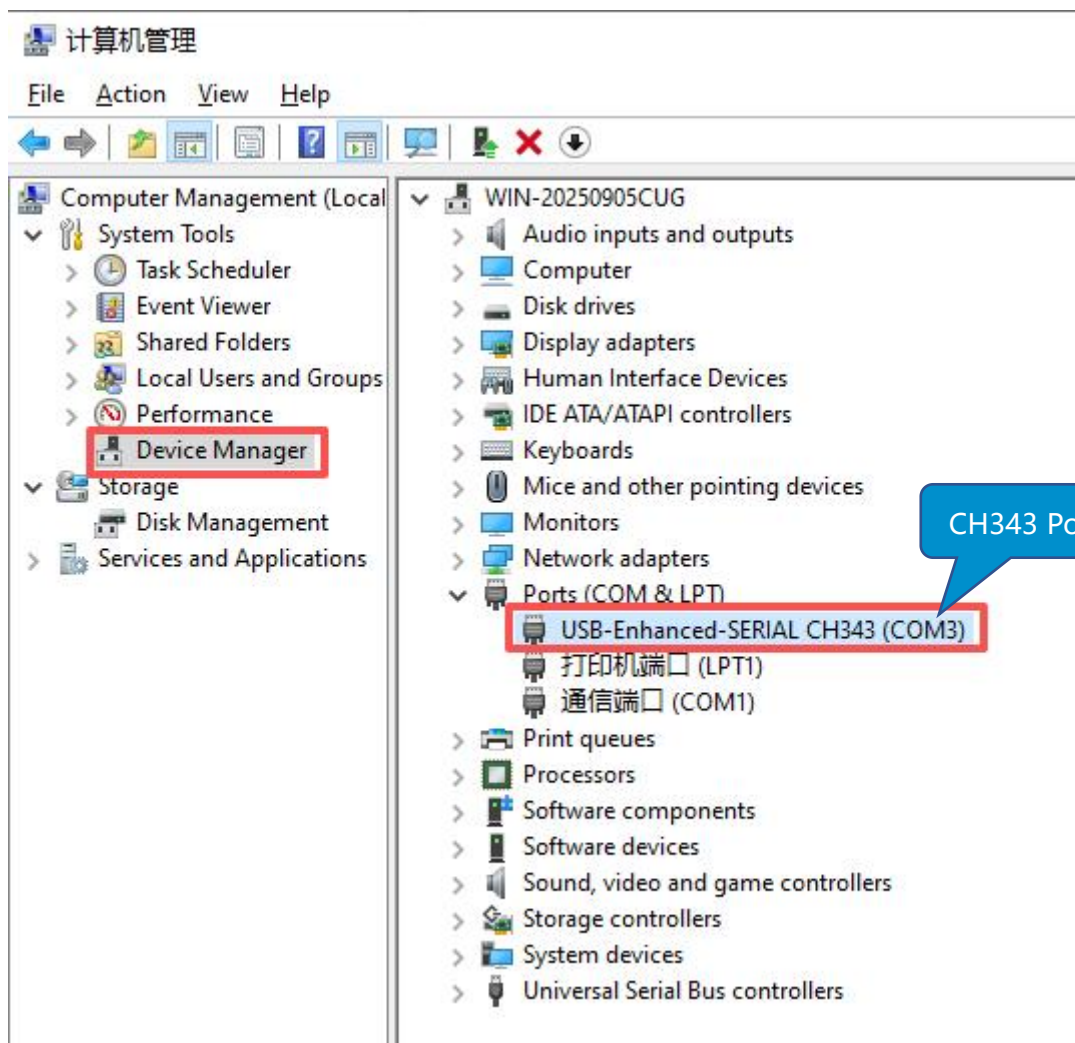
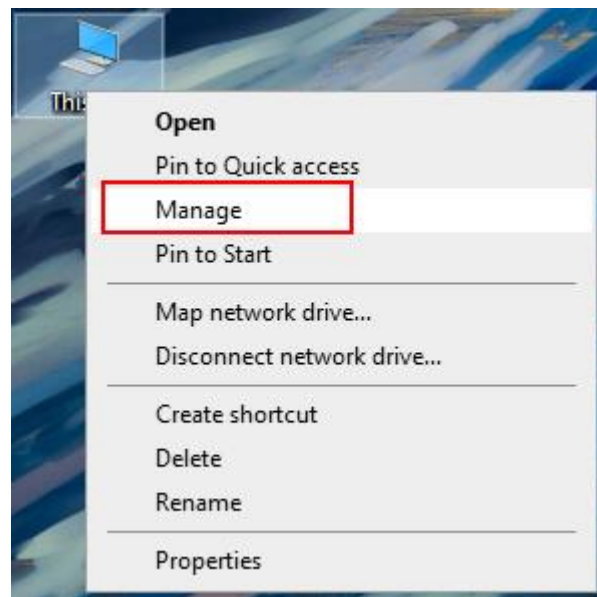
CH341SER_ANDROID.ZIP	11/14/2025 6:13 PM	Compressed (zipp...	2,010 KB
CH341SER_MAC.ZIP	11/14/2025 6:13 PM	Compressed (zipp...	4,330 KB
CH343SER.EXE	11/14/2025 6:13 PM	应用程序	708 KB
CH343SER.ZIP	11/14/2025 6:13 PM	Compressed (zipp...	648 KB



