MicroPython Environment Setup

MicroPython is a streamlined implementation of the Python3 language, including a small portion of the Python standard library, optimized to run on microcontrollers and restricted environments such as ESP32, ESP8266, micro:bit, etc.

Thonny is an open source software that is designed in a minimalist way and is very friendly to MicroPython compatibility. It also supports Windows, Mac OS, and Linux systems. Due to open source, the software iteration speed is very fast, and the functions are becoming more mature.

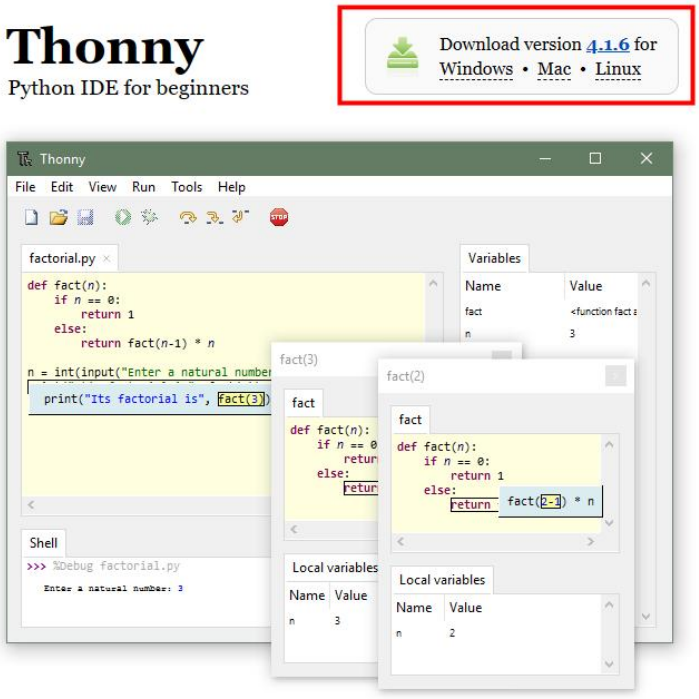
Follow the steps below to install the Thonny programming software.

1. Download the Installation Package

You can download the package from Thonny's website：

https://thonny.org/open in new window

The opening screen is as follows:



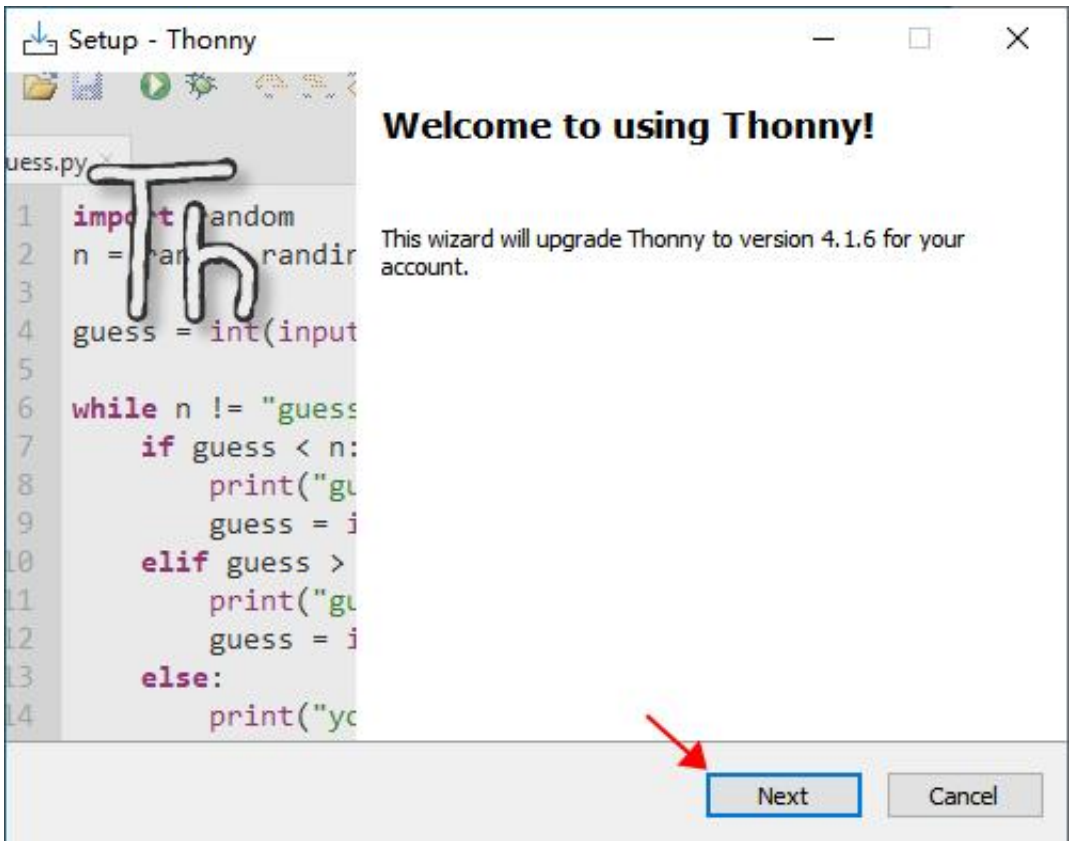
Note: There is a download prompt in the upper right corner of the page, select a different version according to your computer's system, and then download it

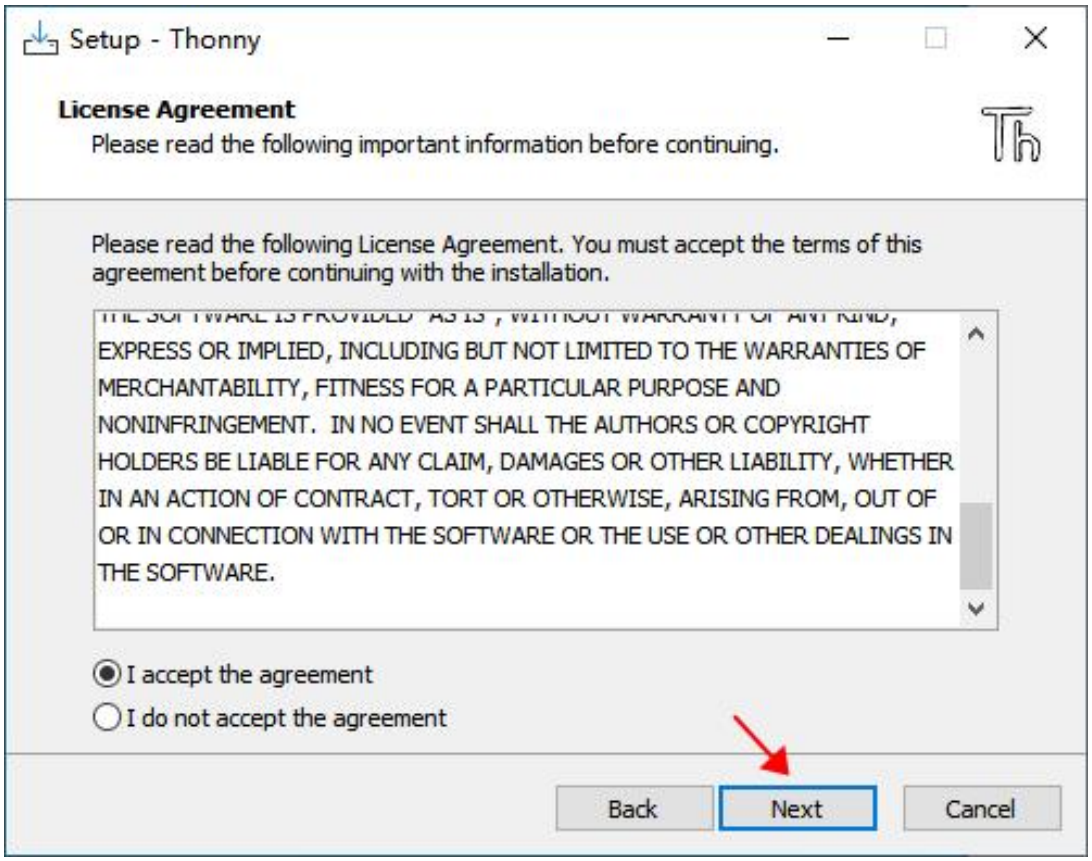
2.Install the Software

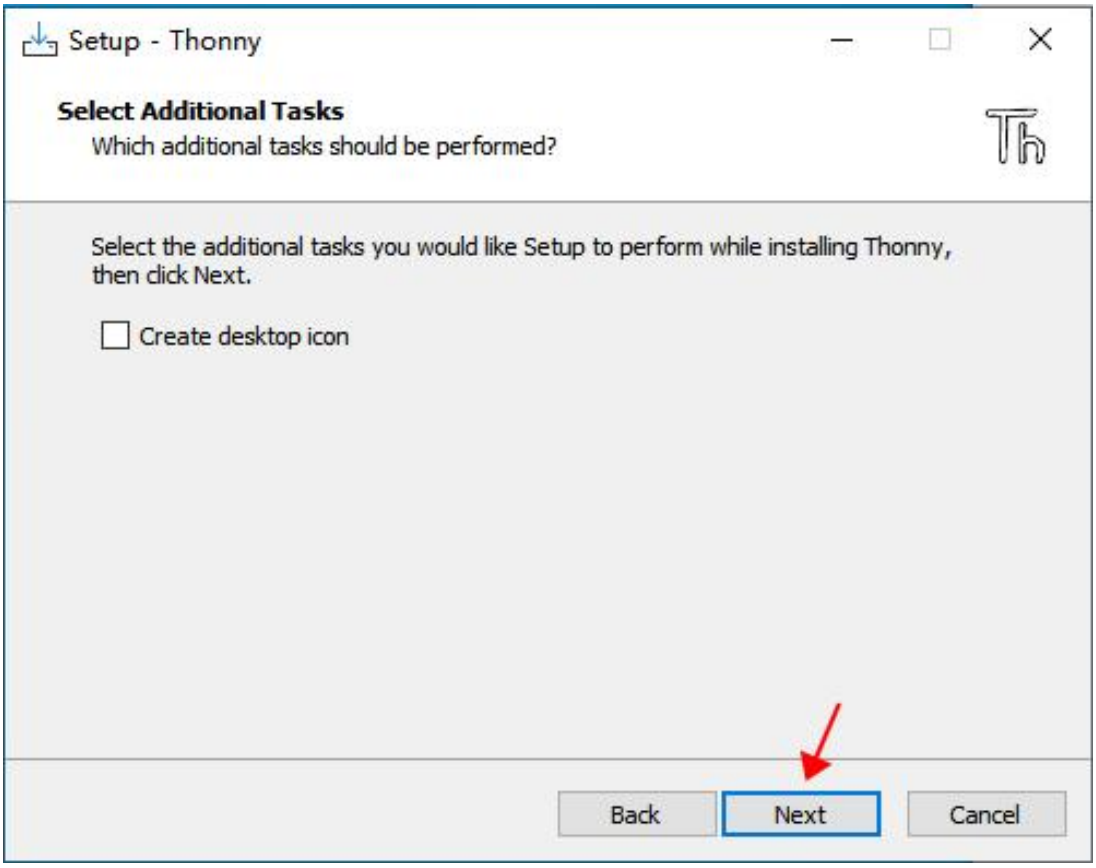
This section uses Windows as an example to explain the installation procedure.

(1) Double-click the downloaded Thonny installation package.

