Environment Building

pymycobot is a Python package used for serial communication with myCobot. It supports Python2, Python3.5 and later versions.

Before using pymycobot, make sure to build a Python environment. Follow the steps below to install Python.

1 Download and Installation of Python

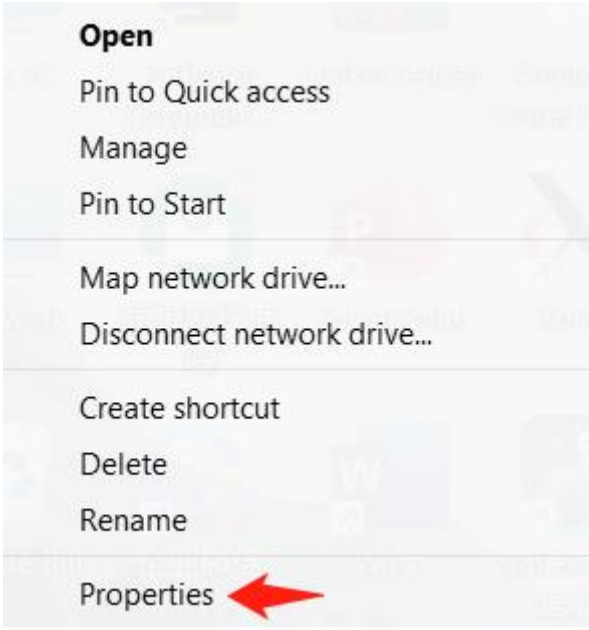
Python is applicable to:

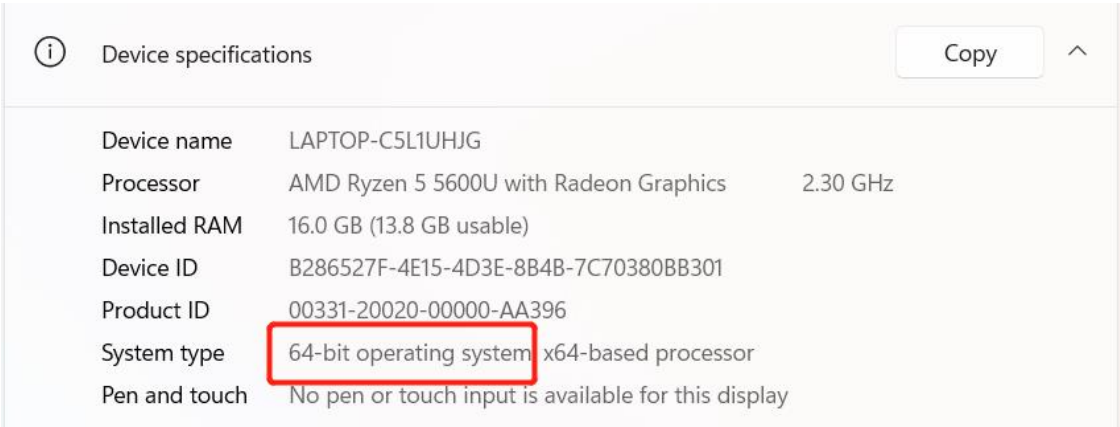
- myCobot 320 M5
- myCobot 320 PI

At present, Python has two versions: `2.x` and `3.x`. These two versions are incompatible with each other. This section takes the version `3.x` as an example due to its increasing popularity.

1.1 Installing Python

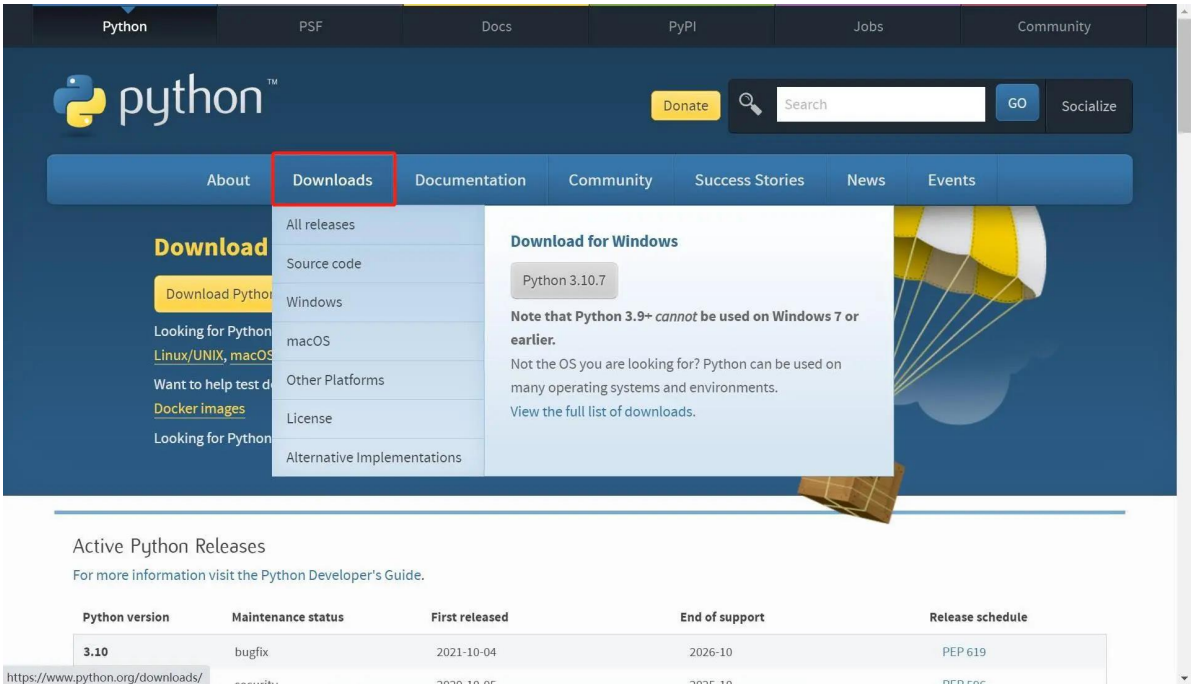
> **Notice:** Before installation, check the operation system of PC. Press right button on the `My Computer` icon and then select `Properties`. Install the corresponding Python.