CH341SER_ANDROID.ZIP	11/14/2025 6:13 PM	Compressed (zipp...	2,010 KB
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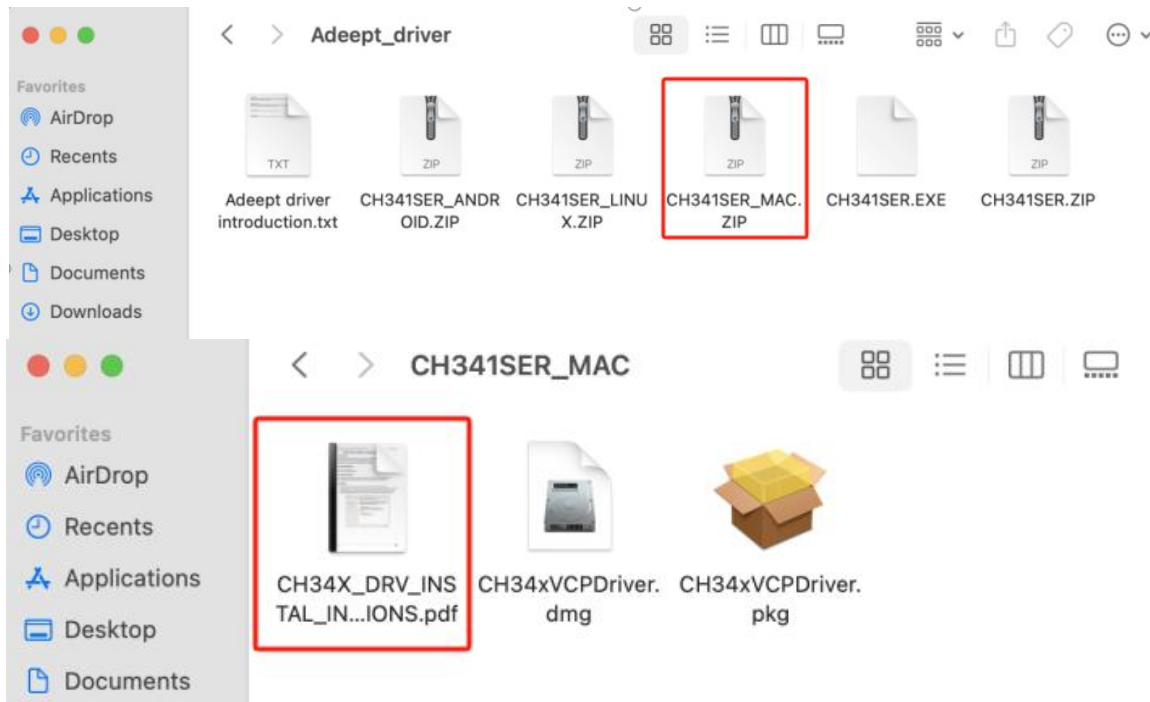