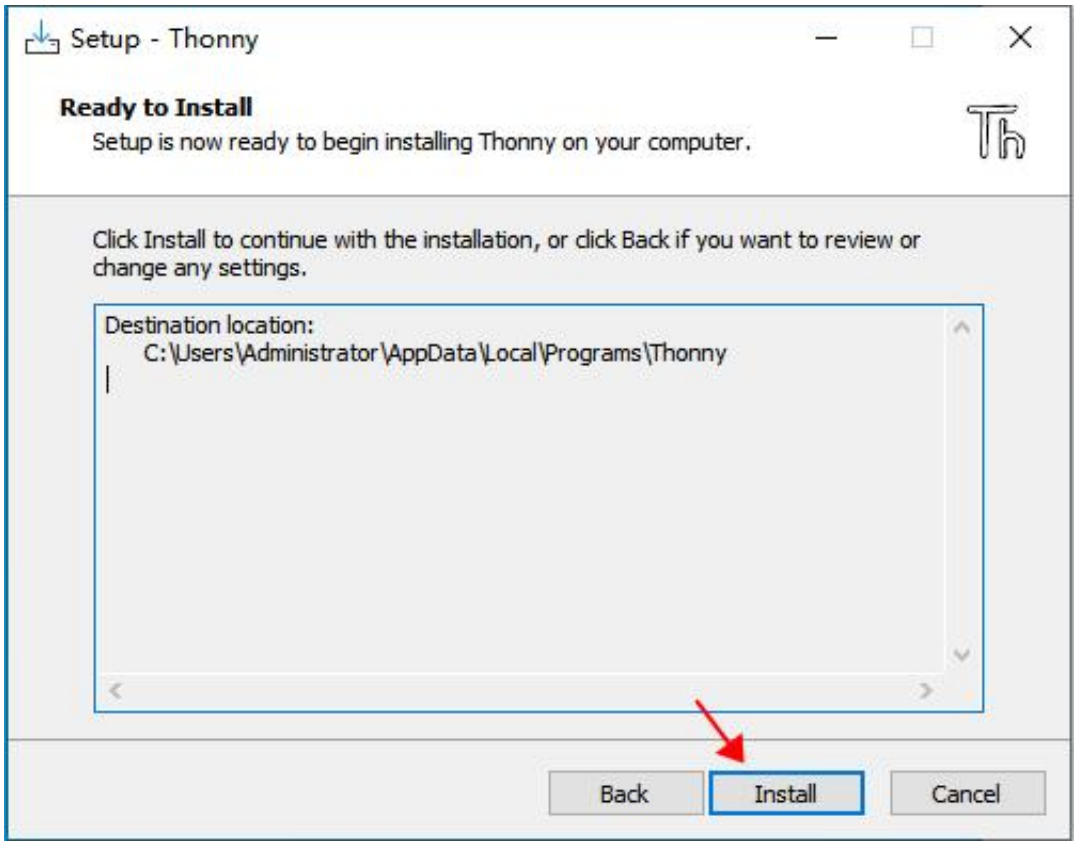
(2) Keep clicking "Next".

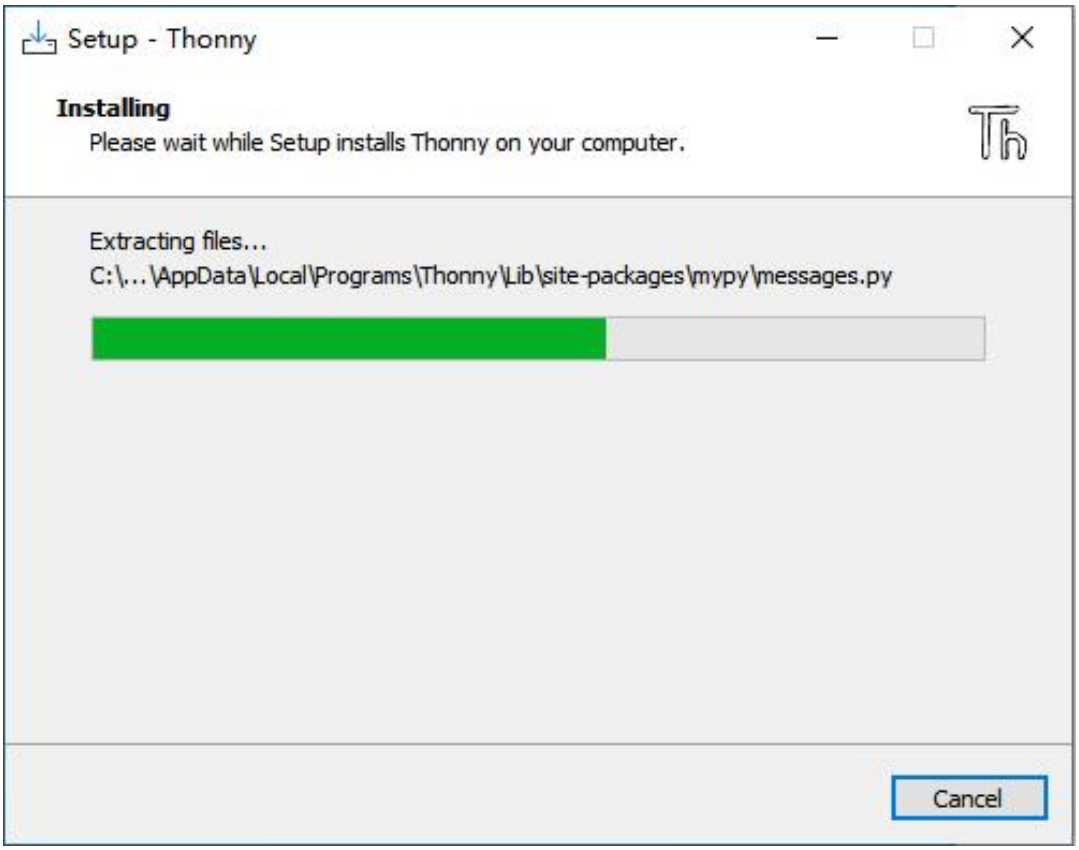



Setup - Thonny
License Agreement
Please read the following important information before continuing.
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
I accept the agreement
I do not accept the agreement
Back
Next
Cancel

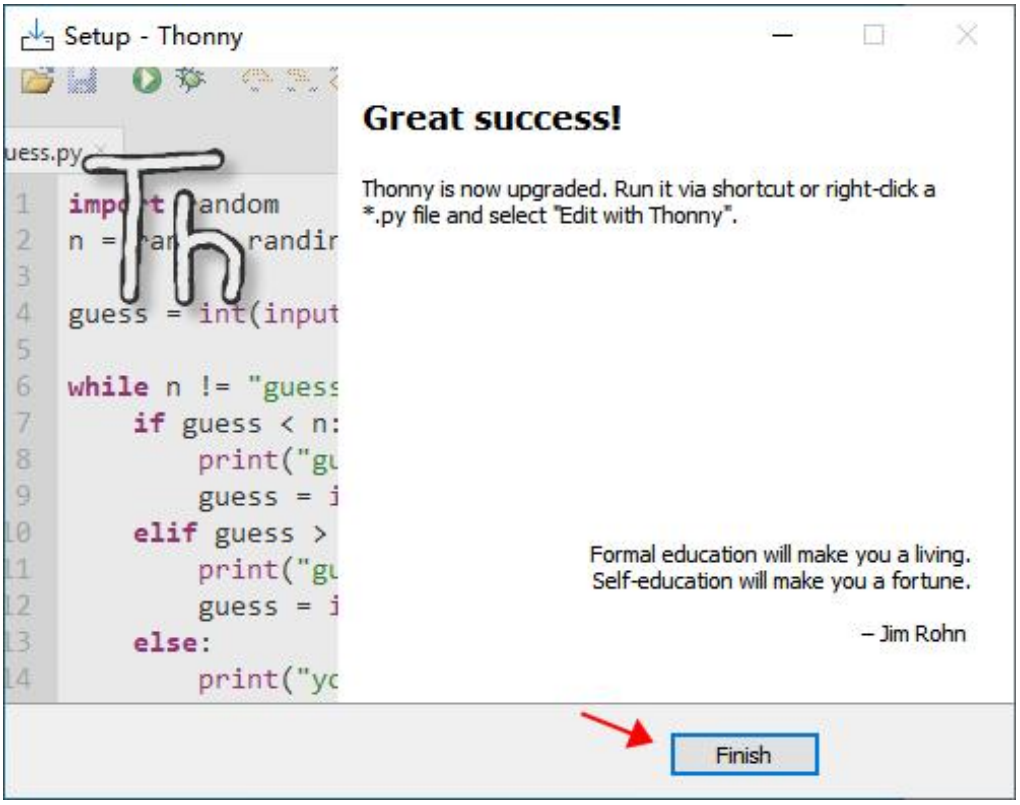

Setup - Thonny
Select Additional Tasks
Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing Thonny, then click Next.
Create desktop icon
Back
Next
Cancel

(3) Click“Install”.





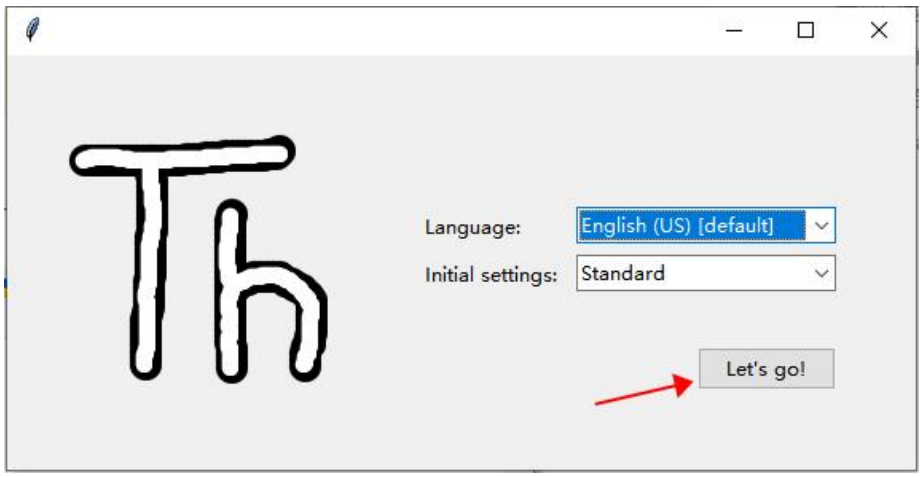
(4) Install successfully, click "Finish".



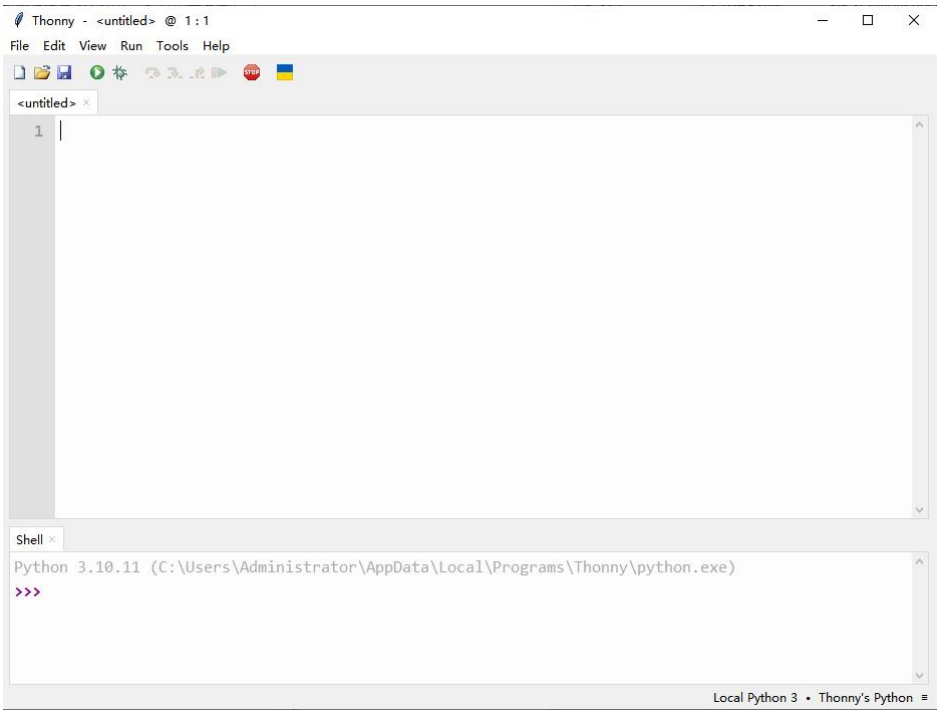
3.Run Software

(1) Double-click the Thonny shortcut.