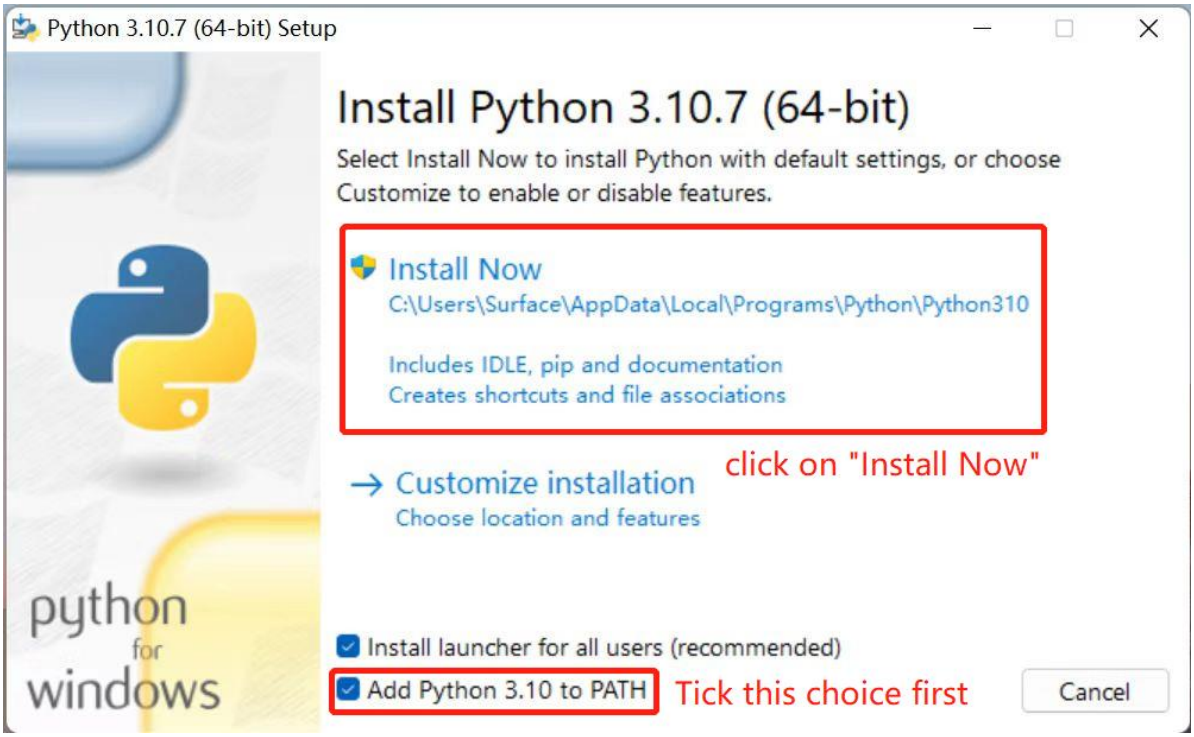


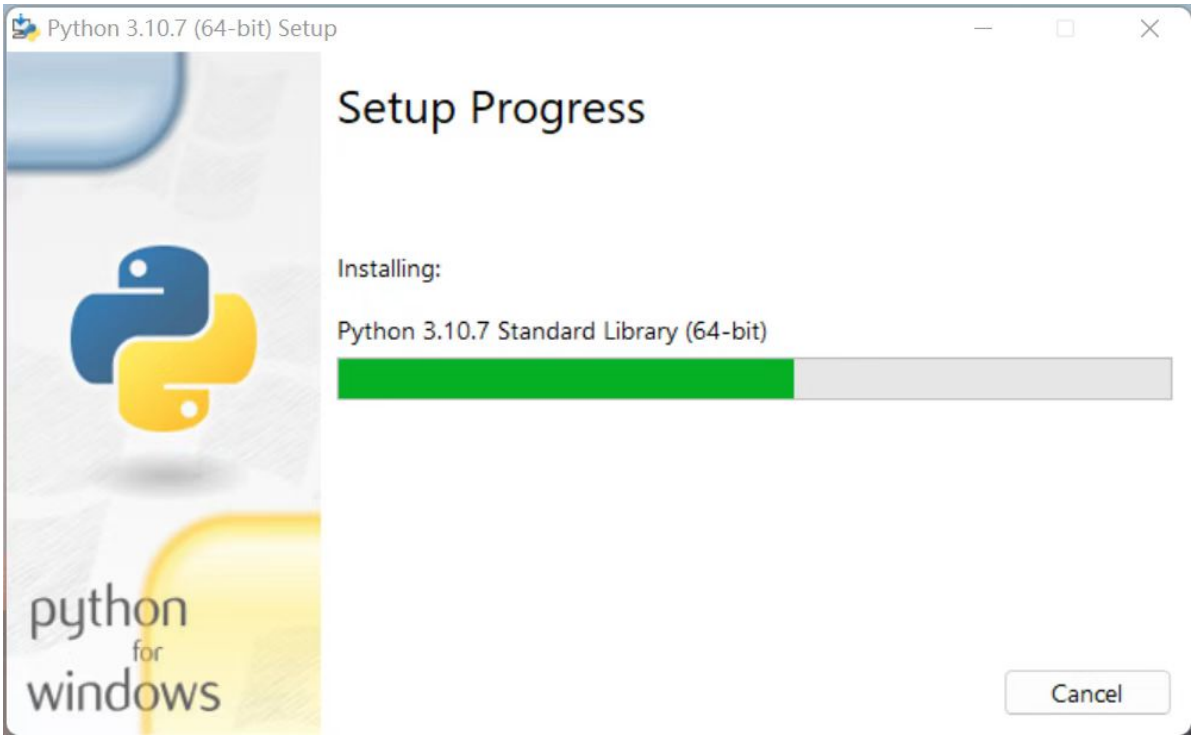


- **Go to http://www.python.org/download/ to download Python.**

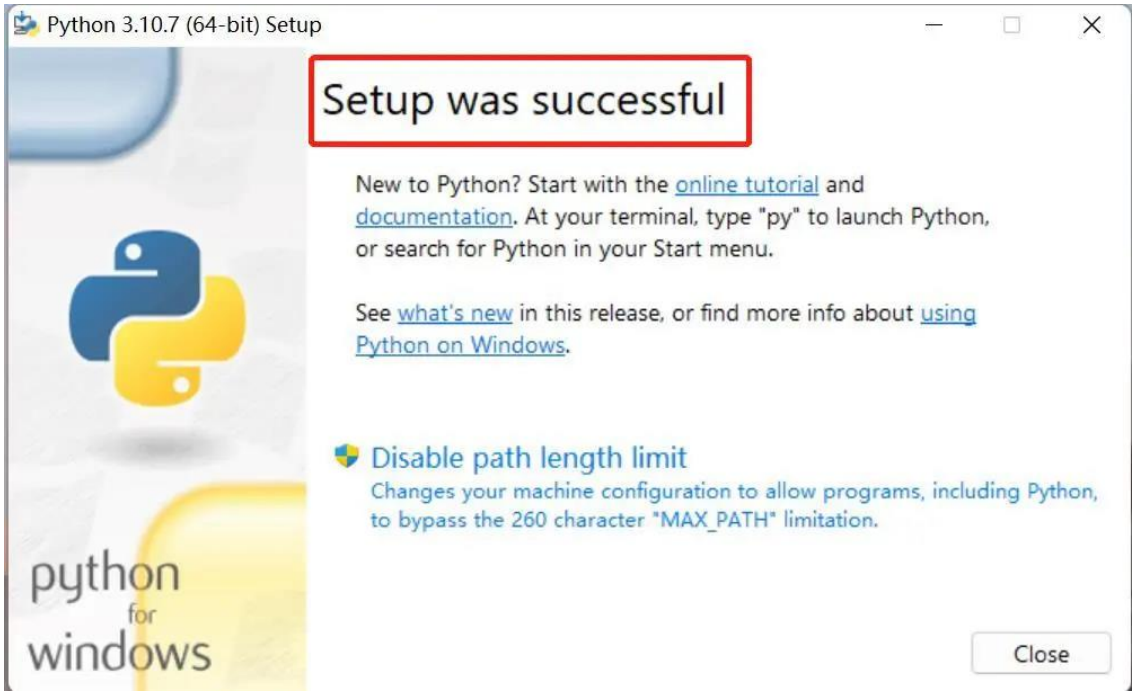
- **Click on `Downloads`, and then download begins. Tick `Add Python 3.10 to PATH`. Click on `Install Now`, and then installation begins.**







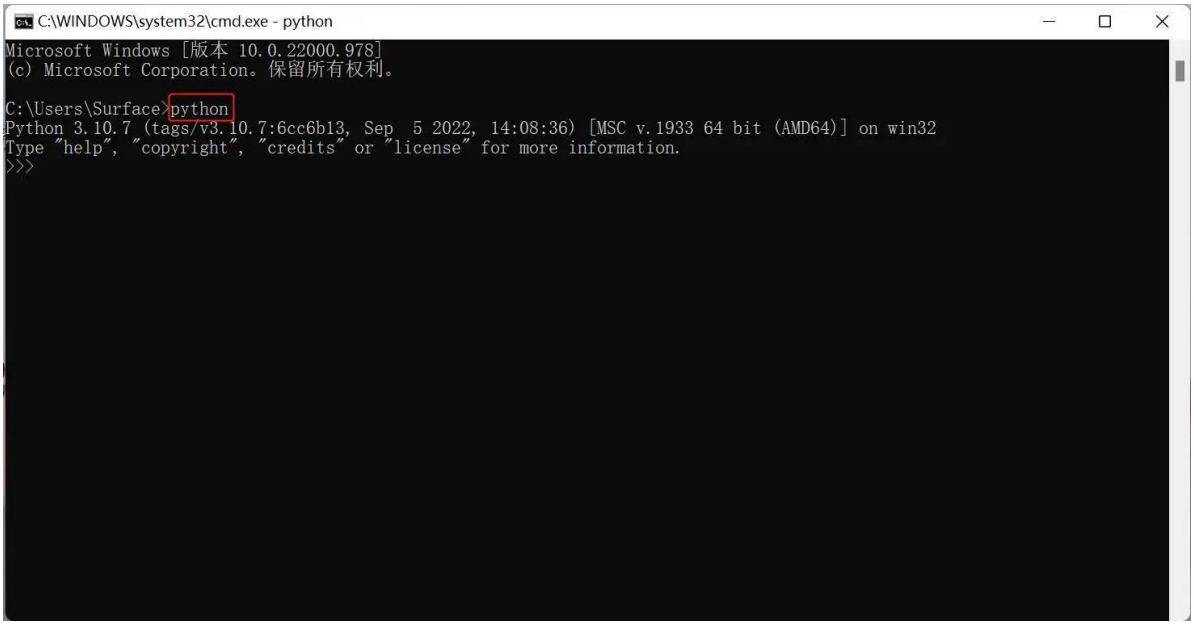
- **Download and installation complete.**



1.2 Running Python

Open the command prompt window (Win+R, input `cmd` and press `Enter`). Type `Python`.

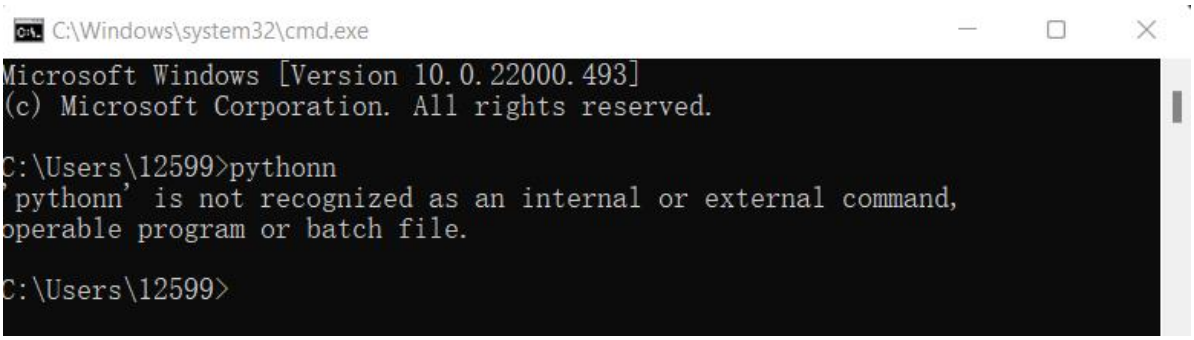
Successful Installation:



This on-screen instruction means that Python is successfully installed. The prompt `>>>` means Python interactive environment. If you input a Python code to get the execution result immediately.

Error Report:

If a wrong instruction is typed, for example "pythonn", the system may report an error.



