

Python (101) for everyone

PyLadies Stockholm

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Introduction

Python:

- Introduced in 1991 as Python 0.9.0
- A **high-level, interpreted, general-purpose** programming language
- **Dynamically-typed**
- Dynamic memory management (aka. **garbage-collected**).
- Builds around two focus point: *code readability* and *simplicity*



Installation of Python 3

- macOS
- Windows
- Linux



Installing Python 3 on macOS

```
$ python --version  
$ python3 --version  
$ brew --version
```

1. Install Homebrew (Homebrew is a package manager)

<https://brew.sh/>

```
$ /bin/bash -c "$(curl -fsSLhttps://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
```

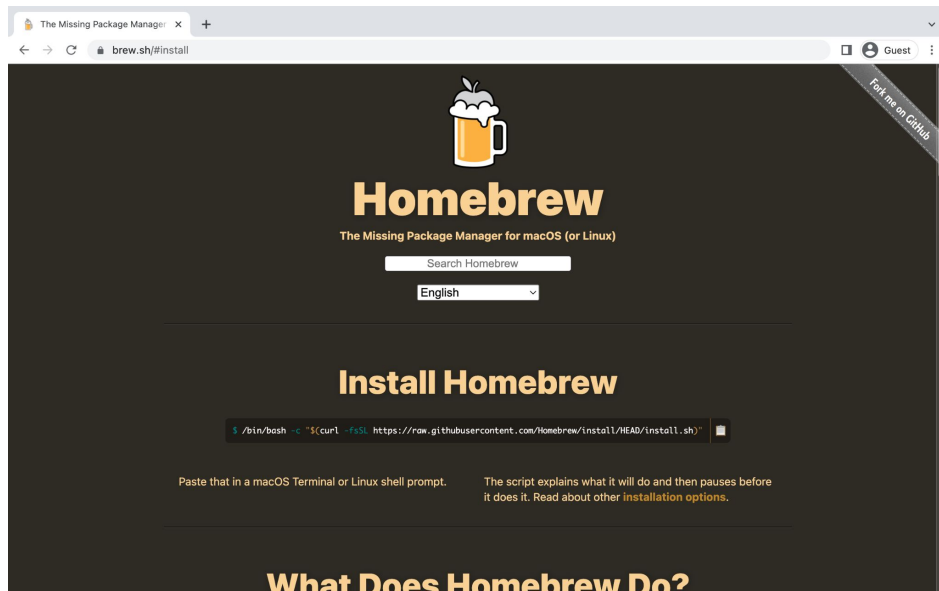
2. Using Homebrew to install Python

```
$ brew install python@3.10
```



Installing Homebrew on macOS

<https://brew.sh/#install>



Installing Homebrew on macOS

```

nafise — /bin/bash -c — bash -c #!/bin/bash\012\012# We don't need return codes for "${command...
/bin/bash
Last login: Fri Jul 29 22:20:19 on console

17:17:51 ~ 3.10.2
$ /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
==> Checking for `sudo` access (which may request your password)...
Password:
==> This script will install:
/usr/local/bin/brew
/usr/local/share/doc/homebrew
/usr/local/share/man/man1/brew.1
/usr/local/share/zsh/site-functions/_brew
/usr/local/etc/bash_completion.d/brew
/usr/local/Homebrew

Press RETURN/ENTER to continue or any other key to abort:

```



Installing Python 3 on macOS

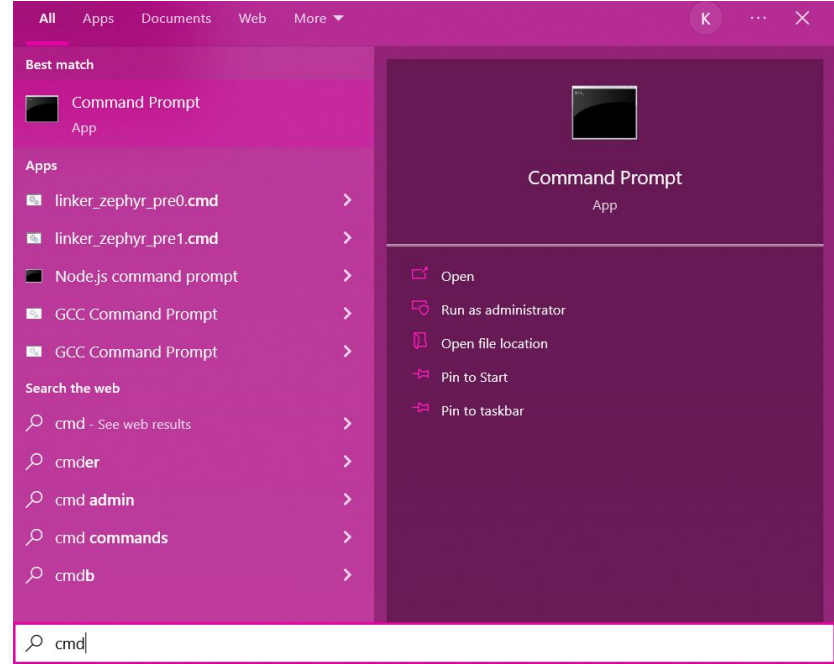
The latest stable version of Python right now is 3.10

```
17:23:03 x nafise@Nafises-MacBook-Pro ~ 3.10.2
$ brew install python@3.10
python@3.10 is already installed but outdated (so it will be upgraded).
==> Downloading https://ghcr.io/v2/homebrew/core/gdbm/manifests/1.23
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/gdbm/blobs/sha256:0d0aeea95f9e7
==> Downloading from https://pkg-containers.githubusercontent.com/ghcr1/blobs/sh
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/ca-certificates/manifests/2022-
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/ca-certificates/blobs/sha256:9e
==> Downloading from https://pkg-containers.githubusercontent.com/ghcr1/blobs/sh
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/openssl/1.1/manifests/1.1.1q
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/openssl/1.1/blobs/sha256:b4dabe
==> Downloading from https://pkg-containers.githubusercontent.com/ghcr1/blobs/sh
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/sqlite/manifests/3.39.2
##### 100.0%
==> Downloading https://ghcr.io/v2/homebrew/core/sqlite/blobs/sha256:faba8d1938f
==> Downloading from https://pkg-containers.githubusercontent.com/ghcr1/blobs/sh
##### 31.5%
```