(2) Select the language and click "Let's go!" .

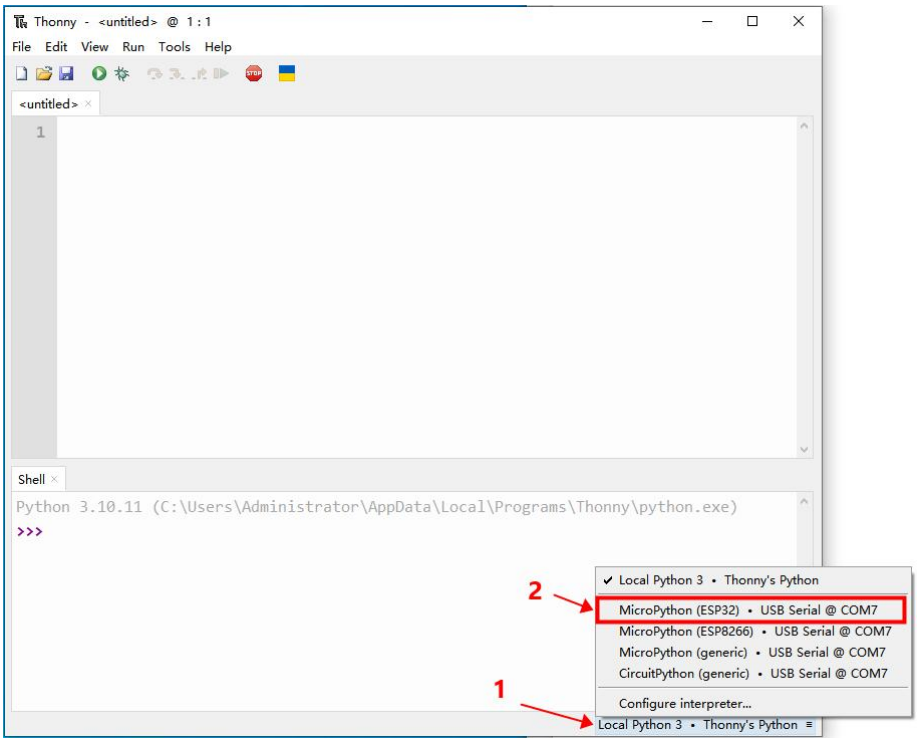


(3) Enter the programming page of the software.

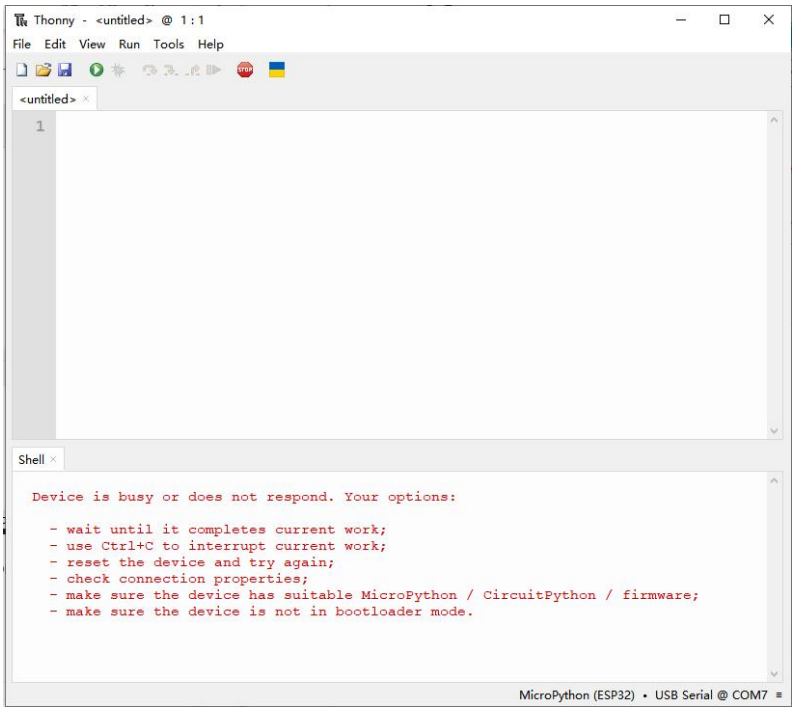


(4) View the interactive environment.

①After connecting the ESP32 controller board to the computer, click the menu bar in the lower right corner of the software, and then select the corresponding controller board and serial port.



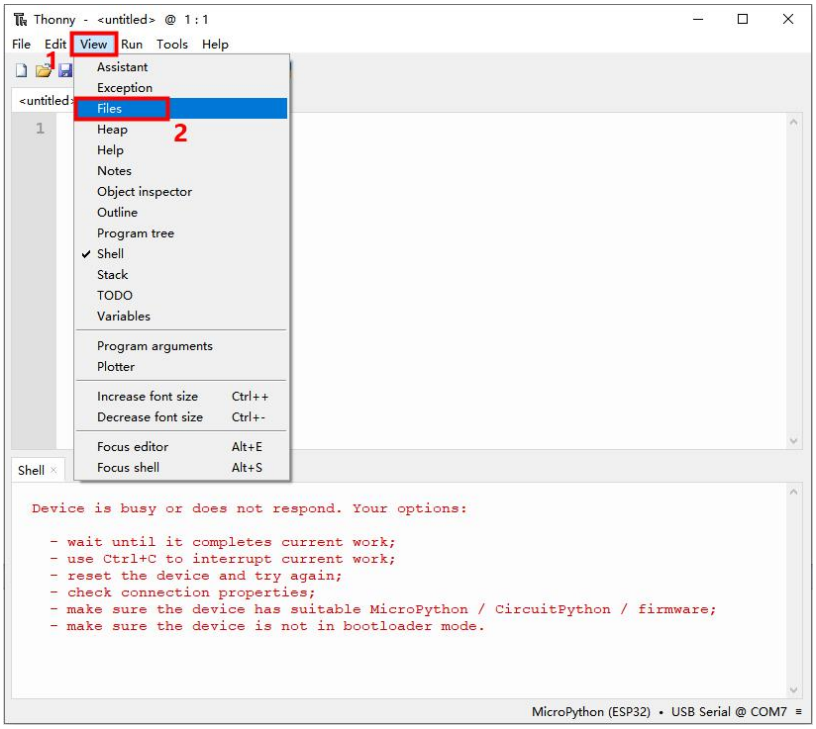
② If there is a red error in the shell interactive environment, then the MicroPython firmware does not exist in the ESP32.



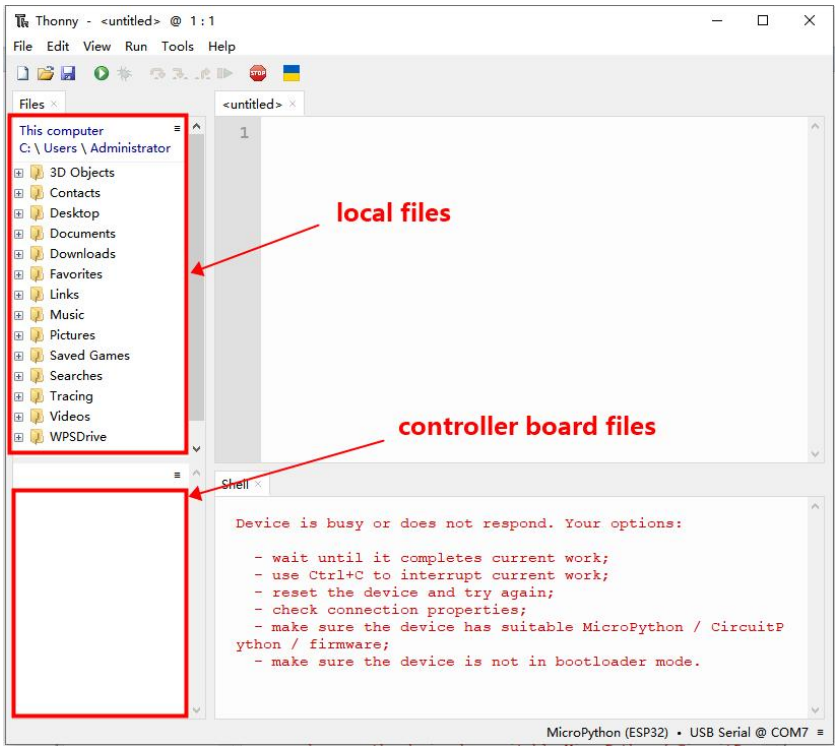
4.Install firmware

(1)Method 1: Install the firmware online

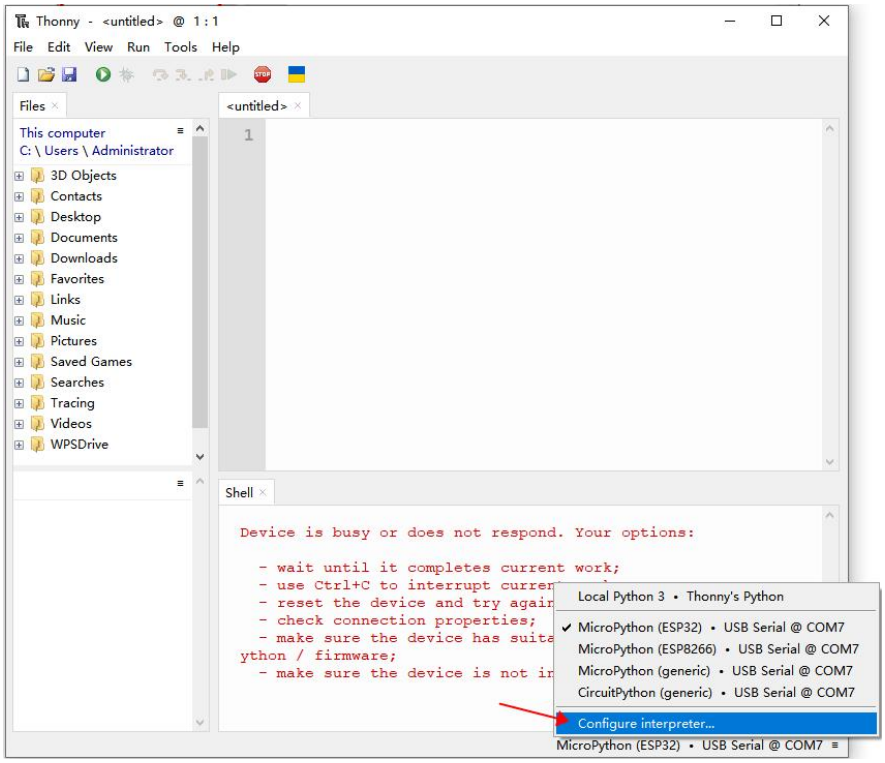
①Click "view" and select "files".