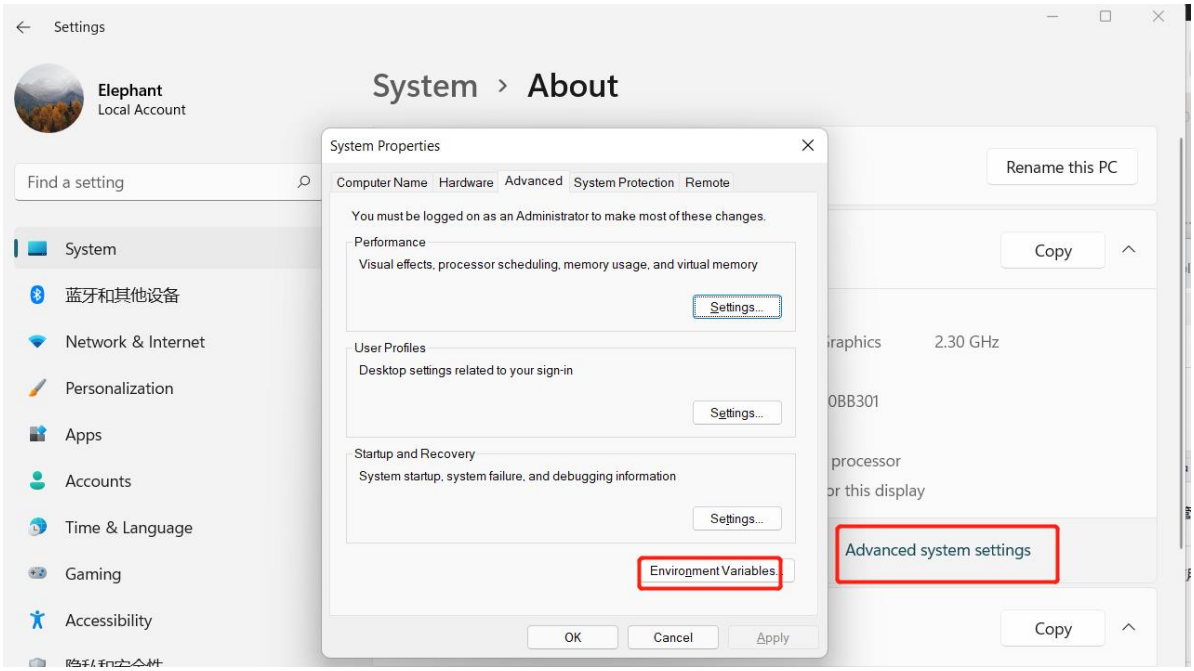
> **Notice:** Generally, the error results from lack of environment configuration. Refer to **1.3 Environment Configuration** to solve problems.

1.3 Environment Variable Configuration

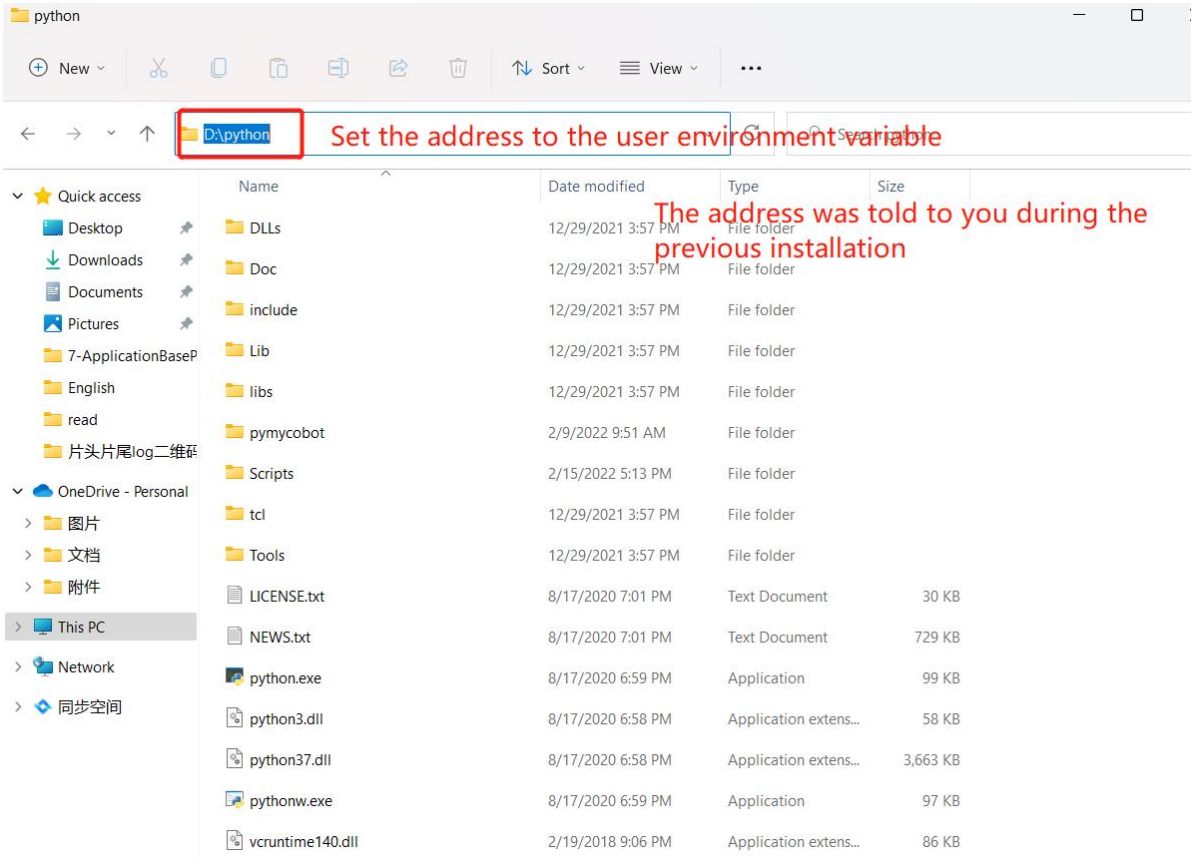
Windows follows the path set by a Path environment variable in search of **python.exe** . Otherwise, an error will be reported. If you fail to tick `Add Python 3.9 to PATH` during installation, you need to manually add the path where python.exe is located into environment variable or download python again. Remember to tick `Add Python 3.9 to PATH` .

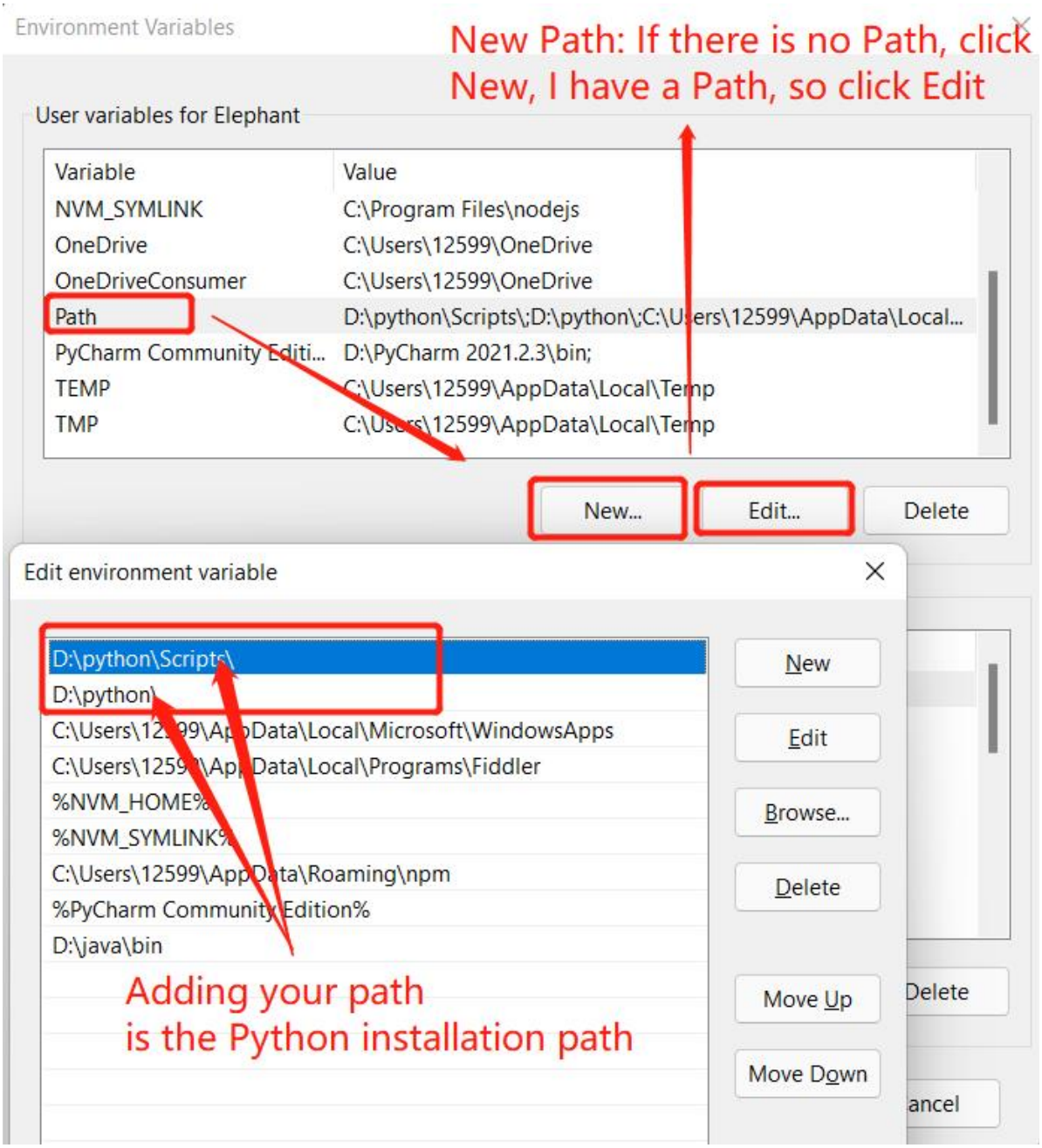
Follow the steps below to add python into environment variable manually.