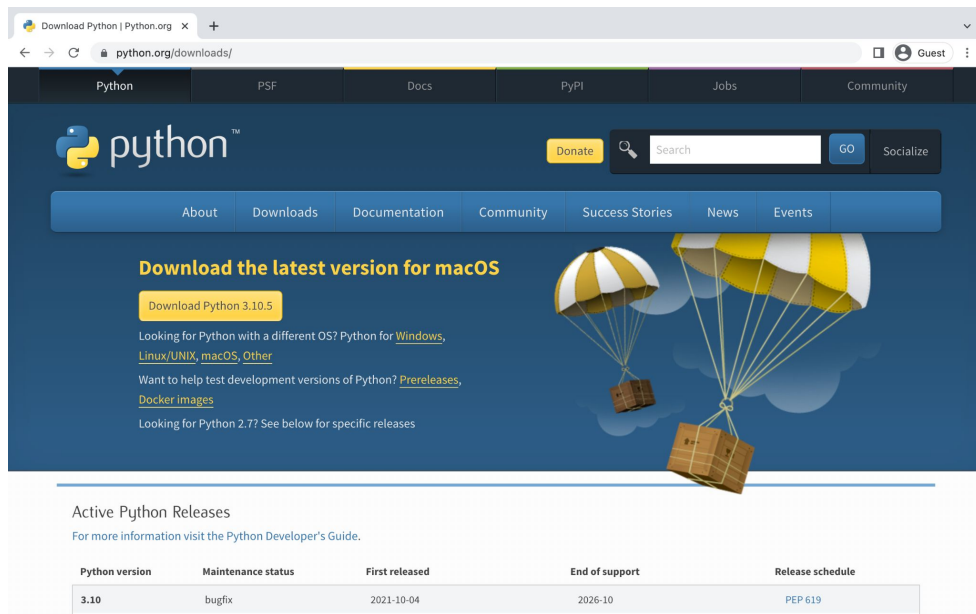
Installing Python 3 on Windows

1. Open “cmd” and type
`$ python --version`
`$ python3 --version`
2. Download the latest stable version of Python from Python website
<https://www.python.org/>
3. Install Python with the help of windows installer



Installing Python 3 on Windows

<https://www.python.org/downloads/>



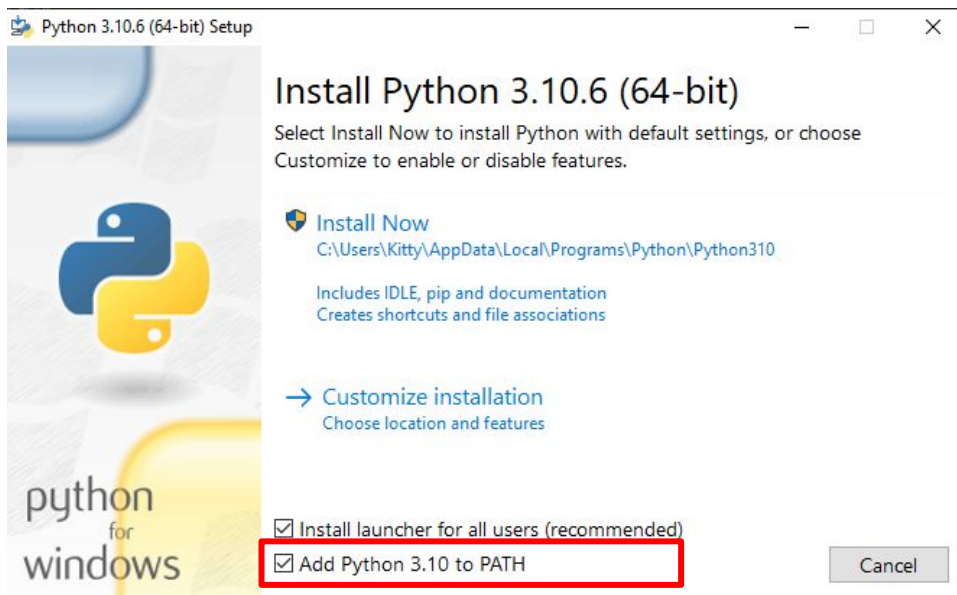
The screenshot shows the Python.org website's download page. The header includes the Python logo, a 'Donate' button, a search bar, and a 'Socialize' button. Below the header is a navigation bar with links to 'About', 'Downloads', 'Documentation', 'Community', 'Success Stories', 'News', and 'Events'. The main content area features a large yellow button labeled 'Download Python 3.10.5' and text encouraging users to download the latest version for macOS, with links for other operating systems like Windows, Linux, and macOS. There is also a link for 'Prereleases' and 'Docker Images'. Below this, a section titled 'Active Python Releases' provides a table of current releases.