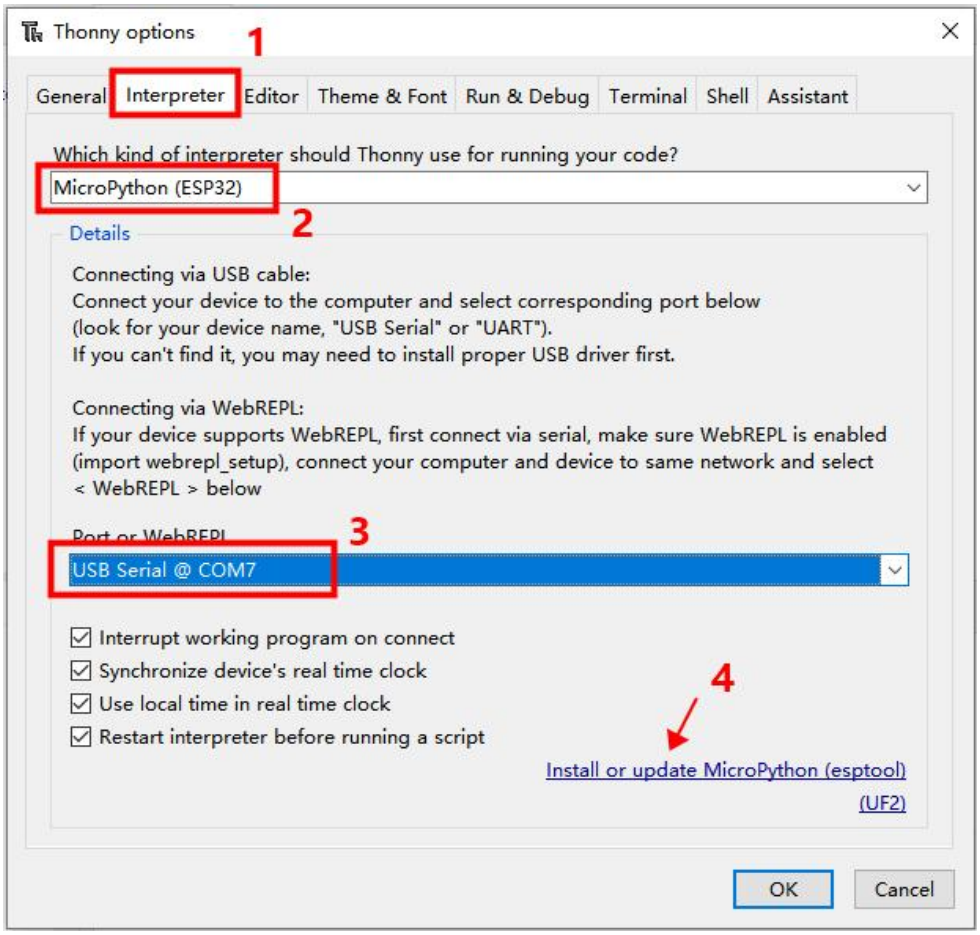
②The real-time file viewing window for the local and controller board appears on the left, but the firmware file does not exist on the controller board at this time.



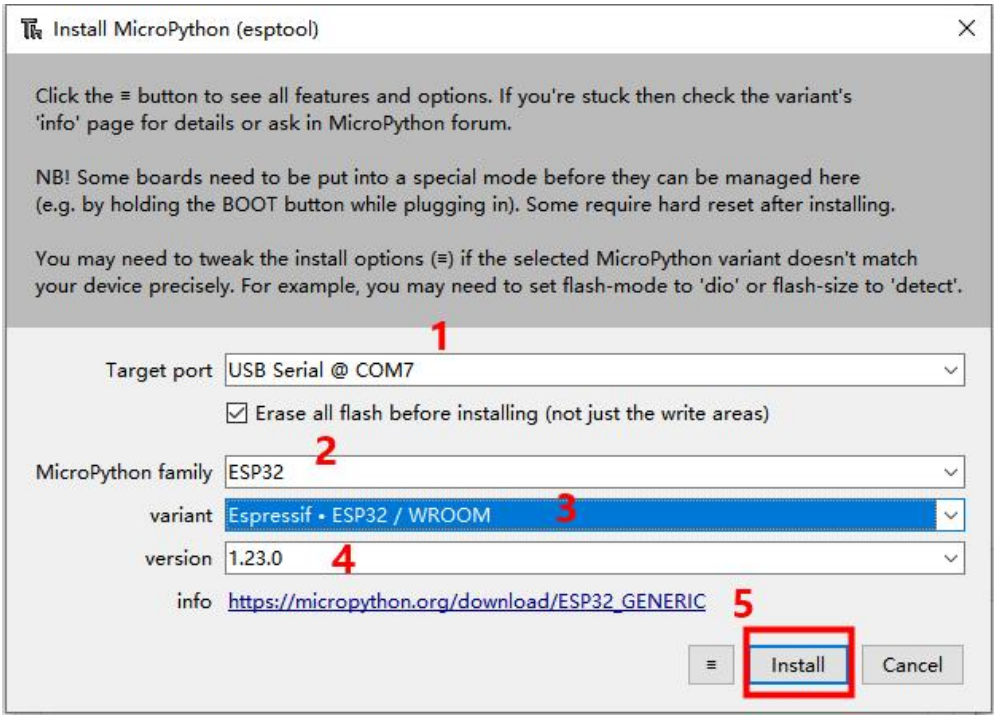
③Click on the bottom right corner and select "Configure interpreter".



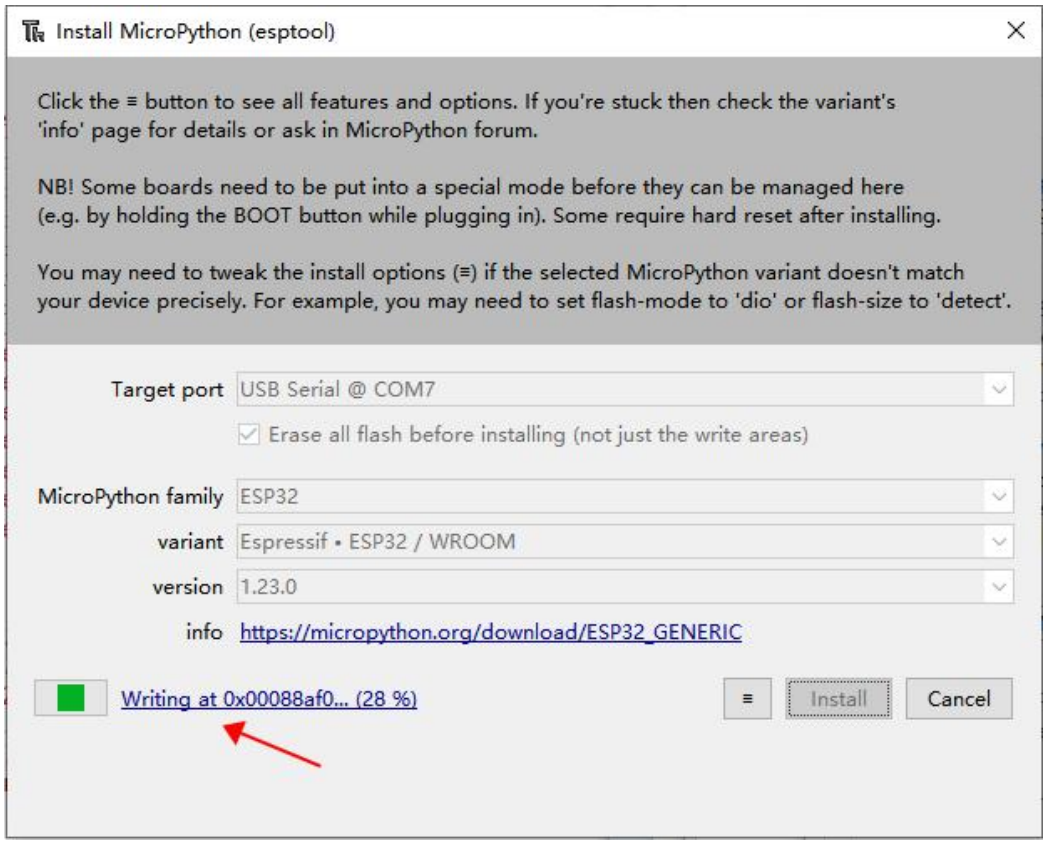
④Configure “Interpreter”.

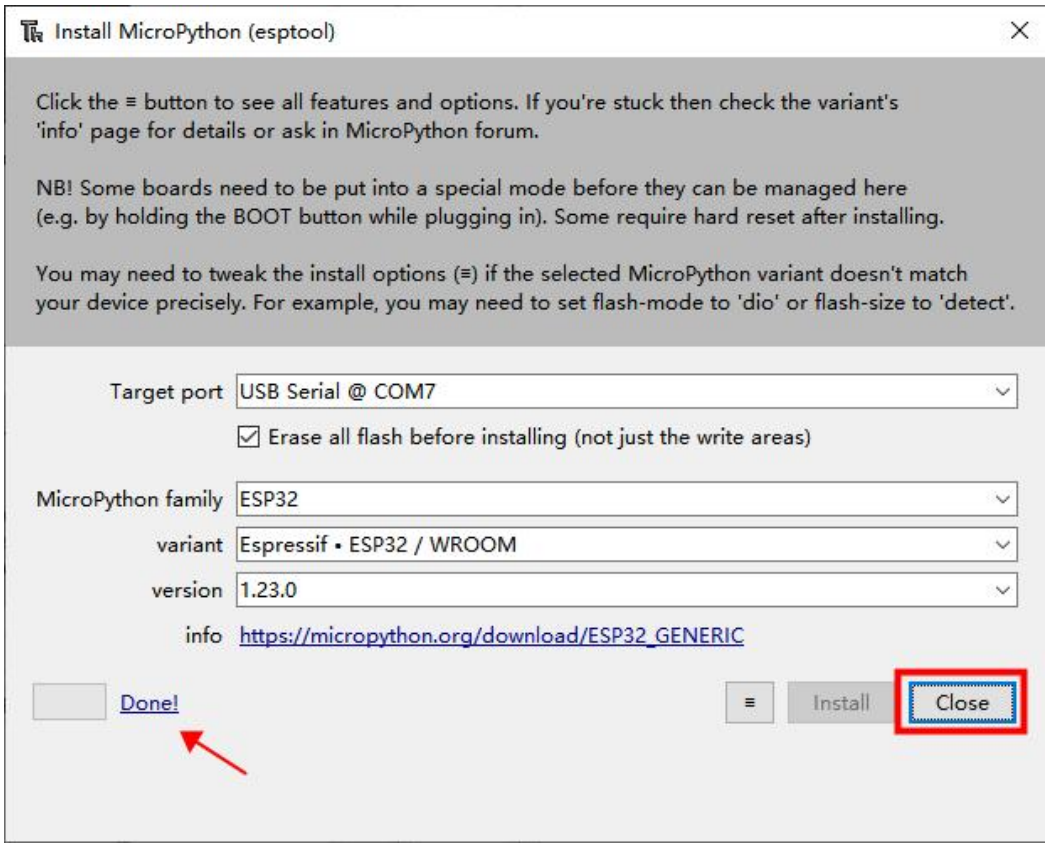


Note: You need to wait a few minutes for the hardware to load before selecting.