- Right click on `My Computer` icon -->Properties ->Advanced System Settings ->Environment Variables

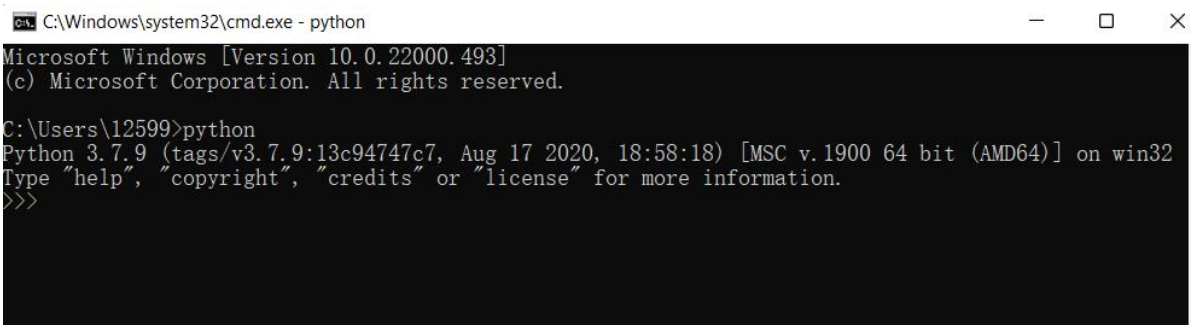


- The environment variables include user variables and system variables. For user variables, users can utilize their own downloaded programs via `cmd` command. Write the absolute path of the target program into the user variables.





- After the configuration, open the command prompt window (Win+R; input `cmd` and press `Enter`), and type `Python`.



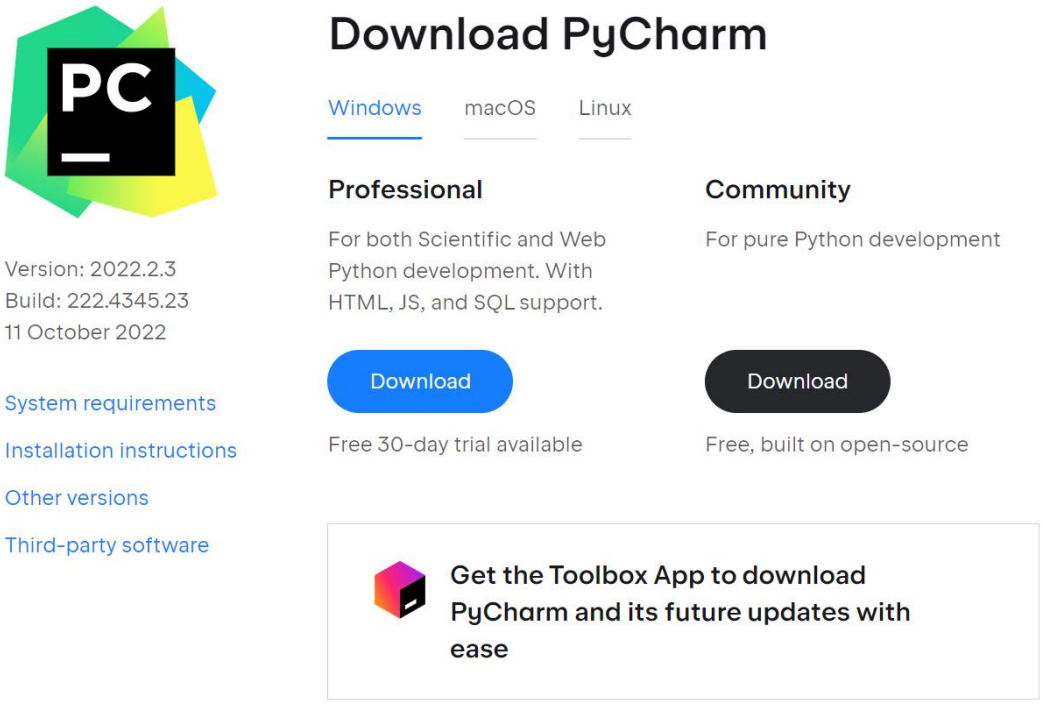
2 Installation of PyCharm

PyCharm is a powerful python editor with the nature of cross-platform. Follow the steps below to download and install PyCharm.

Go to **PyCharm** to download PyCharm.

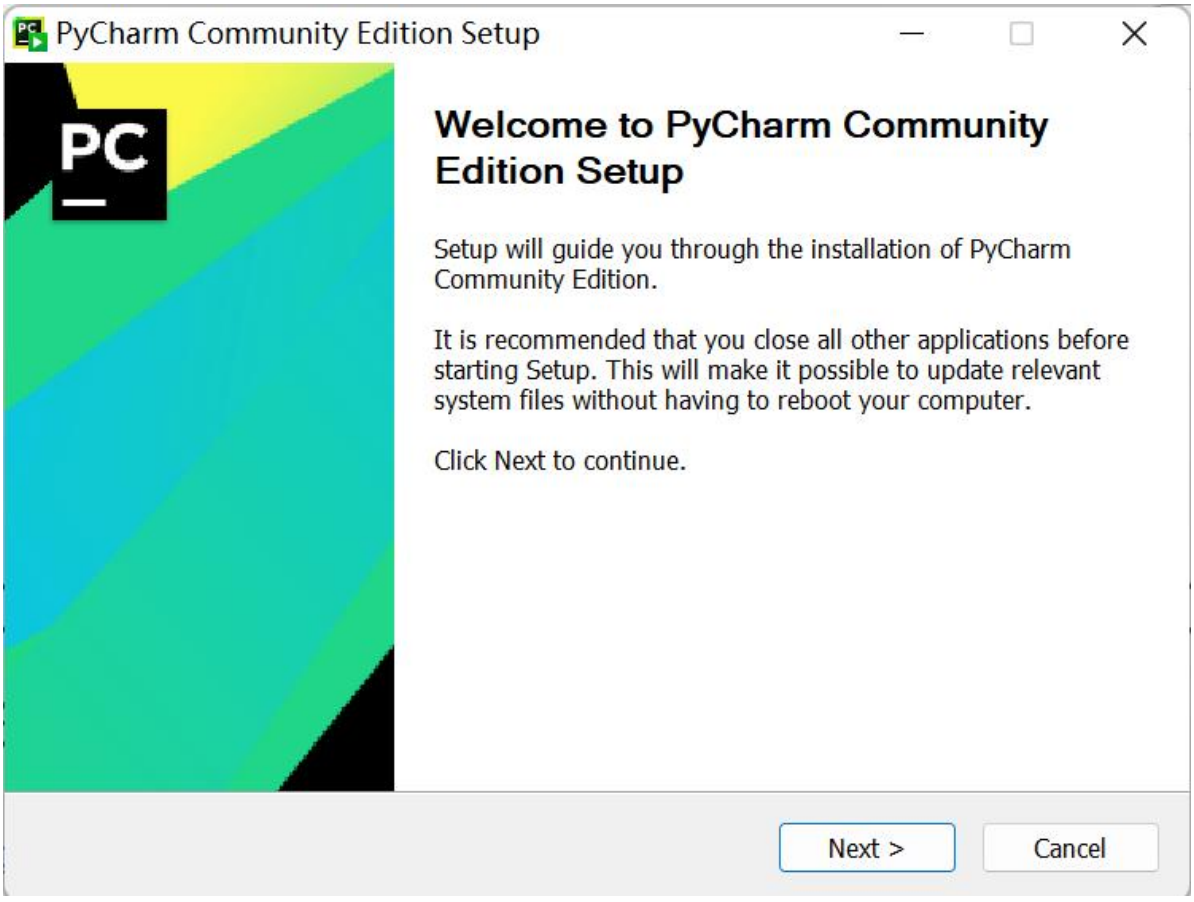
2.1 Download and Installation

Official website view:

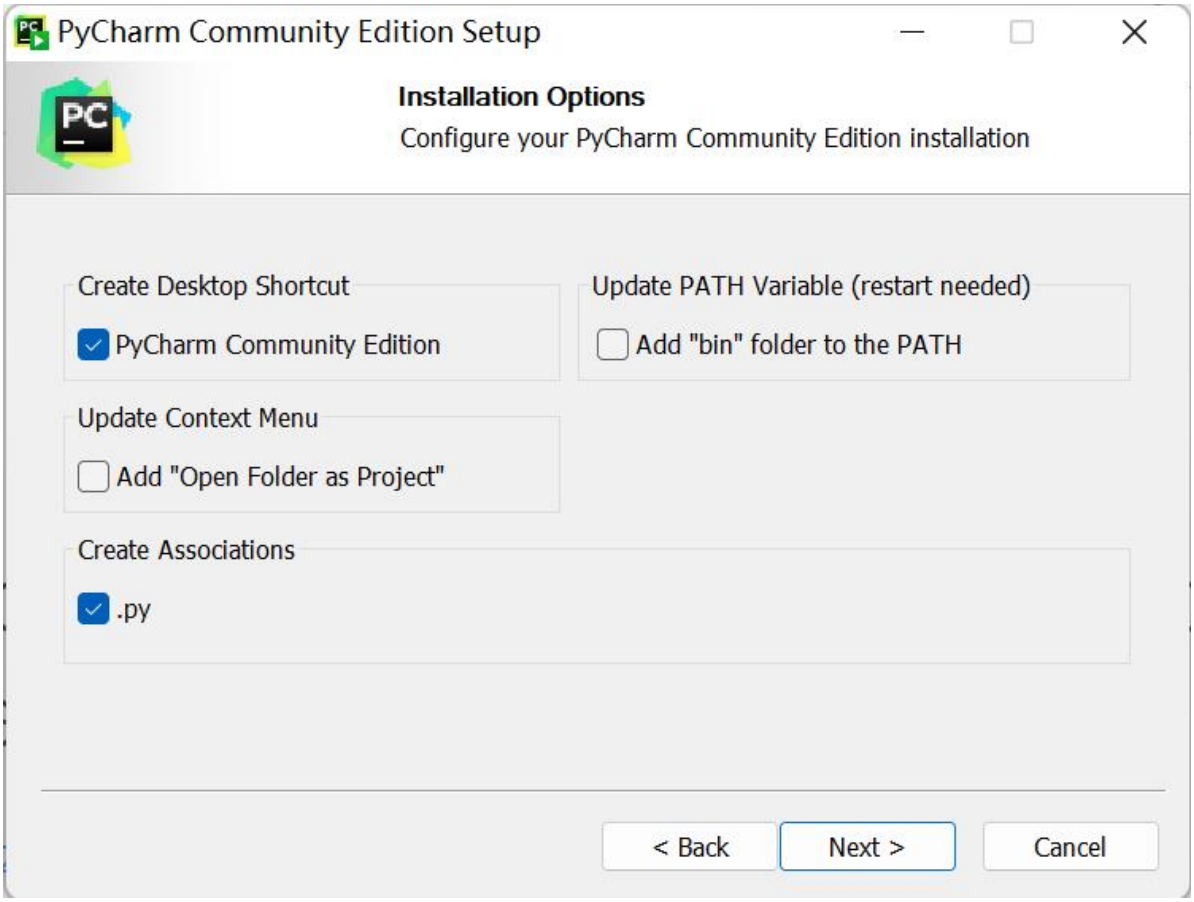


It is recommended to install the free version.