2. Turn to the main interface of your computer, select **"This PC"** and right-click to select **"Manage"**.



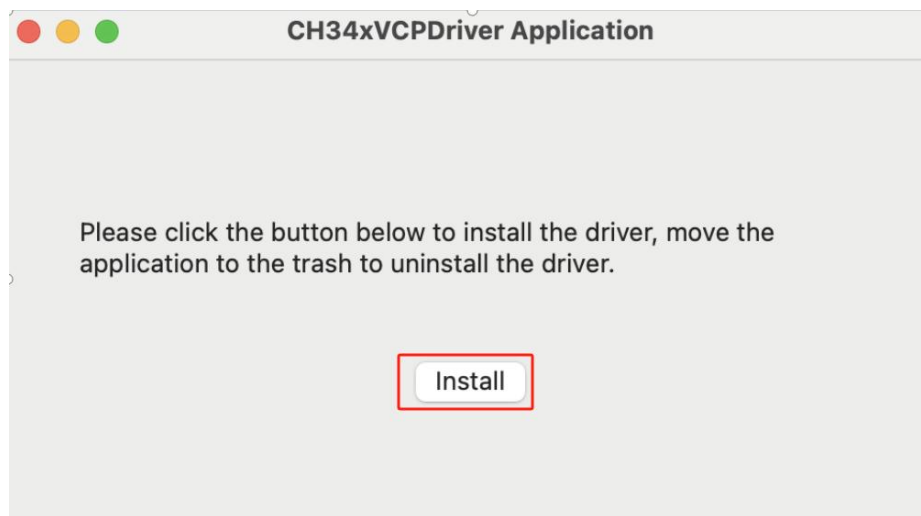
Mac OS:

Enter the driver folder, unzip the **CH341SER_MAC.ZIP** file, and then enter the folder. First, read the "**CH34X_DRV_INSTAL_INSTRUCTIONS.pdf**" document, and then select the corresponding installation method according to the macOS version.



1.The Mac OS version of the computer used in the example is **15.2.2**. Therefore, according to the instruction manual, we use the **".dmg"** file for installation.



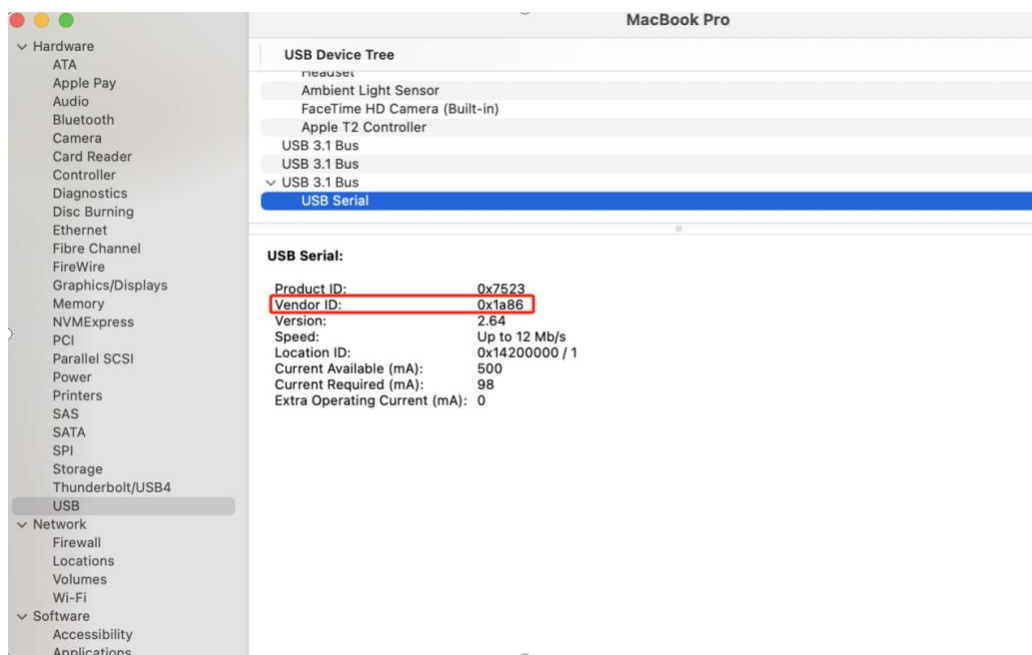


2. There are two ways to check if the driver is installed successfully:

1) Open the terminal and enter "**ls /dev/tty***" to check if "**usbserial***" exists.

```
adeept@AdeeptdeMacBook-Pro ~ % ls /dev/tty*
/dev/tty                                /dev/ttyse
/dev/tty.BLTH                          /dev/ttysf
/dev/tty.Bluetooth-Incoming-Port      /dev/ttyt0
/dev/tty.usbserial-1420             /dev/ttyt1
/dev/ttyp0                             /dev/ttyt2
/dev/ttyp1                             /dev/ttyt3
/dev/ttyp2                             /dev/ttyt4
/dev/ttyp3                             /dev/ttyt5
/dev/ttyp4                             /dev/ttyt6
/dev/ttyp5                             /dev/ttyt7
```

2) Open the system report and check the usb Serial. If "**Vendor ID: 0x1a86**" appears.