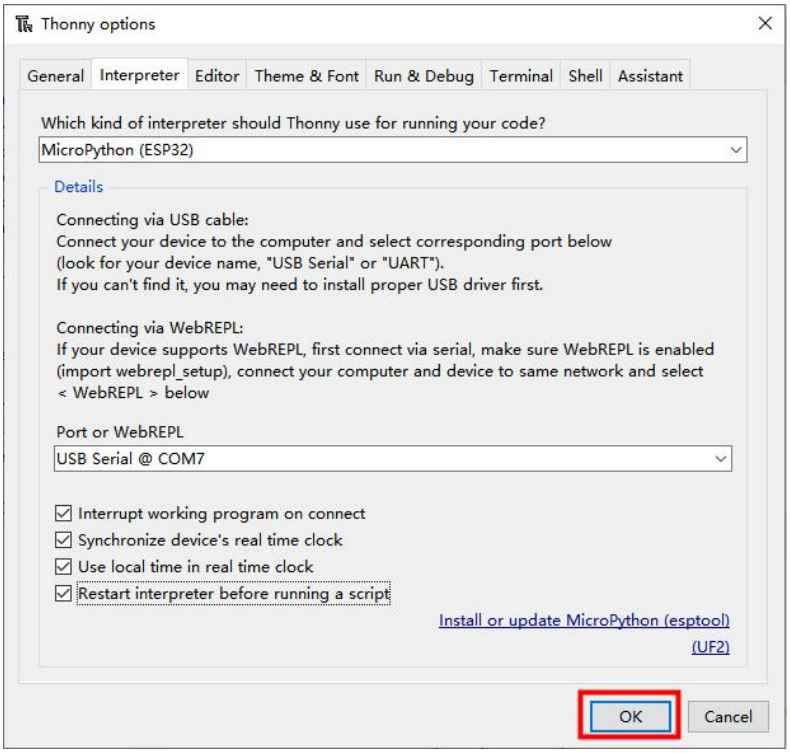


⑤Download the firmware. When the download is complete, click "Close".

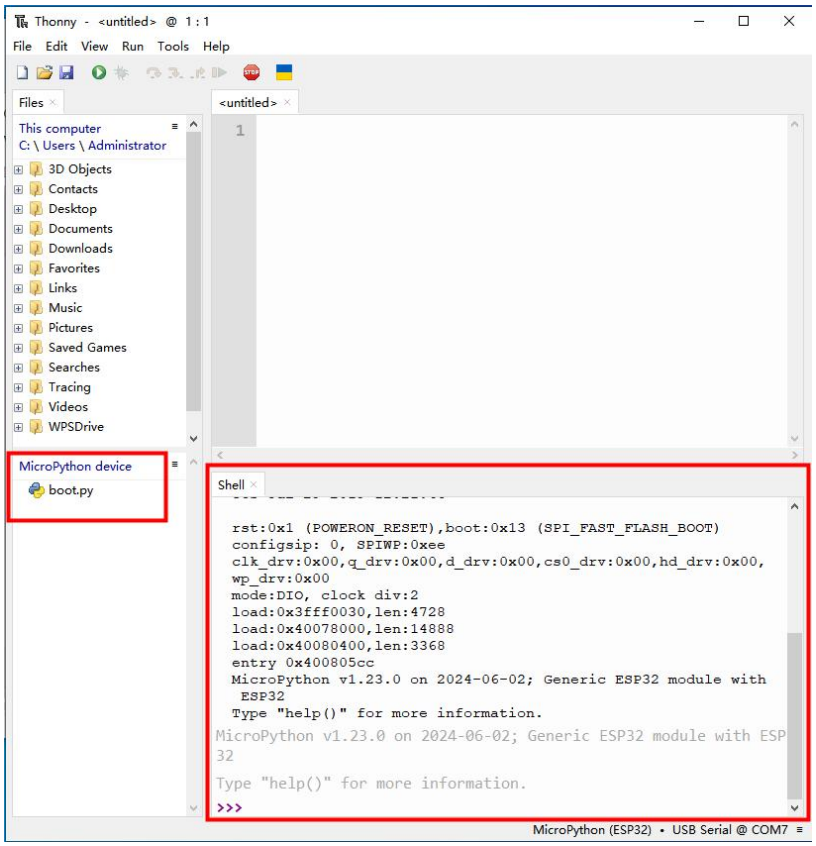




⑥Click“OK”.

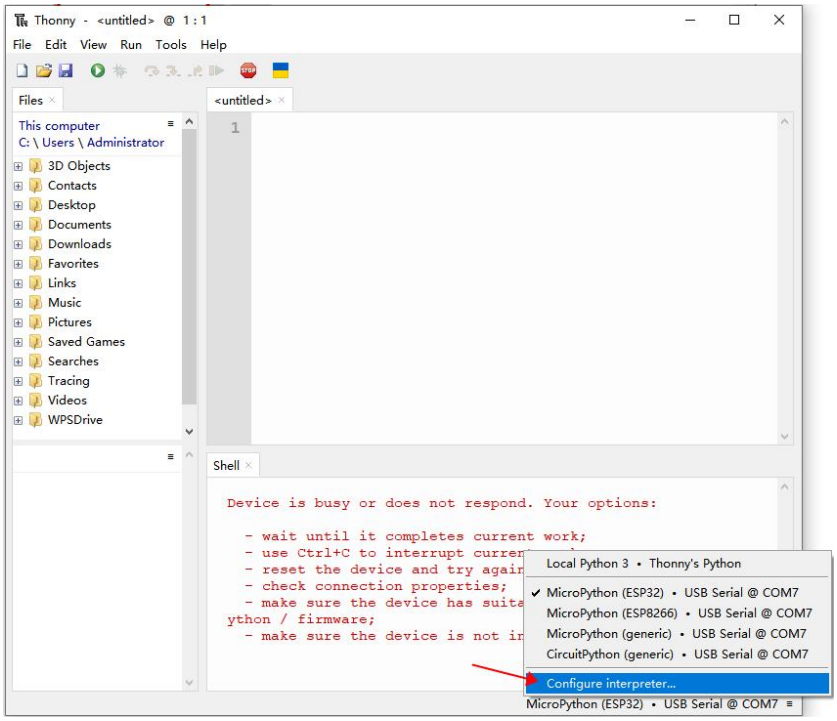


⑦After the firmware is downloaded successfully, “boot.py” is displayed in the file bar of the controller board.

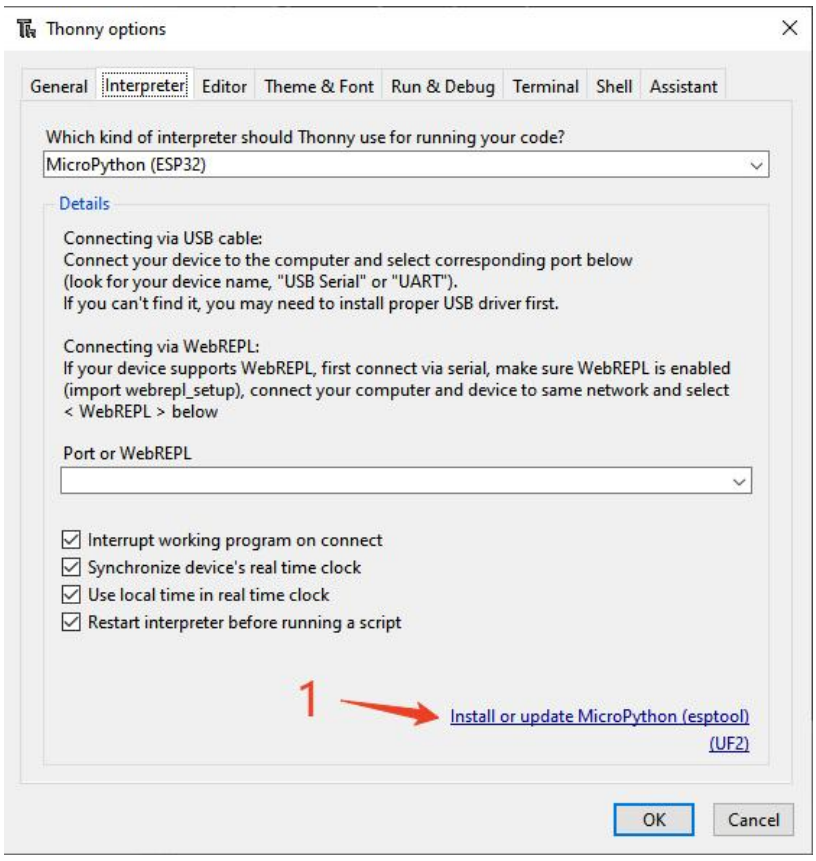


(2) Method 2: Install the firmware offline

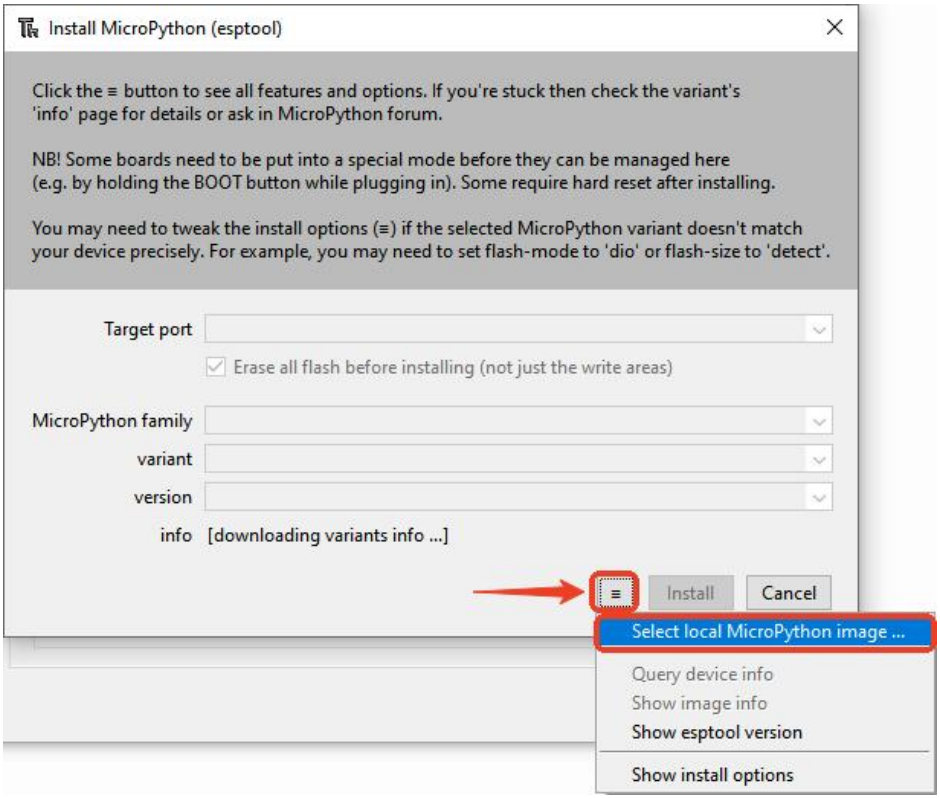
①Click on the bottom right corner, click Configure interpreter