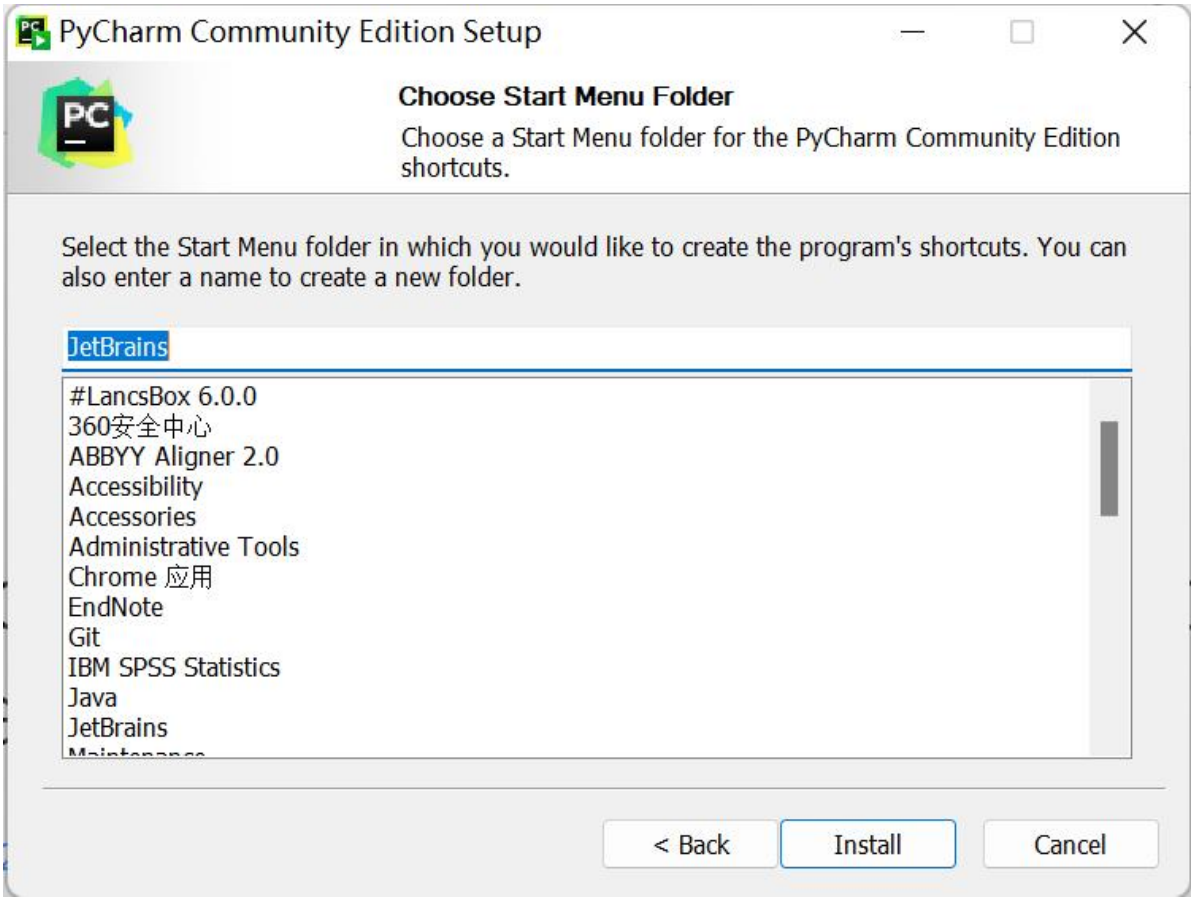
- Click on `Next`:



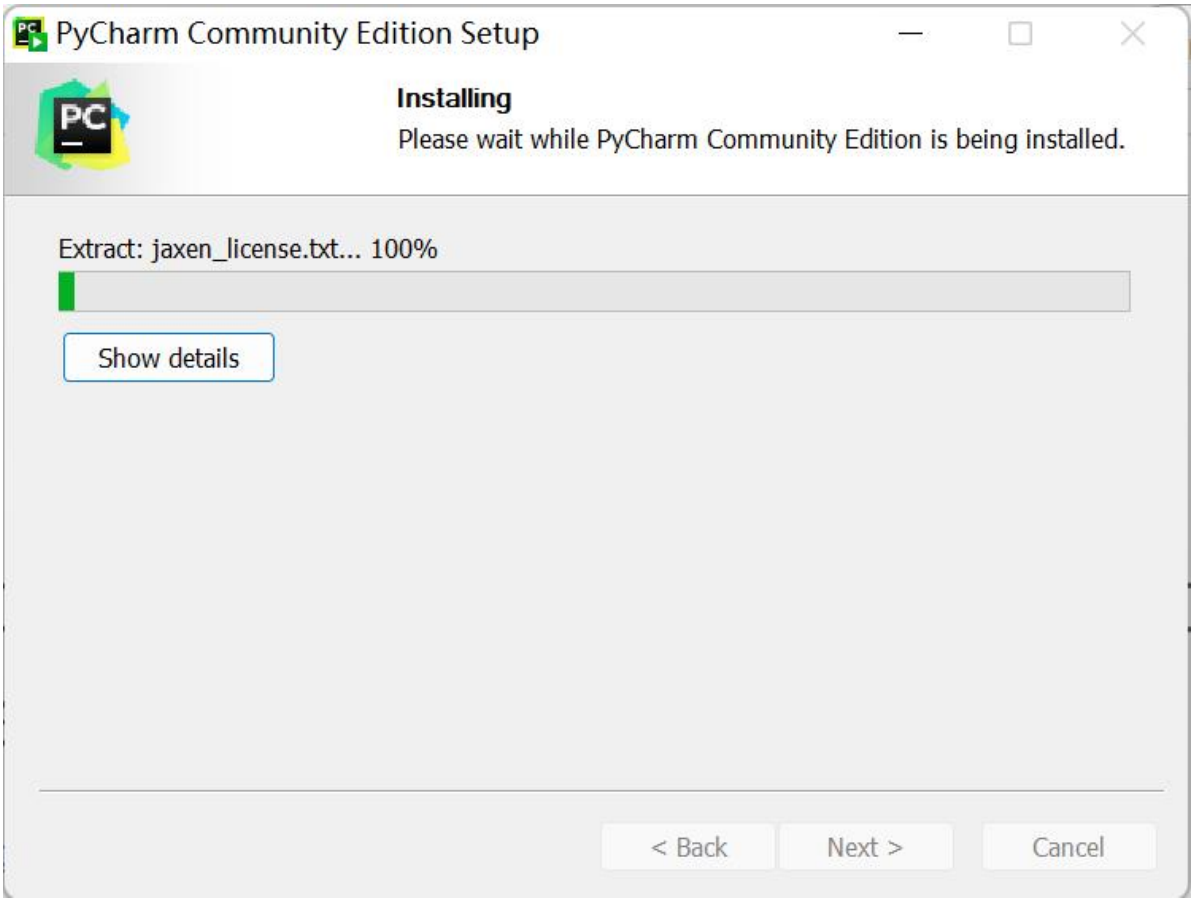
- Select options according to your needs and then select `Next`:



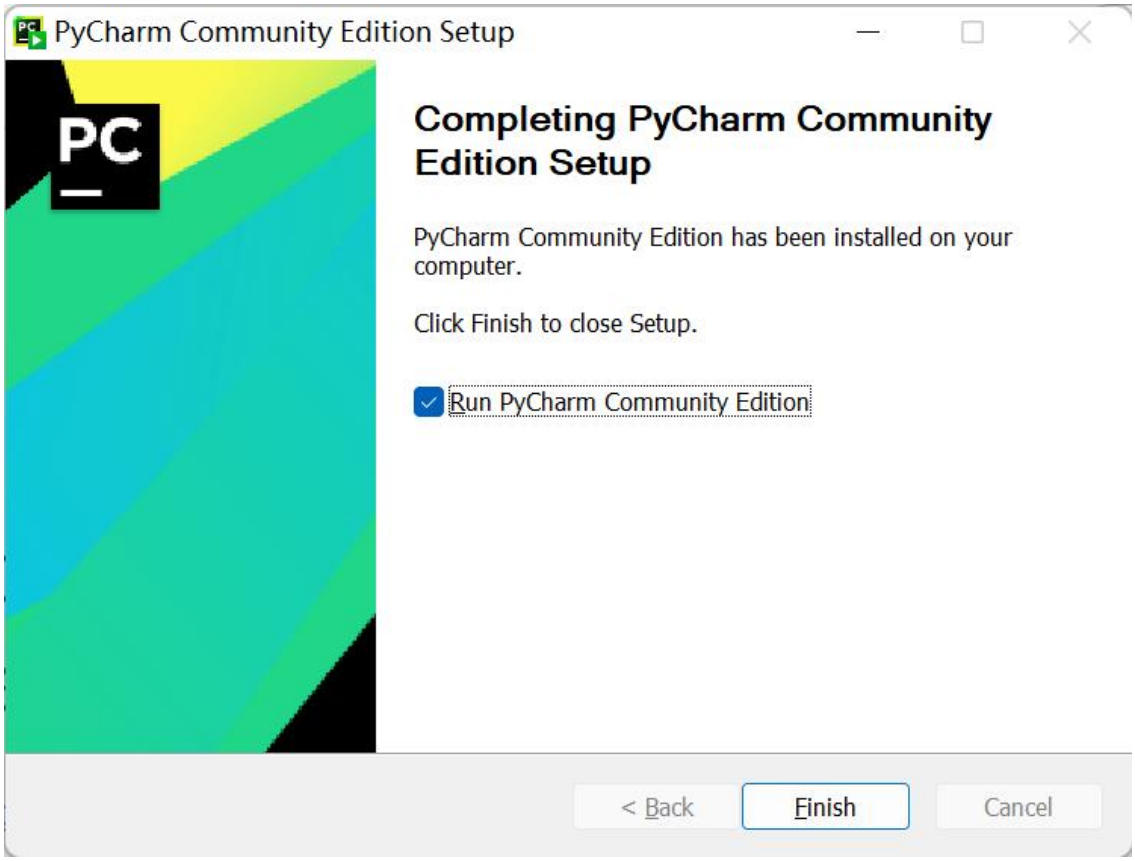
- Tap `Install`:



- Installing:

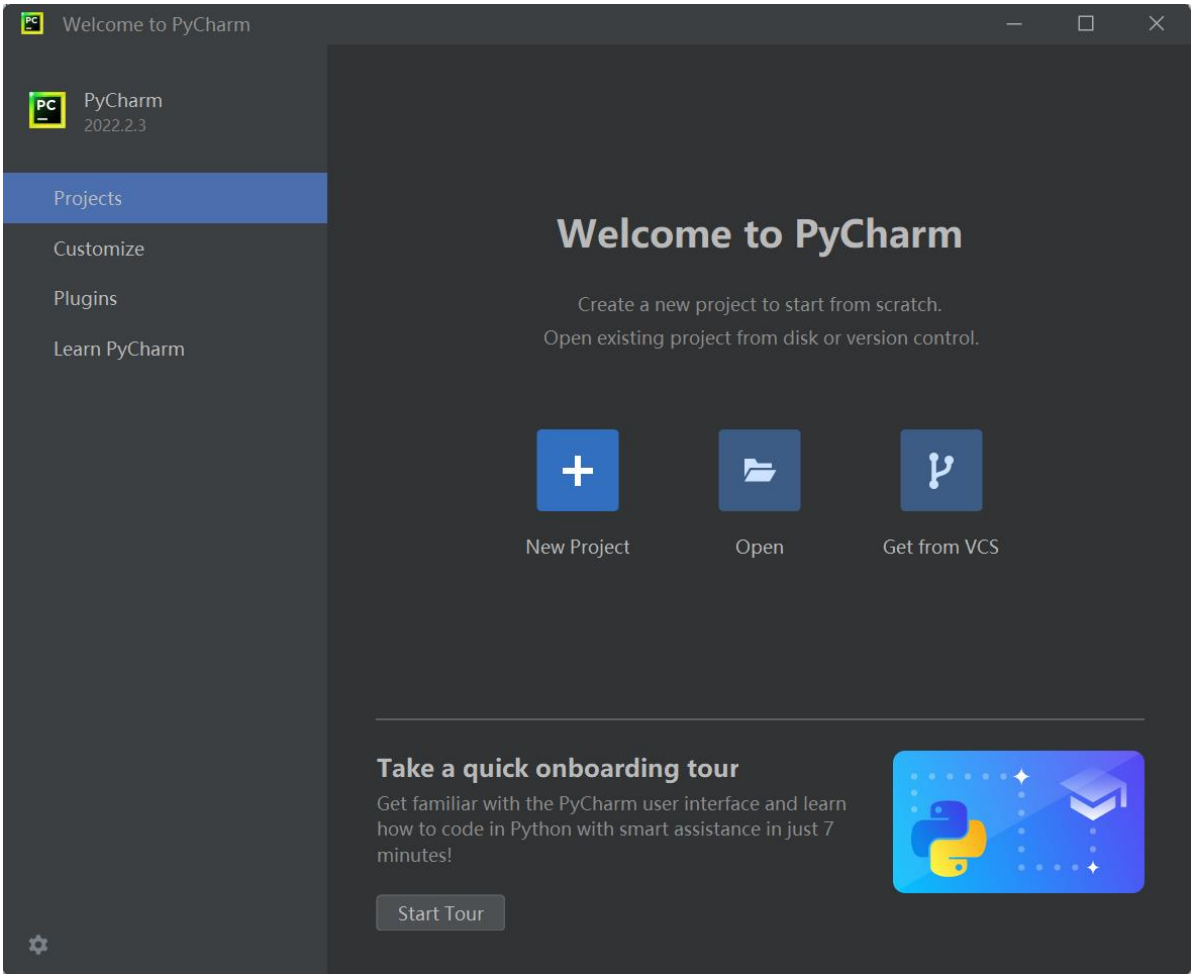

PyCharm Community Edition Setup
Installing
Please wait while PyCharm Community Edition is being installed.
Extract: jaxen_license.txt... 100%
Show details
< Back
Next >
Cancel

- Tap `Finish`

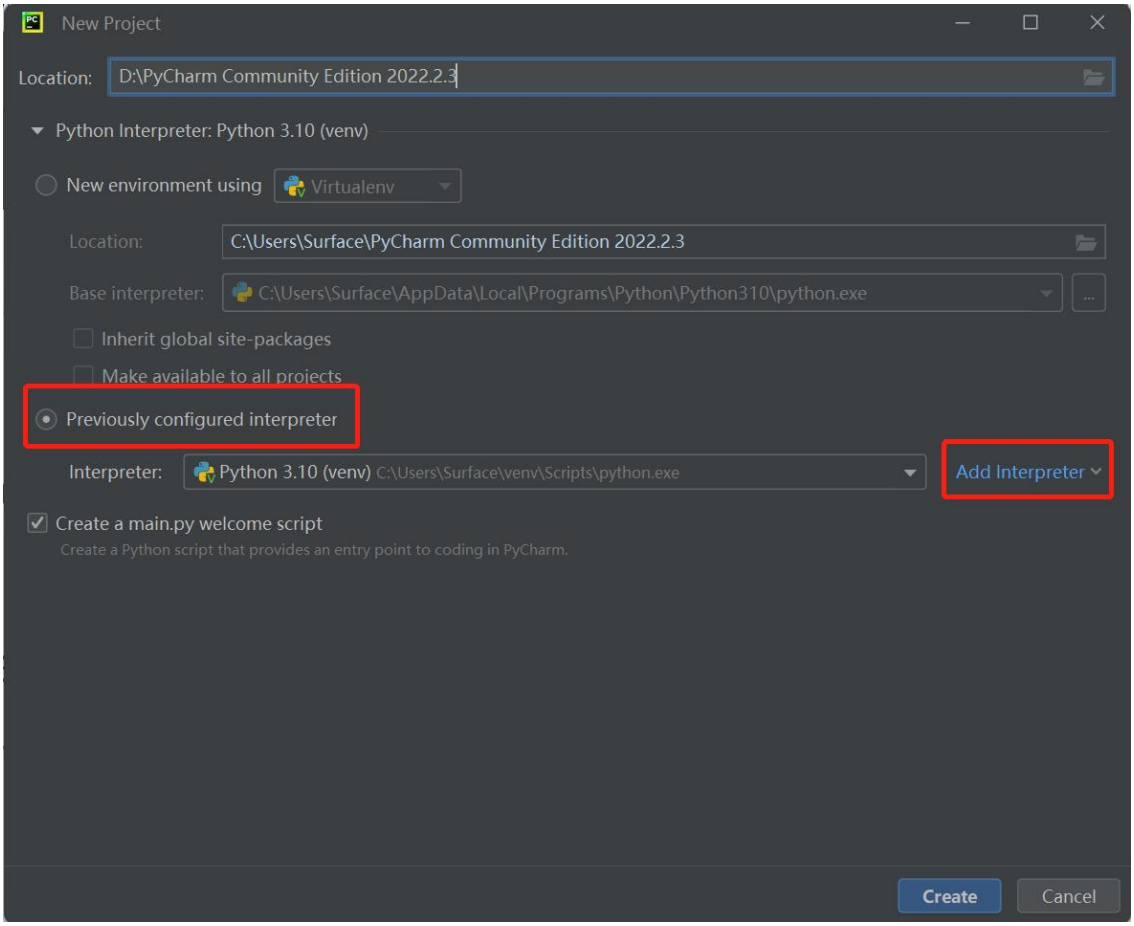

PyCharm Community Edition Setup
Completing PyCharm Community Edition Setup
PyCharm Community Edition has been installed on your computer.
Click Finish to close Setup.
Run PyCharm Community Edition
< Back
Finish
Cancel