Python version	Maintenance status	First released	End of support	Release schedule
3.10	bugfix	2021-10-04	2026-10	PEP 619

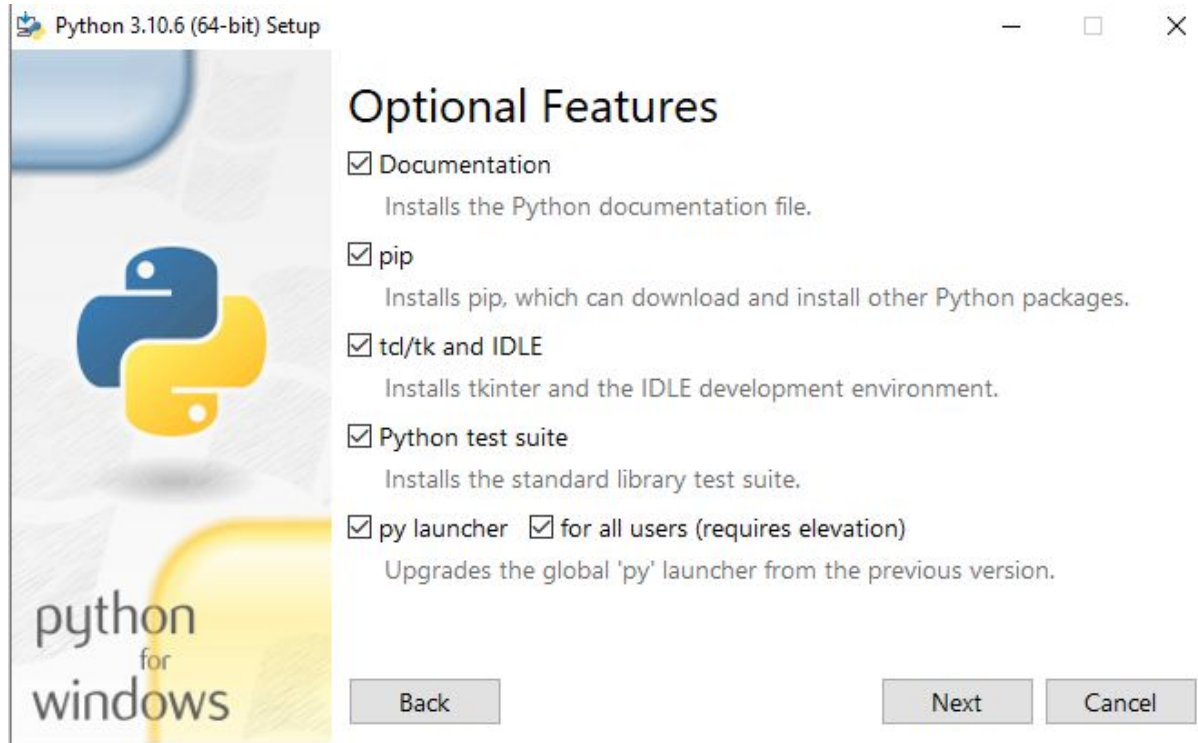


Installing Python 3 on Windows

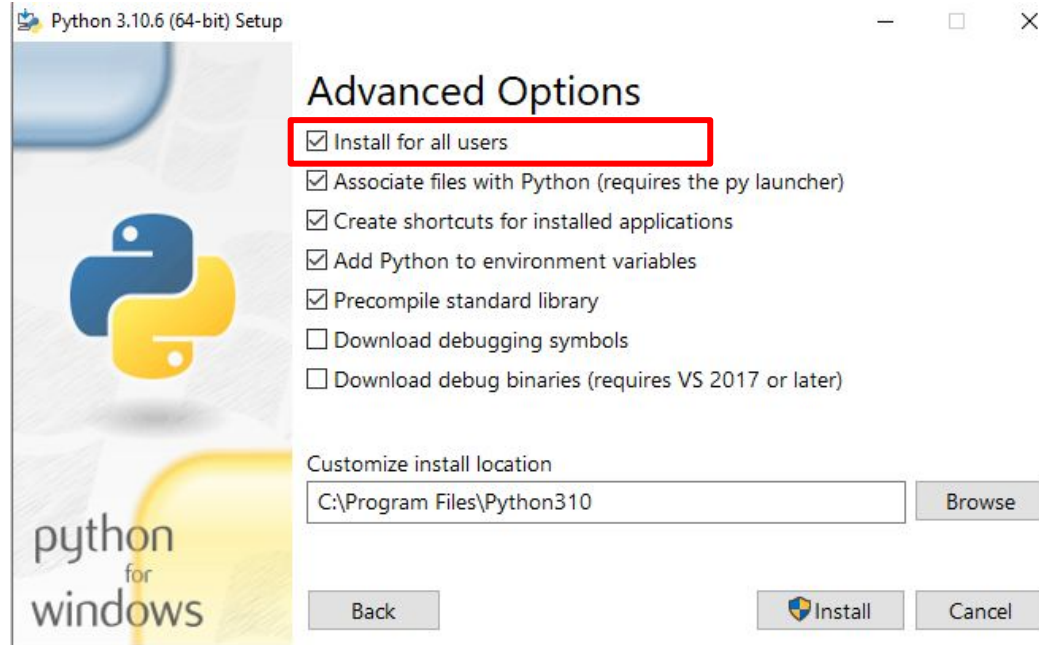
- Make sure to select “Add Python to PATH”
- Continue with “Customize installation” option