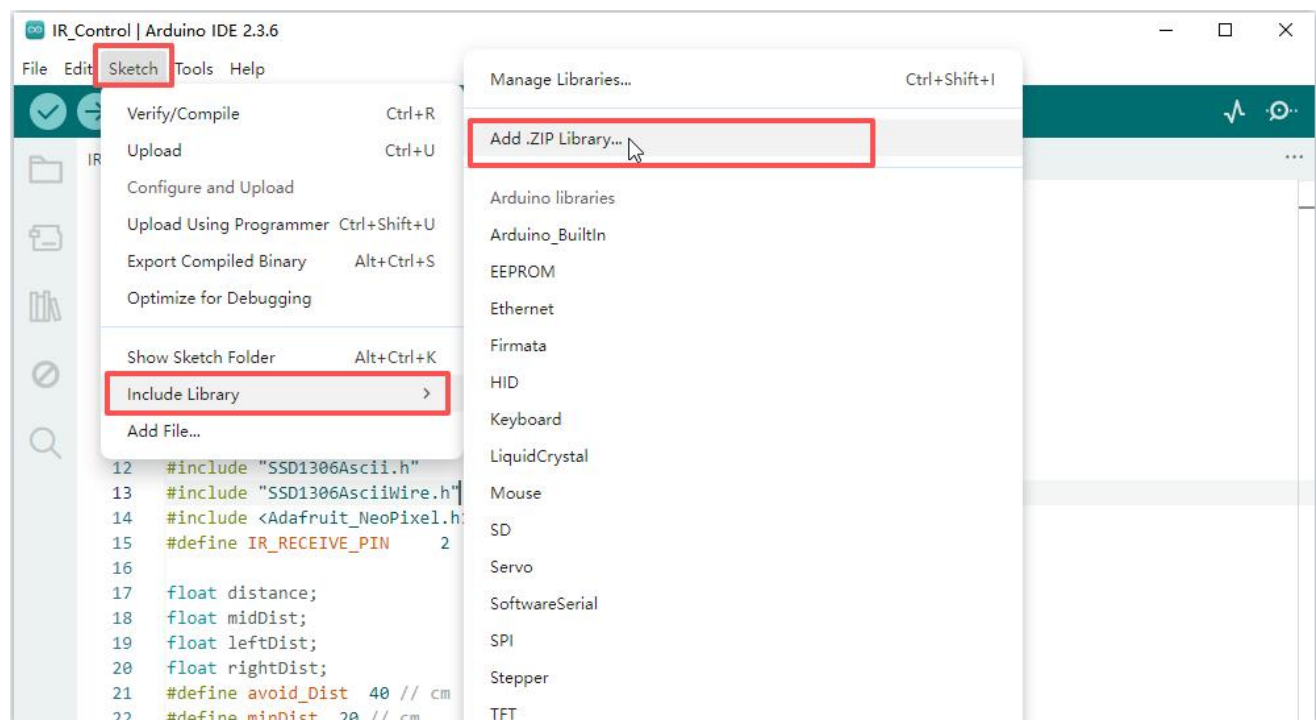


2.6 Uploading the First Code

Before uploading the code, we need to import all the libraries required by the project.

How to Add libraries

Open Arduino IDE, click **Sketch** on Menu bar, move your mouse to **Include Library** and then click **Add .ZIP library...**



Enter **Libraries** folder, Add **Adafruit_NeoPixel.zip**.

ArduinoJson.zip	11/5/2025 12:06 PM	Compressed (zipp...	352 KB
Servo.zip	11/4/2025 3:40 PM	Compressed (zipp...	128 KB
IRremote.zip	9/22/2025 1:58 PM	Compressed (zipp...	1,368 KB
SSD1306Ascii.zip	9/22/2025 11:27 AM	Compressed (zipp...	4,097 KB
Adafruit_NeoPixel.zip	7/20/2023 4:31 PM	Compressed (zipp...	51 KB

You need to add **all the ZIP files** in the folder to the Arduino IDE one by one.