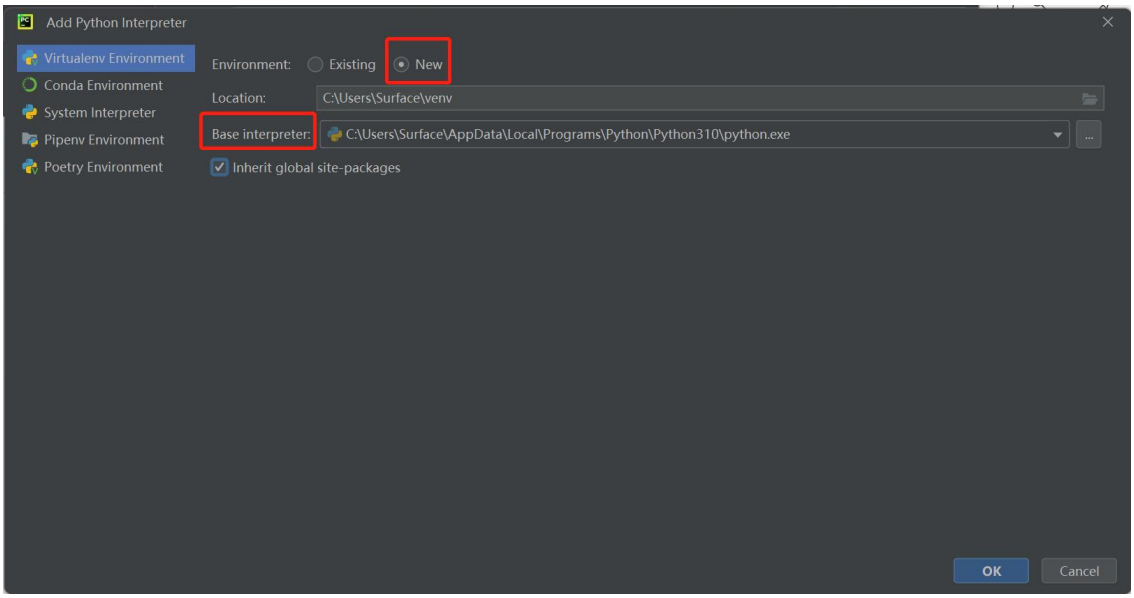
2.2 Create a new project

- Click `+New Project` :

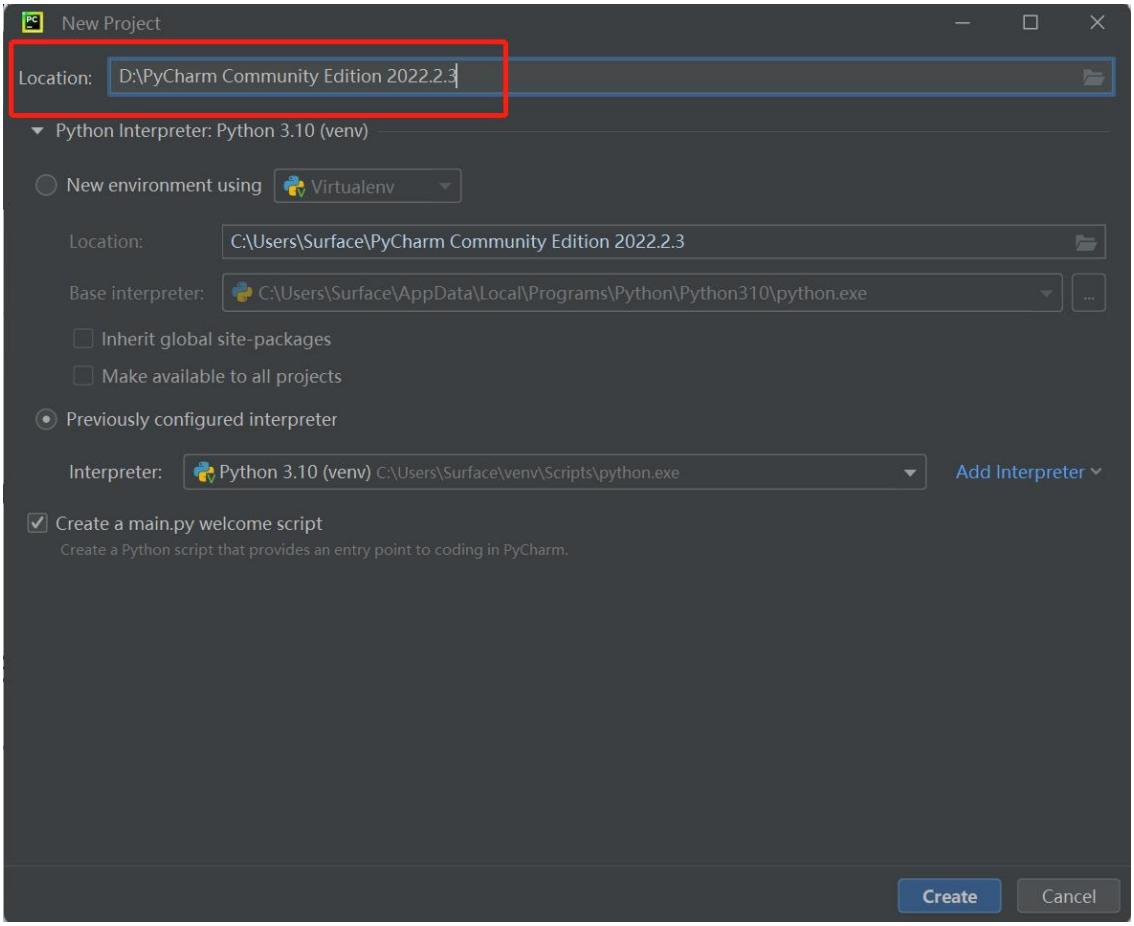


- The `Interpreter` is used to interpret python programs. Select `Add Interpreter` -> `New` to add base interpreter.

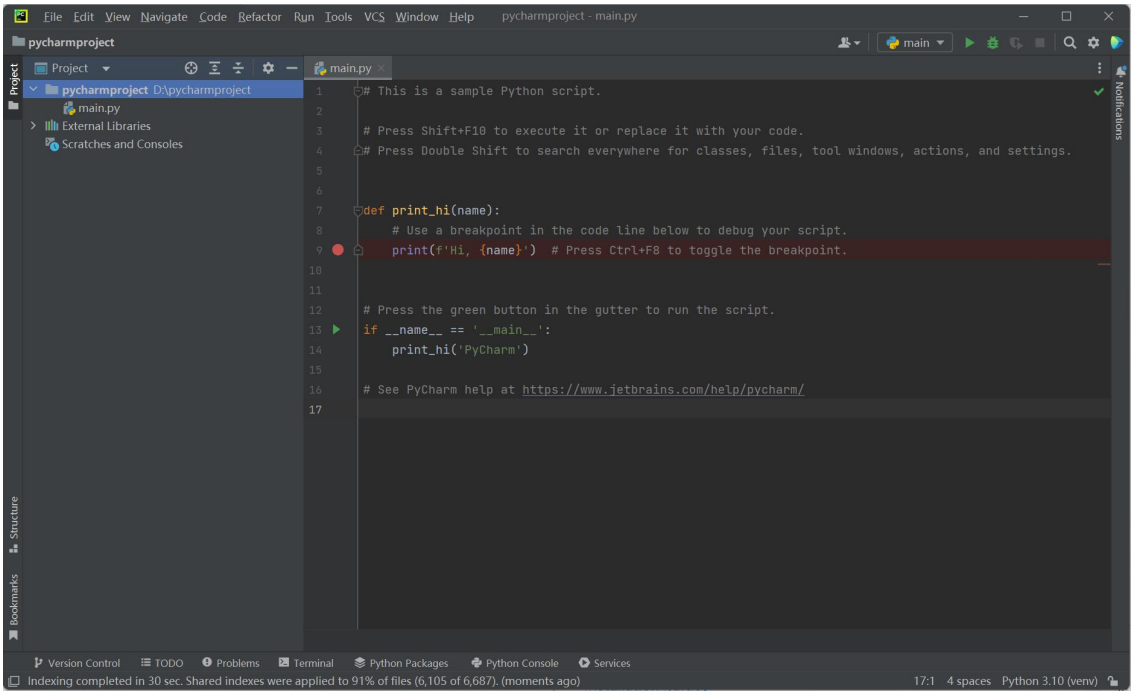




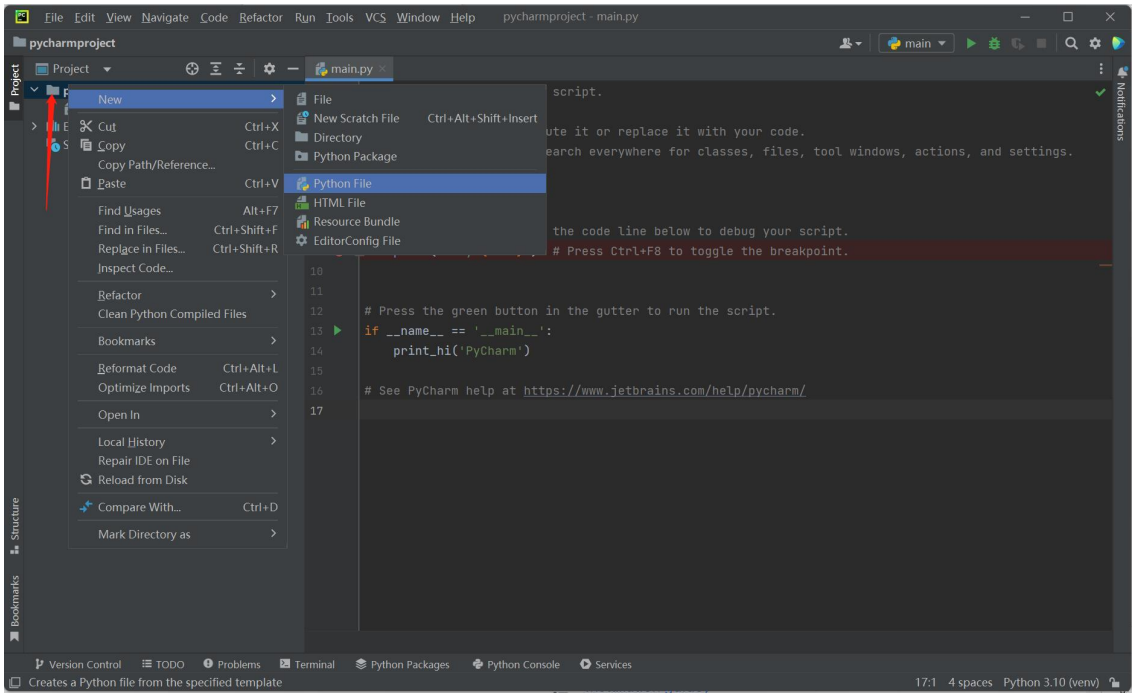
- `Location` refers to the place where to save python file. Choose a file to put your programs.