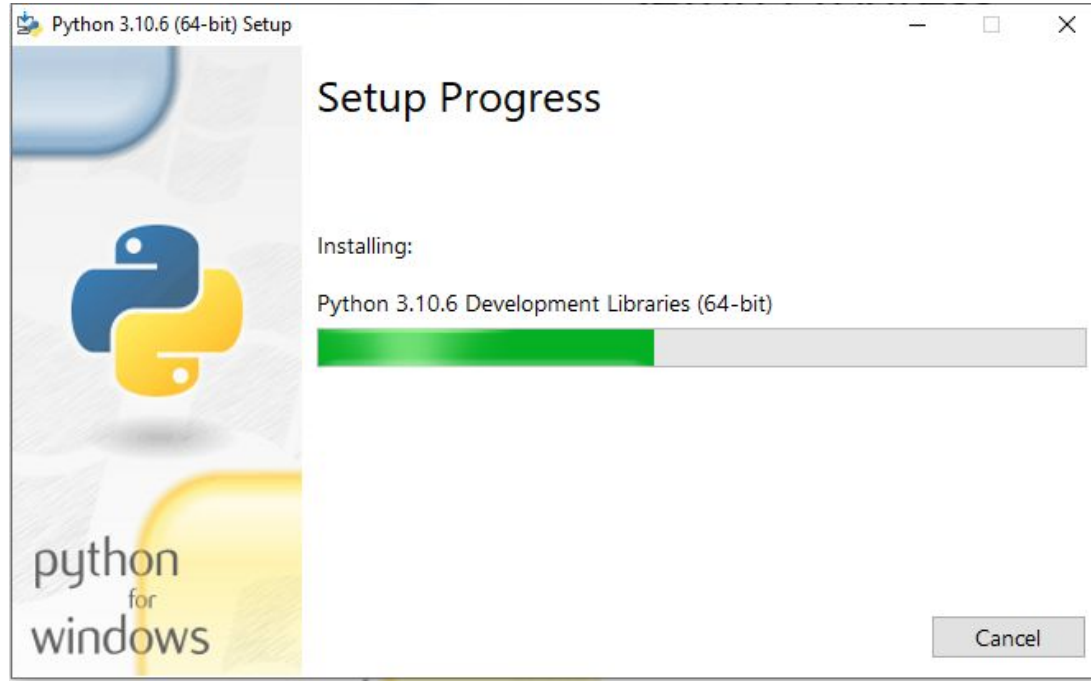
Installing Python 3 on Windows



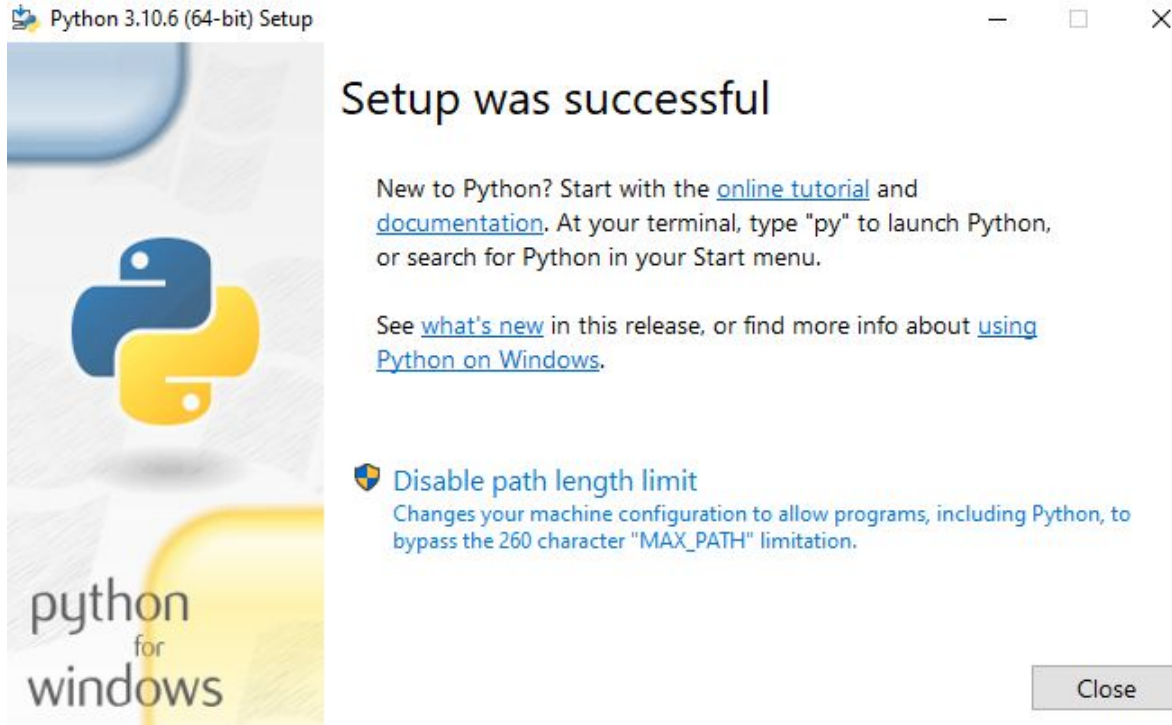
- If you have more than one user and you want to install Python for all users, select first option. (better to select this option)
- You can customize install location.



Installing Python 3 on Windows



Installing Python 3 on Windows



Installing Python 3 on Linux

Python comes preinstalled on most Linux distributions.