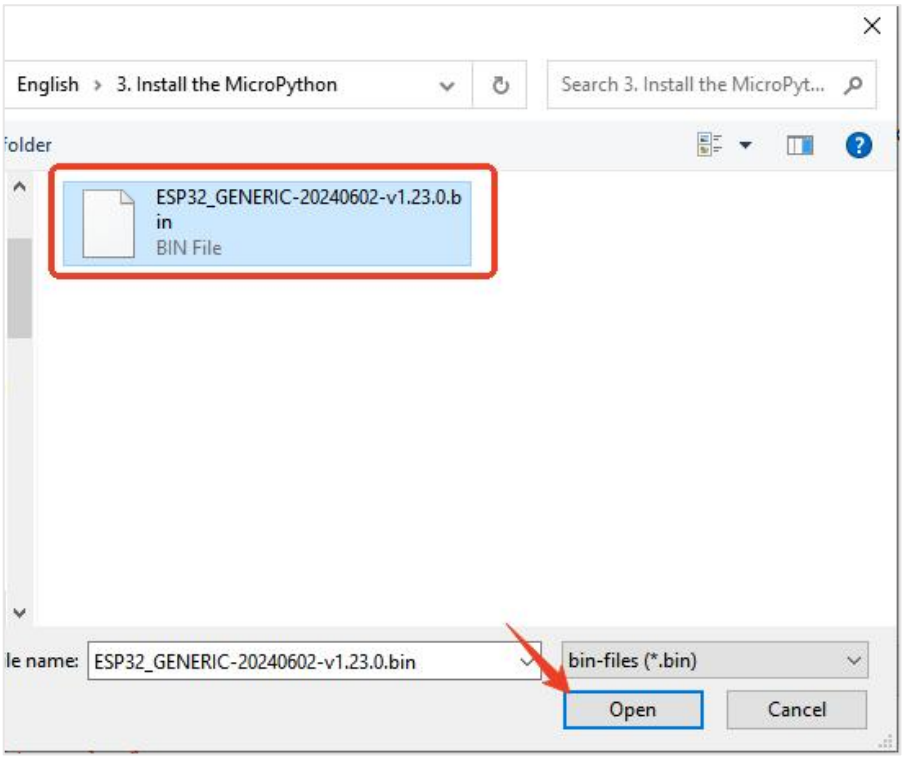
②Click “Install or update MicroPython”



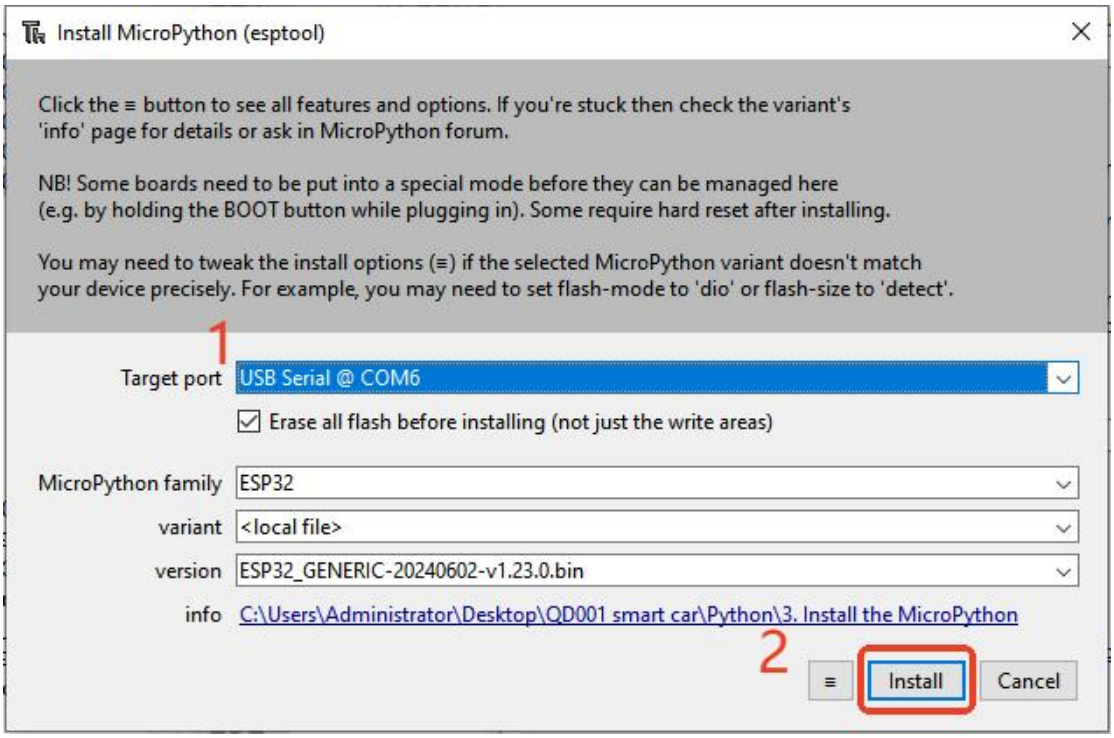
③Click the icon to select “Select local MicroPython image...”



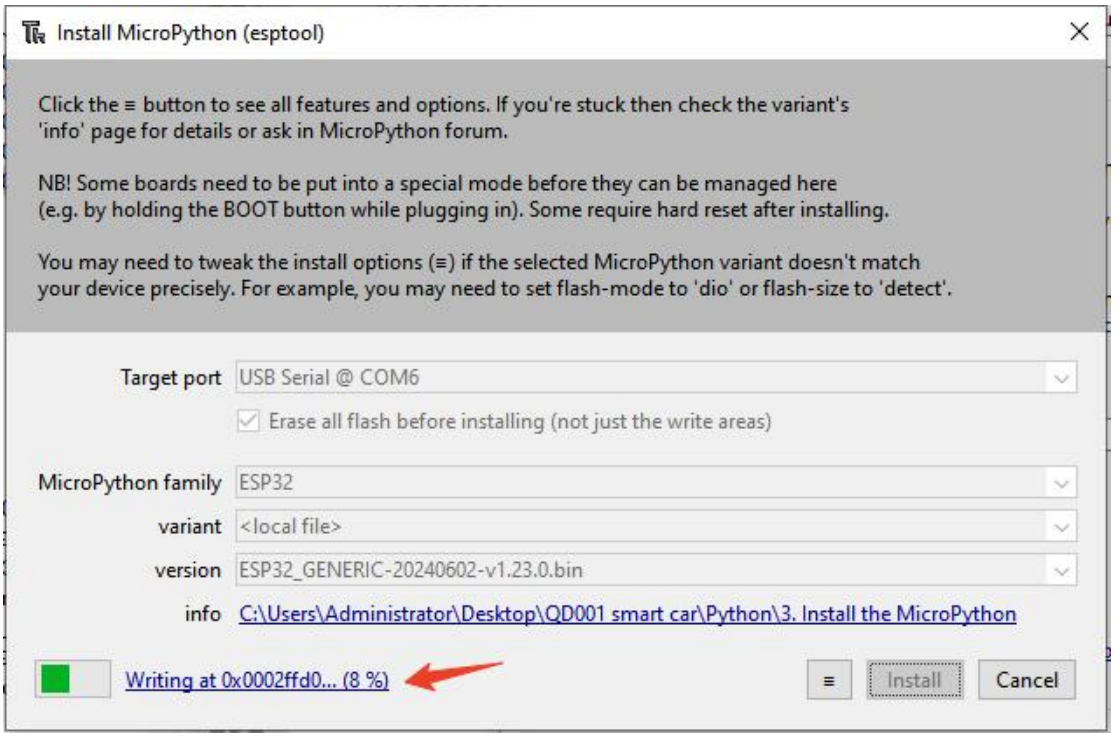
④ Click the "ESP32_GENERIC-20240602-v1.23.0.bin" file in English /python/3. Install the MicroPython environment.

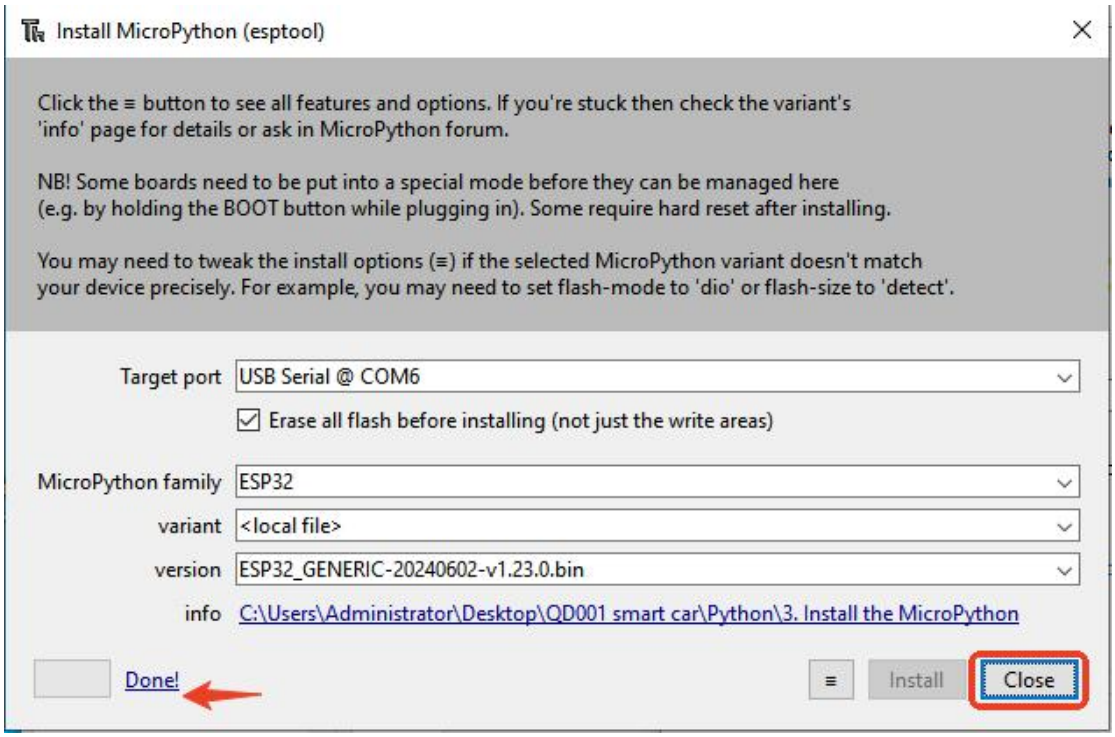


⑤Click Select serial port, and then click Install.

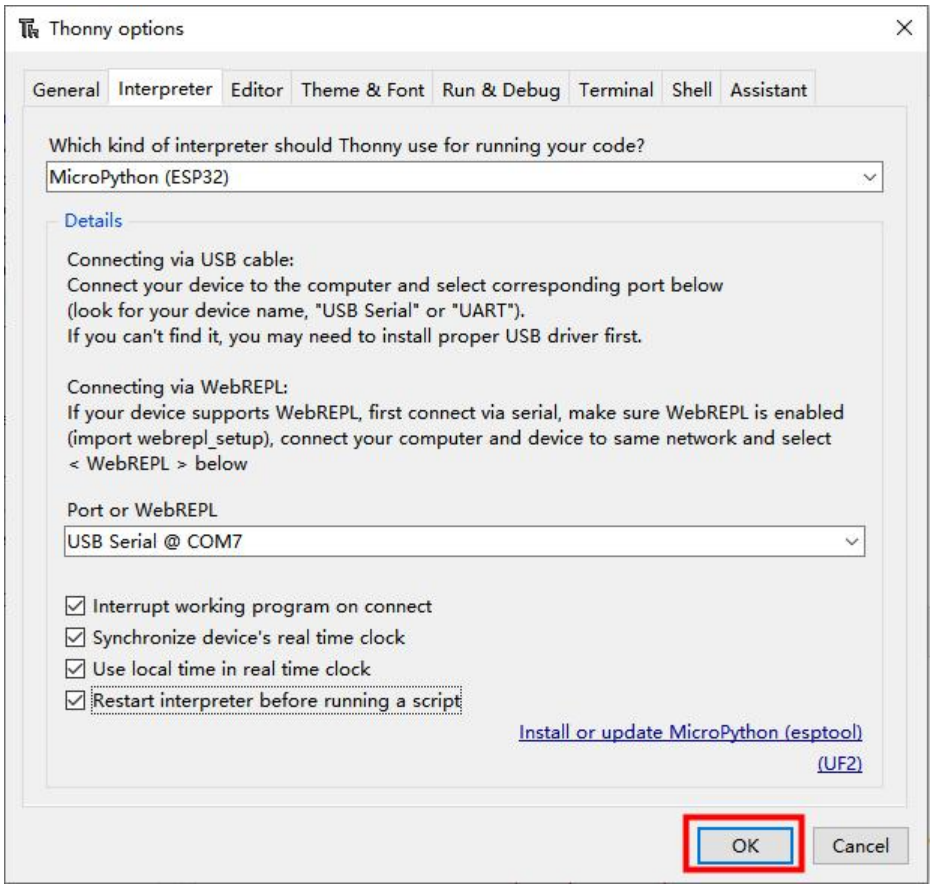


⑥Download the firmware. When the download is complete, click "Close".