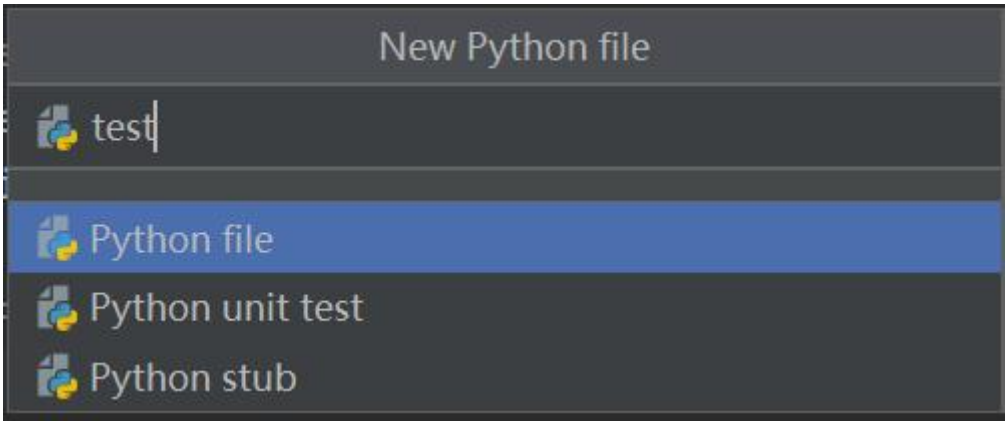
- Click on `Create` and a sample appears:



- Right click on the selection that the red arrow points, and create a new python file.



- Type name for the new file.



3 Preparations

- Firmware burning. Firmware serves as a driver for systems to control robots.
    - **M5Stack version** Make sure to burn `minirobot` for **Basic** at the bottom. And then choose `Transponder` function (to receive instructions from Basic), Press `Press A`. `Atom: OK` means connect successfully. Refer to [MyStudio] for more information about firmware burning.
    - **Pi \ jetsonnano version** `AtomMain` for **Atom** at the top is factory burnt.
- pymycobot installation. Type `pip install pymycobot --upgrade --user` via terminal (Win+R) `cmd` command.

```
pip install pymycobot --upgrade --user
```

- Source code installation. Open a terminal (Win+R, input `cmd`), and type the command below to install.

```
git clone https://github.com/elephantrobotics/pymycobot.git <your-path>
#Fill in your installation address in <your-path>, do not choose the current default path.

cd <your-path>/pymycobot
#Go to the pymycobot folder of the downloaded package.

#Run one of the following commands according to your python version.
# Install
 python2 setup.py install
# or
 python3 setup.py install
```

- Update pymycobot

```
pip install pymycobot --upgrade
```

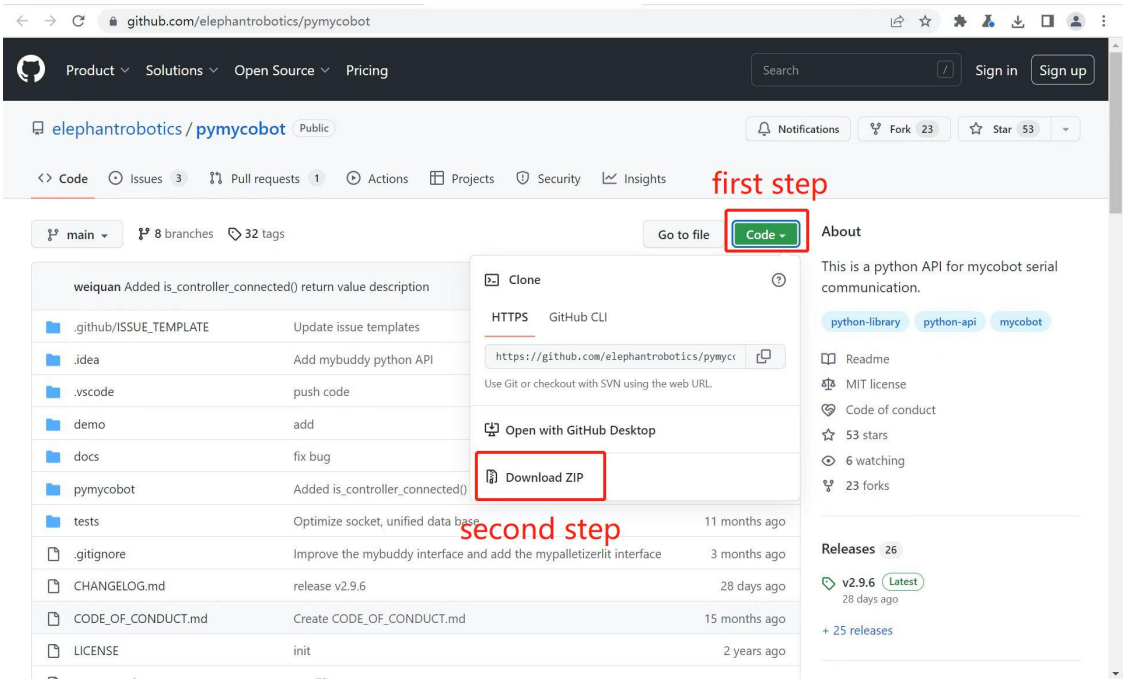
4 Import of pymycobot

This part takes MyPalletizer 260-M5 as an example to introduce how to control a robot via python.

- Import pymycobot library for MyPalletizer :

```
from pymycobot.mypalletizer import MyPalletizer
```

> **Notice:**
>
> 1. If no red wavy line appears below the codes, pymycobot is successfully installed.
> 2. if a red wavy line appears, got to the address **https://github.com/elephantrobotics/pymycobot** to download pymycobot manually and put it into python library.



5 Simple Demo

Create a new Python file, and type the following codes to set the color of RGB light panel. The codes are suitable to myCobot 280-M5, myCobot 320-M5 and myPalletizer 260.

> **Notice:** The baud rates are different according to types of devices. Refer to **calculator device manager** to check the corresponding number.

- **Codes for MyCobot:**

```
# demo.py
from pymycobot.mycobot import MyCobot

from pymycobot import PI_PORT, PI_BAUD      # When using the Raspberry Pi version of mycobot, you can refer to these two variables to initialize MyCobot, if not, you can omit this line of code
import time
#The above codes are required to be written, which means importing the project package

# MyCobot class initialization requires two parameters:
#   The first is the serial port string, such as:
#       linux:  "/dev/ttyUSB0"
#          or "/dev/ttyAMA0"
#       windows: "COM3"
#   The second is the baud rate::
#       M5 version is:  115200
#
#    Example:
#       mycobot-M5:
#           linux:
#              mc = MyCobot("/dev/ttyUSB0", 115200)
#          or mc = MyCobot("/dev/ttyAMA0", 115200)
#           windows:
#              mc = MyCobot("COM3", 115200)
#       mycobot-raspi:
#           mc = MyCobot(PI_PORT, PI_BAUD)
#
# Initiate MyCobot
# Create object code here for windows version
mc = MyCobot("COM3", 115200)

i = 7
#loop 7 times
while i > 0:
    mc.set_color(0,0,255) #blue light on
    time.sleep(2)    #wait for 2 seconds
    mc.set_color(255,0,0) #red light on
    time.sleep(2)    #wait for 2 seconds
    mc.set_color(0,255,0) #green light on
    time.sleep(2)    #wait for 2 seconds
    i -= 1
```

Run the example file:

```
python3 demo.py
```

- **Codes for MyPalletizer:**

```
from pymycobot.mypalletizer import MyPalletizer
import time
##The above codes are required to be written at the beginning, which means
importing the project package

#initiate MyPalletizer
mc = MyPalletizer("COM3", 115200)

#     MyPalletizer initiation requires two parameters:
#   The first is the serial port string, such as:
#       linux:  "/dev/ttyUSB0"
#          or "/dev/ttyAMA0"
#       windows: "COM3"
#   The second is the baud rate::
#       M5 version is:  115200
#
#    Example:
#       MyPalletizer-M5:
#           linux:
#              mc = MyPalletizer("/dev/ttyUSB0", 115200)
#          or mc = MyPalletizer("/dev/ttyAMA0", 115200)
#           windows:
#              mc = MyPalletizer("COM3", 115200)

i = 7
#loops 7 times
while i > 0:
    mc.set_color(0,0,255) #blue light on
    time.sleep(2) #wait for 2 seconds
    mc.set_color(255,0,0) #red light on
    time.sleep(2) #wait for 2 seconds
    mc.set_color(0,255,0) #green light on
    time.sleep(2) #wait for 2 seconds
    i -= 1
```

The blue, red, and green lights on the top of the robot flash 7 times continuously at an interval of 2 seconds.