1. Using **apt-get** (Ubuntu, Debian) or **dnf** (Fedora) to install the latest version of Python or upgrade it

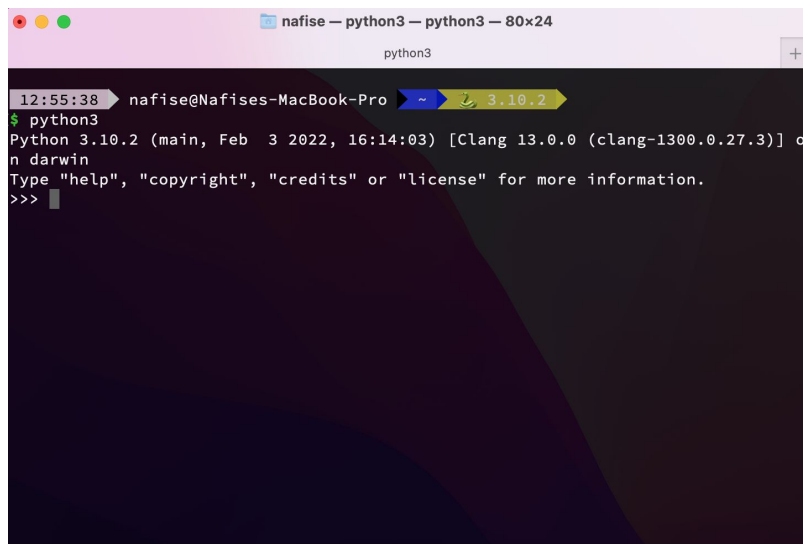
```
$ python3 --version
```

```
$ sudo apt-get install python3
```



Python REPL

A read-eval-print loop (**REPL**) is an interactive programming environment that takes user inputs, executes them, and returns the result to the user.



```
12:55:38 nafise@Nafises-MacBook-Pro ~ 3.10.2
$ python3
Python 3.10.2 (main, Feb 3 2022, 16:14:03) [Clang 13.0.0 (clang-1300.0.27.3)] on
darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> 
```



Interpreter vs Compiler

- Interpreter translates just one statement of the program at a time into machine code.
- Compiler scans the entire program and translates the whole of program into machine code at once.



Hello World

Open the Terminal and type:

```
$ mkdir project
```

```
$ cd project
```

```
$ nano test.py
```

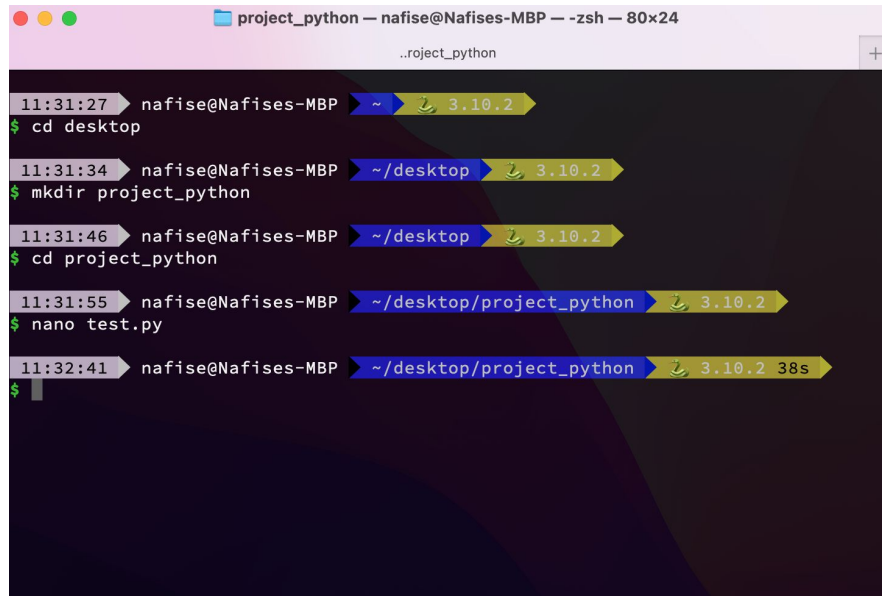
Type the script below:

```
print("Hello world")
```