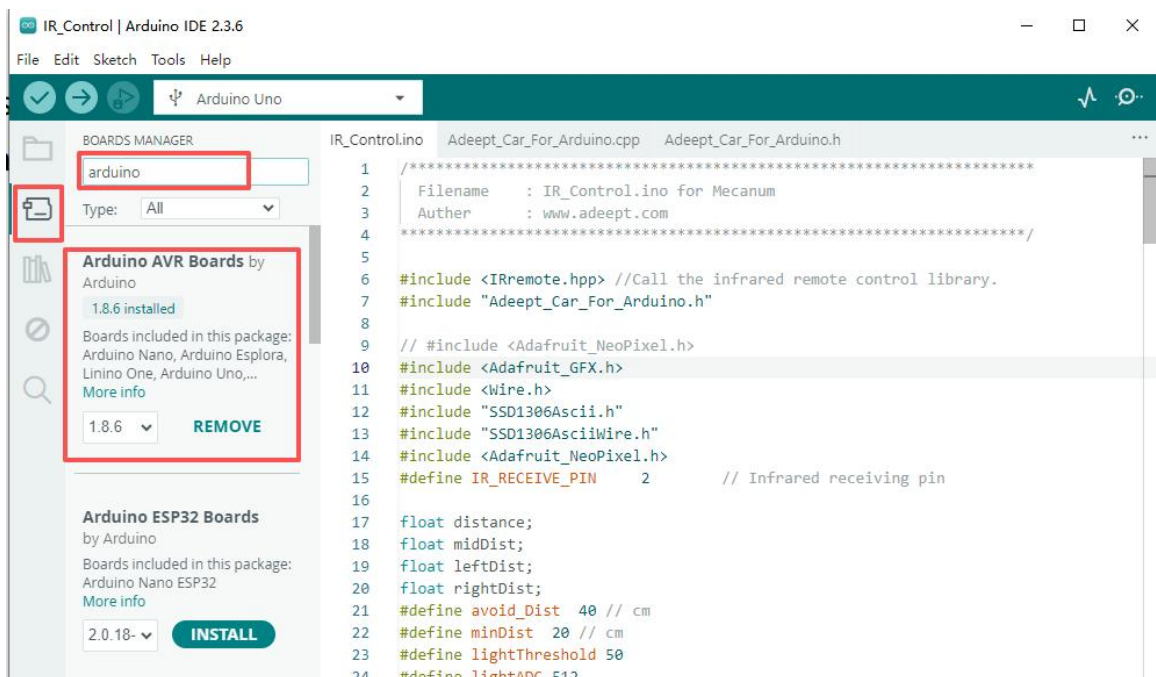
Upload code

1. Connect your computer and Adeept Pixie Board with a USB cable.
2. Open "01_LED" folder in "Code" , double-click "01_LED.ino" .

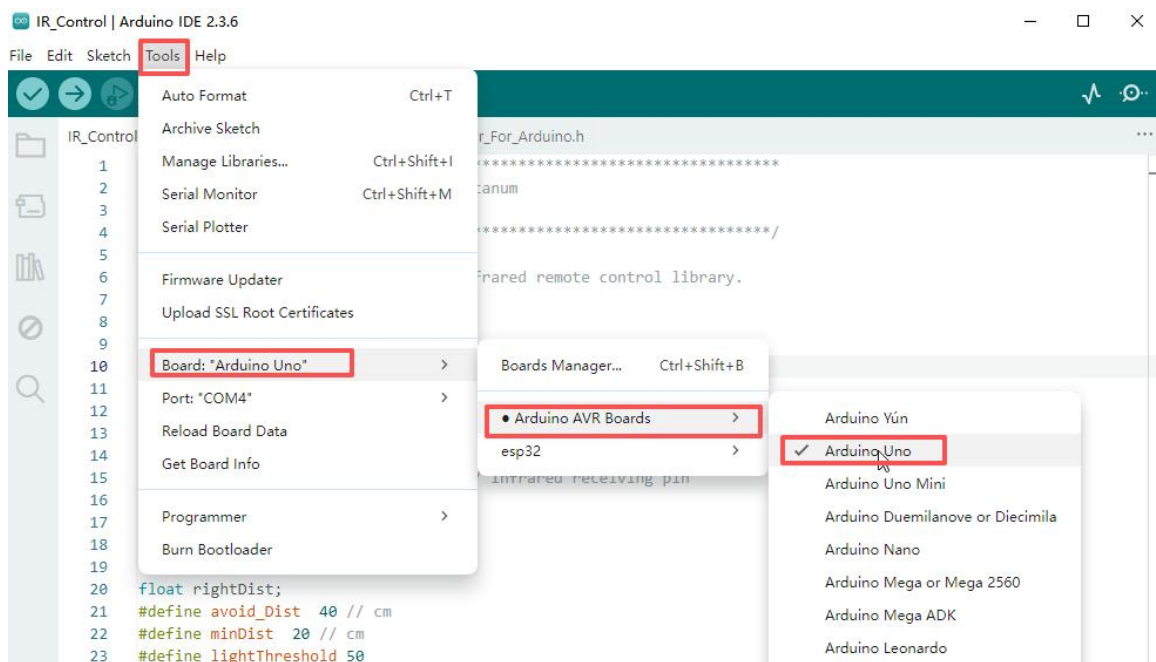
Please ignore the update prompt.