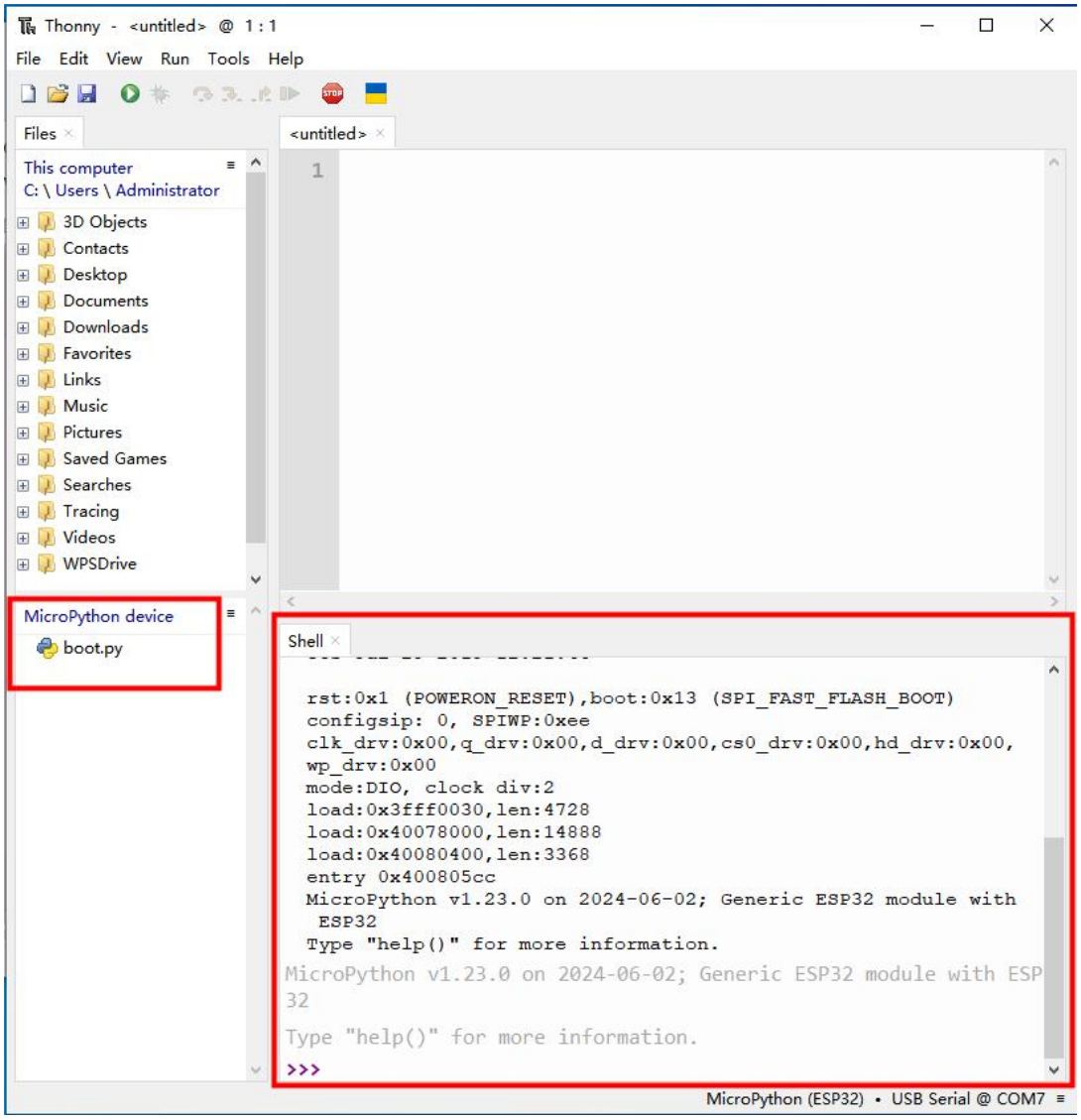




⑦Finally click "OK".



⑧After the firmware is downloaded successfully, boot.py is displayed in the file bar on the ESP32 controller board.



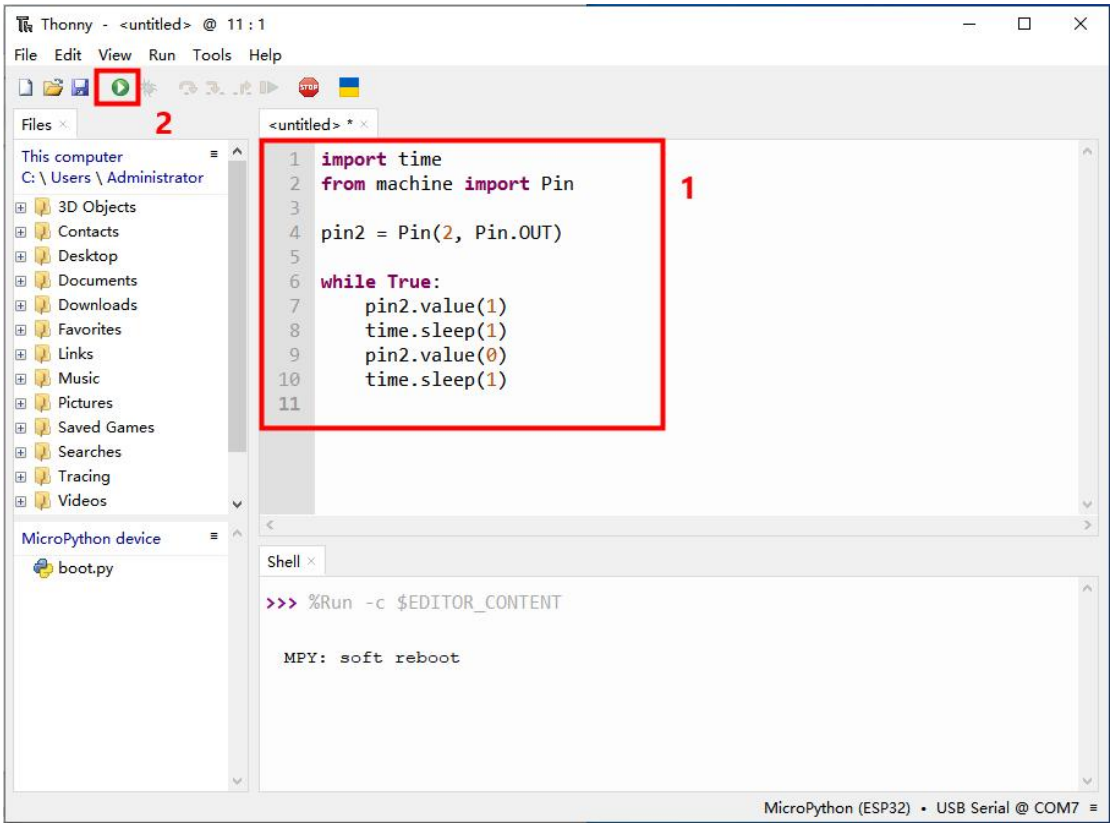
5. Run the program online

①Sample program

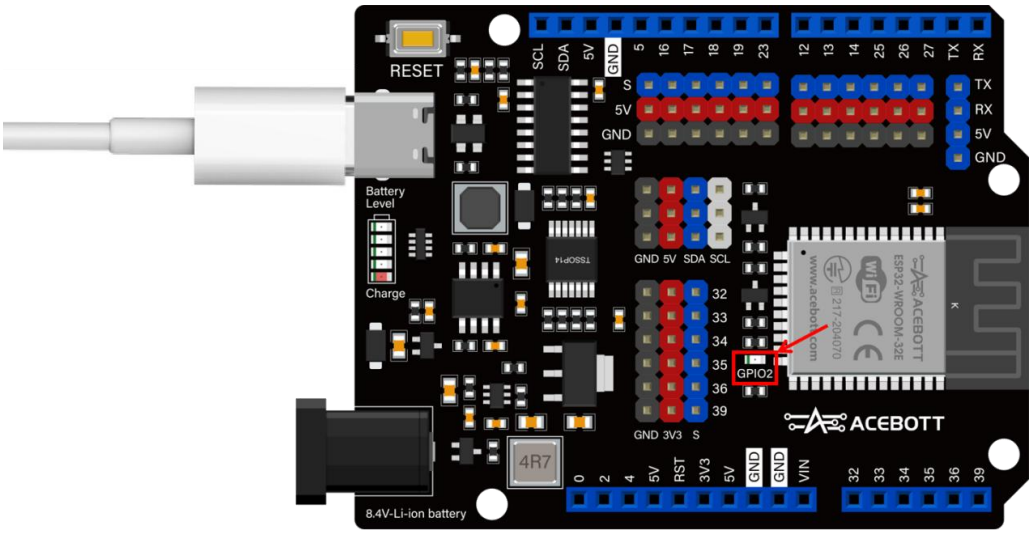
```
import time
from machine import Pin


pin2 = Pin(2, Pin.OUT)
while True:
    pin2.value(1)
    time.sleep(1)
    pin2.value(0)
    time.sleep(1)
```

②After copying the code into the program editing area, click Run.



③If the code runs successfully, the LED light on the controller board will flash, indicating that the MicroPython environment has been set up successfully.