Exit and save the file

Open the Terminal again and type:

```
$ python3 test.py
```



```
project_python — nafise@Nafises-MBP — zsh — 80x24
..roject_python

11:31:27 nafise@Nafises-MBP ~ 3.10.2
$ cd desktop

11:31:34 nafise@Nafises-MBP ~/desktop 3.10.2
$ mkdir project_python

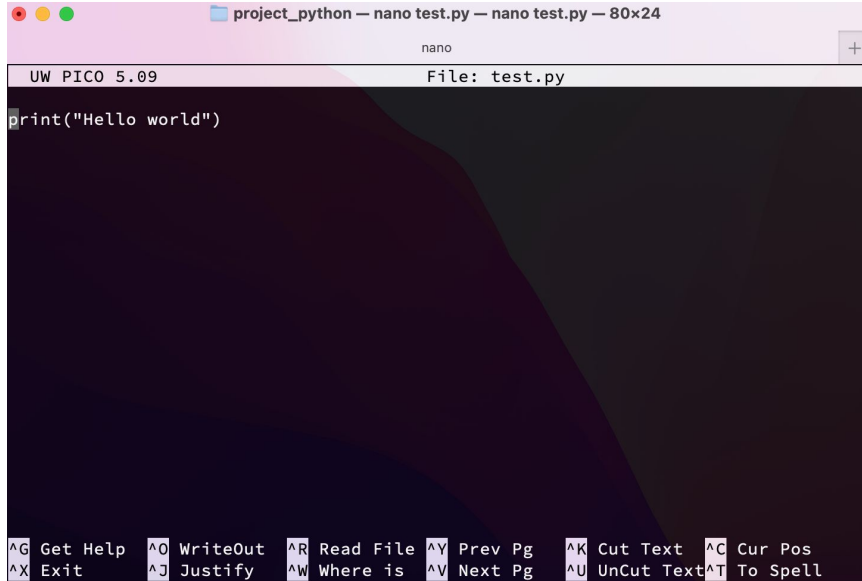
11:31:46 nafise@Nafises-MBP ~/desktop 3.10.2
$ cd project_python

11:31:55 nafise@Nafises-MBP ~/desktop/project_python 3.10.2
$ nano test.py

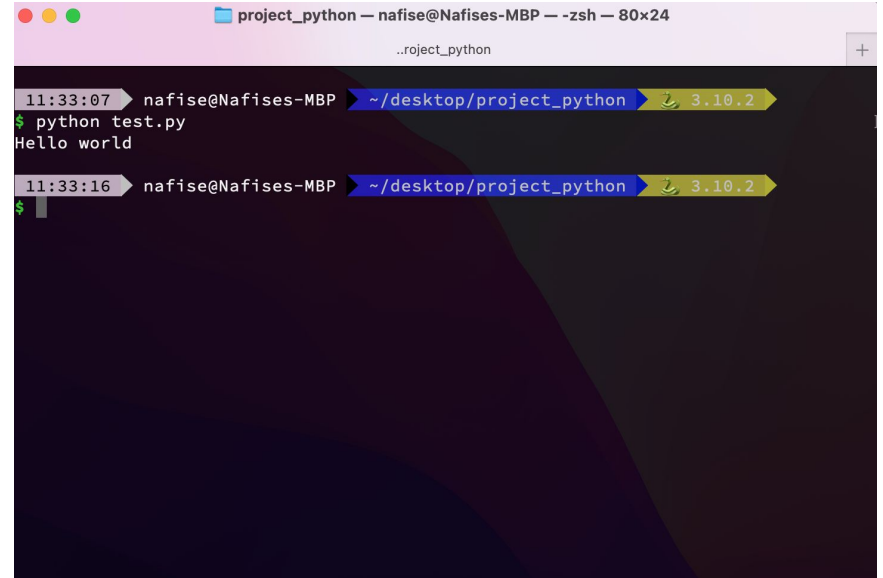
11:32:41 nafise@Nafises-MBP ~/desktop/project_python 3.10.2 38s
$
```



Hello World



A screenshot of a terminal window titled "project_python — nano test.py — nano test.py — 80x24". The window shows the nano text editor with the file "test.py" open. The code inside the file is `print("Hello world")`. The status bar at the bottom displays various nano editor shortcuts: `^G Get Help`, `^O WriteOut`, `^R Read File`, `^Y Prev Pg`, `^K Cut Text`, `^C Cur Pos`, `^X Exit`, `^J Justify`, `^W Where is`, `^V Next Pg`, `^U UnCut Text`, and `^T To Spell`.



A screenshot of a terminal window titled "project_python — nafise@Nafises-MBP — zsh — 80x24". The window shows the execution of the Python script. The first command is `python test.py`, which outputs `Hello world`. The second command is `$`, which shows the prompt. The status bar at the bottom displays the current directory `~/desktop/project_python` and the Python version `3.10.2`.



IDE vs. Code Editor



The difference is the number of features supported and how they are integrated together.



PyCharm

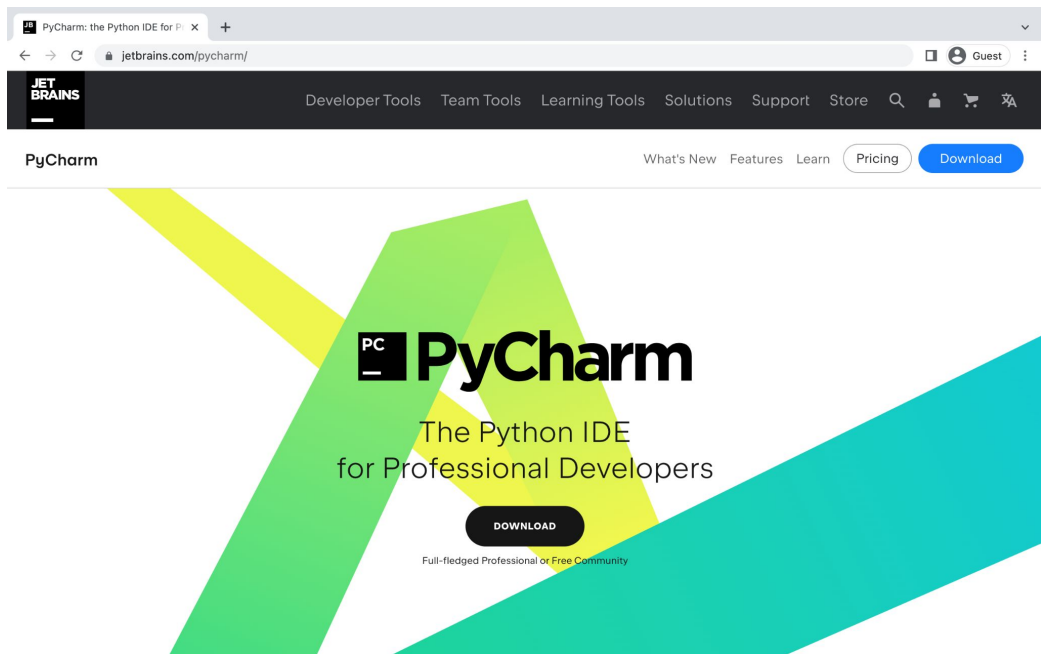
PyCharm is an IDE

1. Smart code completion
2. Code inspection
3. On-the-fly error highlighting and quick-fixes
4. Automated code refactorings
5. Rich navigation capabilities
6. Project management
7. Advanced debugging capabilities
8. And more