3. Install development board.



After the installation is completed, you will be able to see the boards supported by Arduino.

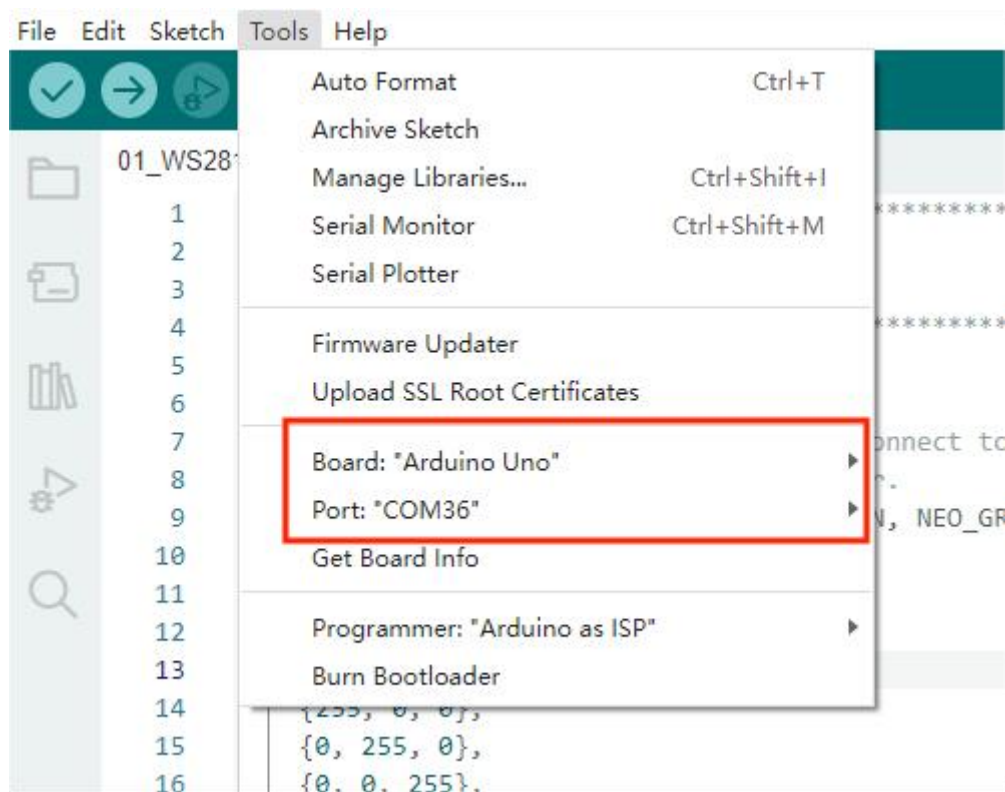


4. Select development board and serial port.

Board: **Tools**--->**Board**--->**Arduino AVR Boards**--->**Arduino Uno**

Port: **Tools** --->**Port**--->**COMx**

Note: The port number will be different in different computers.





5. After opening, click  to upload the code program to the Arduino. If there is no error warning in the console below, it means that the Upload is successful.

```
Output
Sketch uses 2952 bytes (9%) of program storage space. Maximum is 32256 bytes.
Global variables use 82 bytes (4%) of dynamic memory, leaving 1966 bytes for local variables. Maximum is 2048 bytes.
```