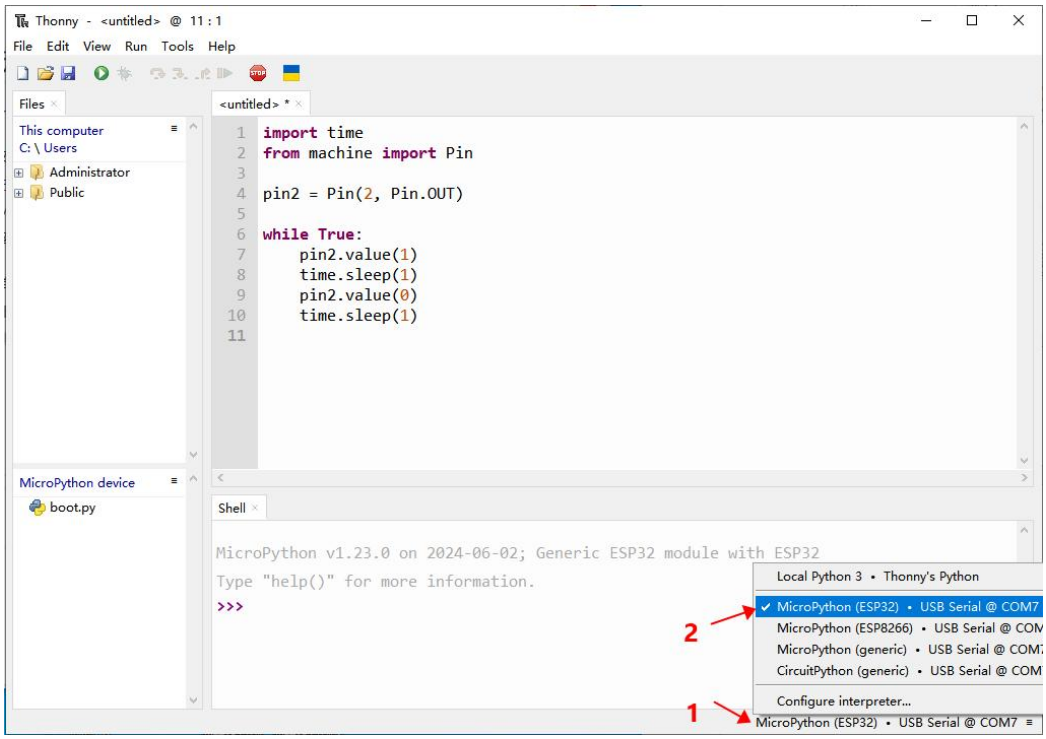
④ If you need to end the running program, you can press the "STOP" icon in the software menu bar or press the shortcut key Ctrl+C.

6. Run the program offline

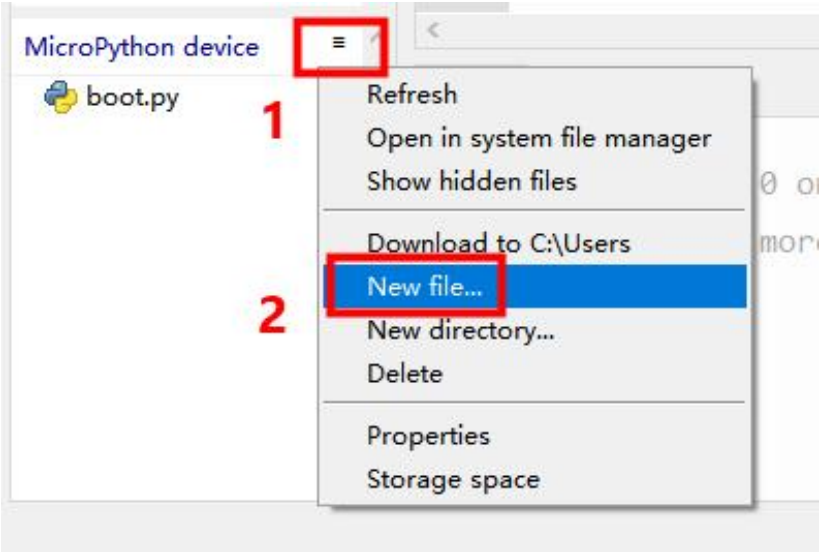
When we unplug the Type-C cable connected to the ESP32 controller board and then connect it, we will find that the LED light of the controller board will not continue to blink, indicating that the controller board has not set the offline operation program at this time.

Here's how to run the program offline:

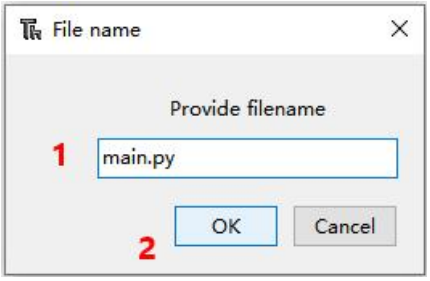
①Connect the controller board to the computer and click the serial port.

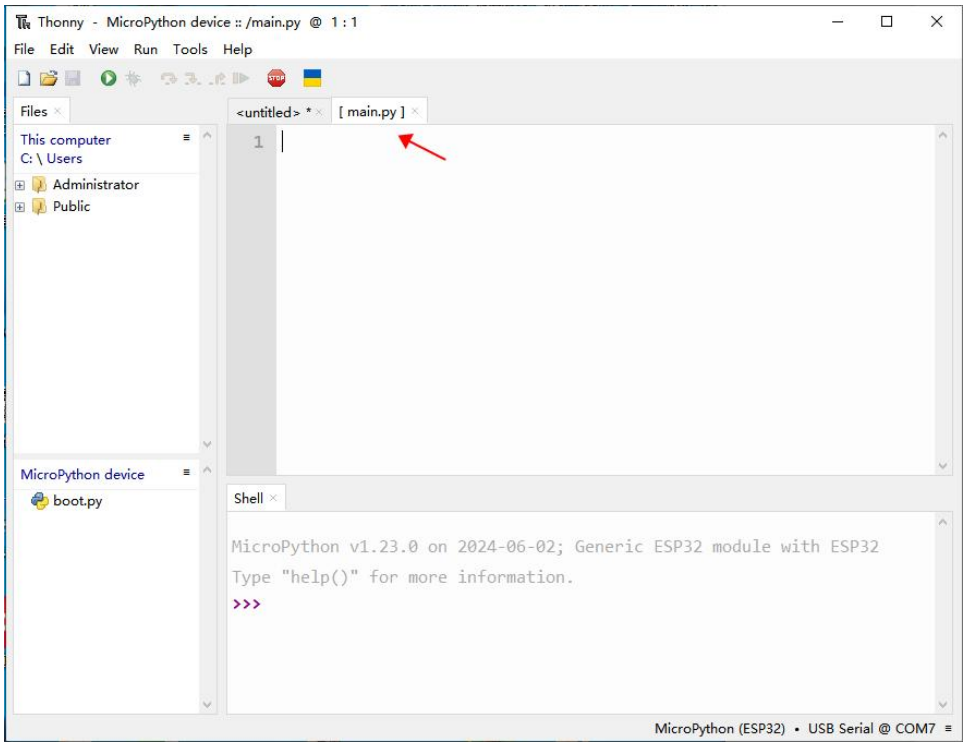


②Click on the icon and select "New file".



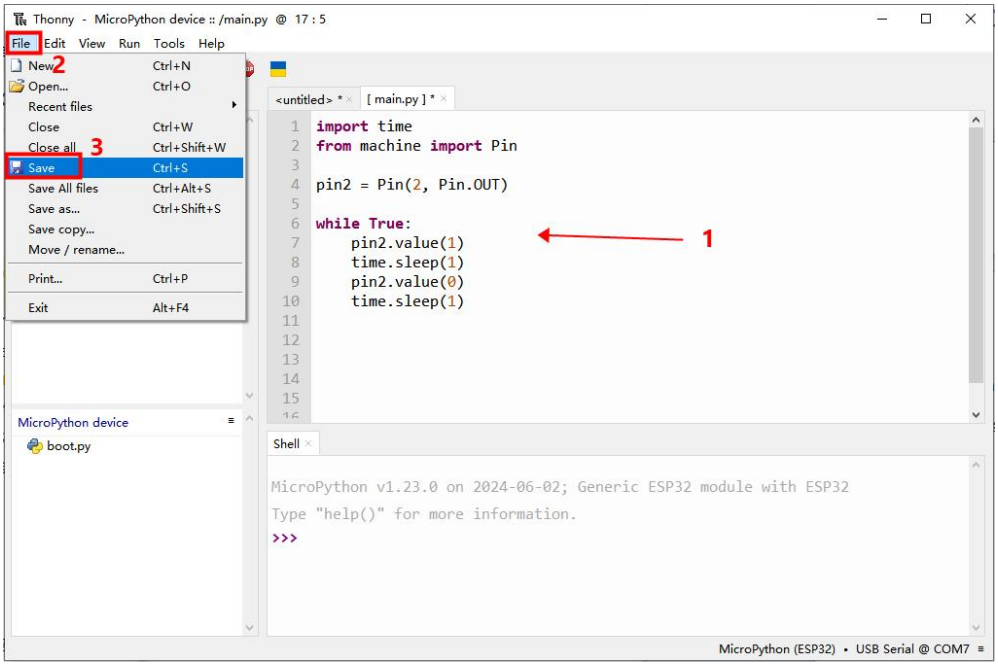
③In the box that appears, enter the name of the new file, main.py, and click OK.



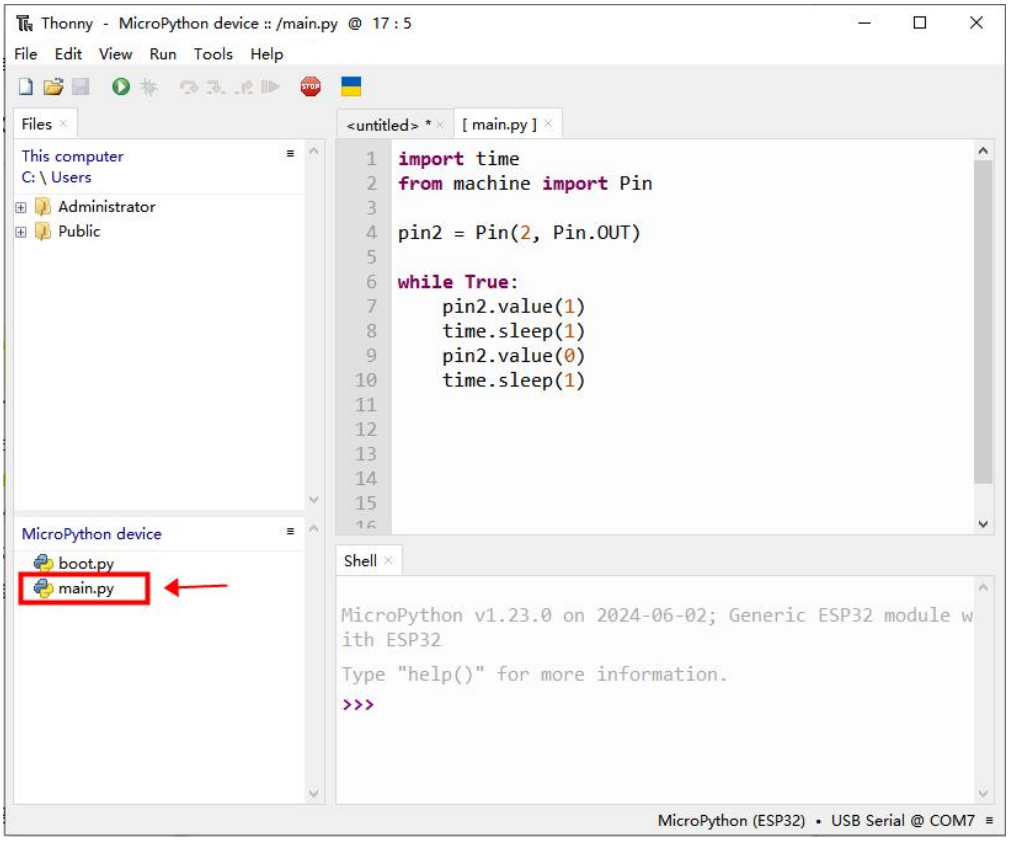


Note: The main.py file is automatically executed after the ESP32 controller board is started, so you only need to copy the offline program to this file.

④Copy the offline code, then click "File" and click "Save".



⑤After the file is saved, the saved main.py file is displayed under boot.py.



⑥ Click Run program, the controller board can achieve the effect of offline operation.