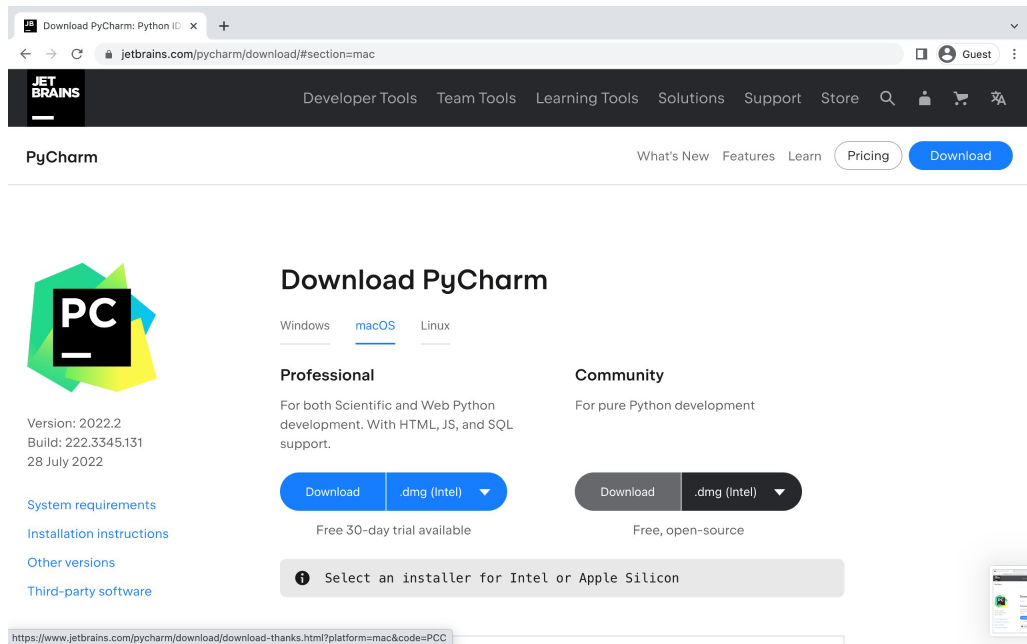
PyCharm

<https://www.jetbrains.com/pycharm/>



PyCharm

- Choose the “Community” version



The screenshot shows the JetBrains website's download page for PyCharm on macOS. The browser address bar shows the URL `jetbrains.com/pycharm/download/#section=mac`. The page features the JetBrains logo and navigation links like 'Developer Tools', 'Team Tools', 'Learning Tools', 'Solutions', 'Support', 'Store', and a 'Download' button. The main content area is titled 'Download PyCharm' and has tabs for 'Windows', 'macOS' (selected), and 'Linux'. Under the 'macOS' tab, there are two sections: 'Professional' and 'Community'. The 'Professional' section describes it as 'For both Scientific and Web Python development. With HTML, JS, and SQL support.' and offers a 'Download' button with a '.dmg (Intel)' dropdown and a note 'Free 30-day trial available'. The 'Community' section describes it as 'For pure Python development' and offers a 'Download' button with a '.dmg (Intel)' dropdown and a note 'Free, open-source'. A message at the bottom says 'Select an installer for Intel or Apple Silicon'. On the left, there is a PyCharm logo with 'PC' and version information: 'Version: 2022.2', 'Build: 222.3345.131', '28 July 2022'. Below this are links for 'System requirements', 'Installation instructions', 'Other versions', and 'Third-party software'. At the bottom, a URL is shown: `https://www.jetbrains.com/pycharm/download/download-thanks.html?platform=mac&code=PCC`.

Download PyCharm: Python ID X

jetbrains.com/pycharm/download/#section=mac

Guest

PyCharm

What's New Features Learn Pricing Download

PC

Version: 2022.2
Build: 222.3345.131
28 July 2022

[System requirements](#)
[Installation instructions](#)
[Other versions](#)
[Third-party software](#)

Download PyCharm

Windows macOS Linux

Professional

For both Scientific and Web Python development. With HTML, JS, and SQL support.

Download .dmg (Intel)

Free 30-day trial available

Community

For pure Python development

Download .dmg (Intel)

Free, open-source

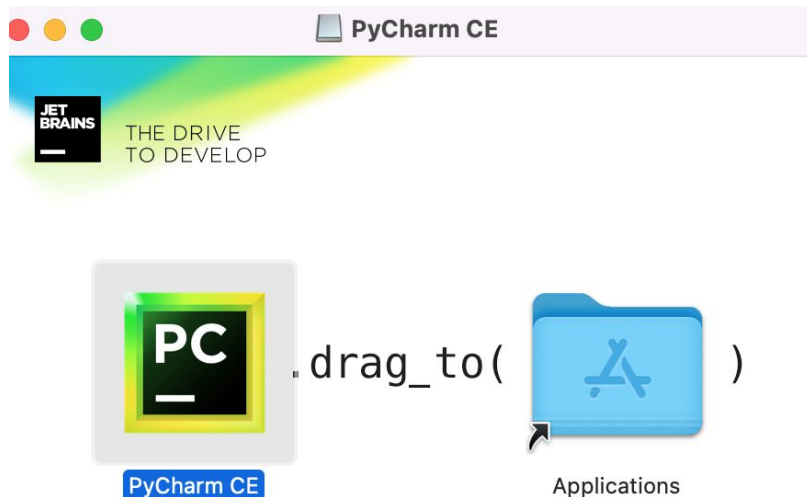
Select an installer for Intel or Apple Silicon

<https://www.jetbrains.com/pycharm/download/download-thanks.html?platform=mac&code=PCC>



PyCharm on macOS

1. Download the PyCharm “Community” version for macOS (the .dmg file)
2. Click on the file
3. Drag and drop



PyCharm on Windows

1. Download PyCharm “Community” version for Windows from the link below

<https://www.jetbrains.com/pycharm/download/#section=windows>

2. Run the .exe file and install it.

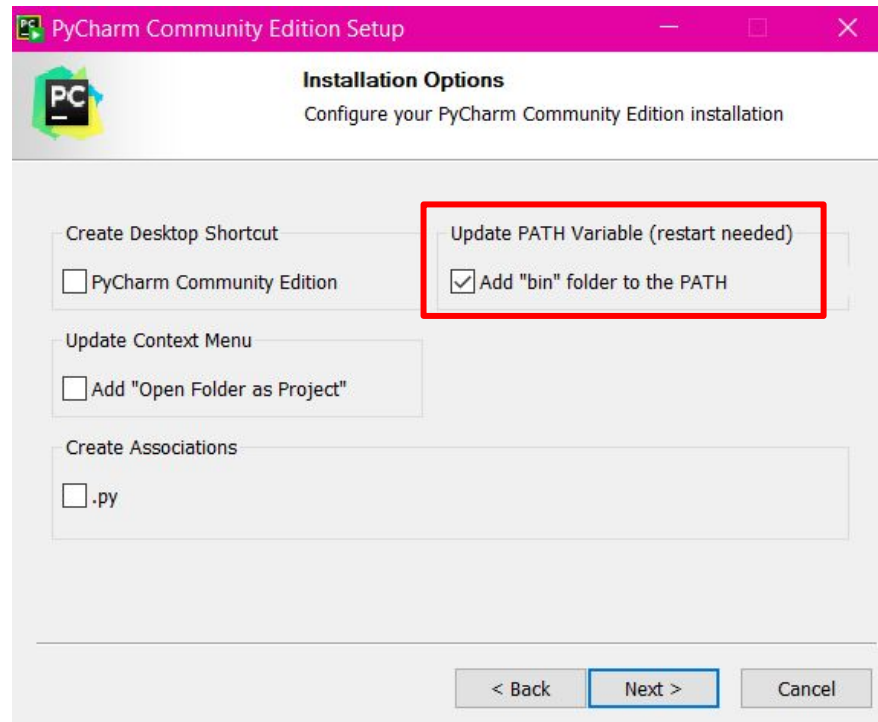
It should be in your “Downloads” folder:



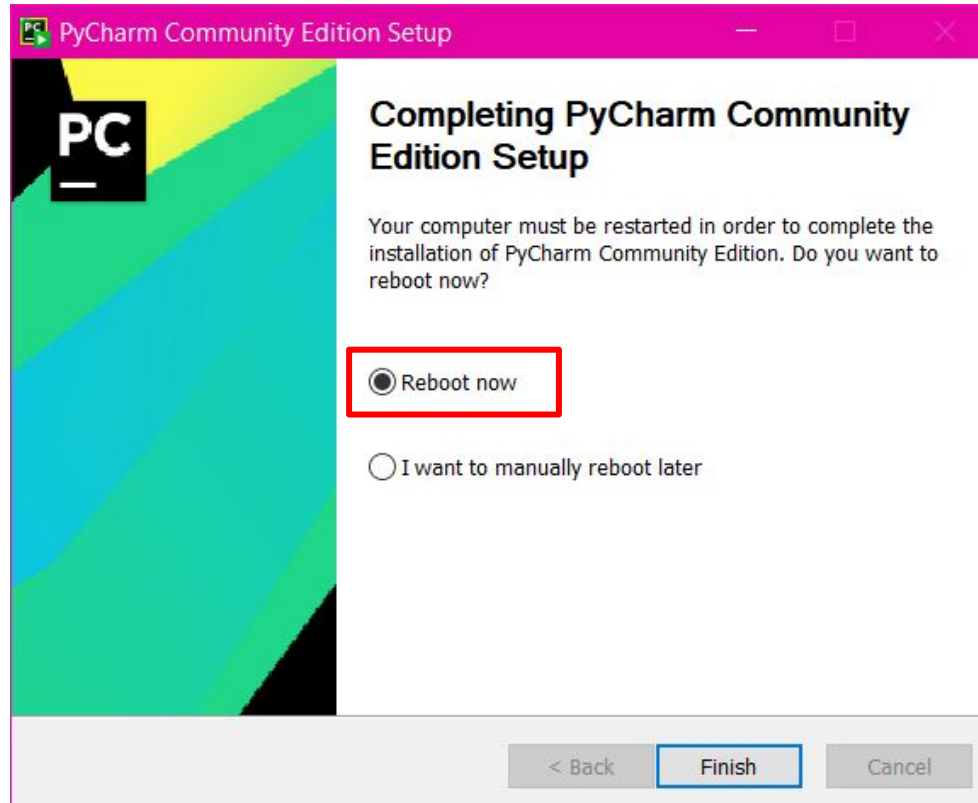
If you want, you can change the installation path



PyCharm on Windows



PyCharm on Windows



PyCharm on Linux

1. Download the tar.gz file for PyCharm from the link below

<https://www.jetbrains.com/pycharm/download/#section=linux>

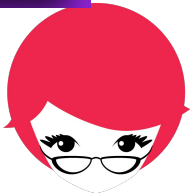
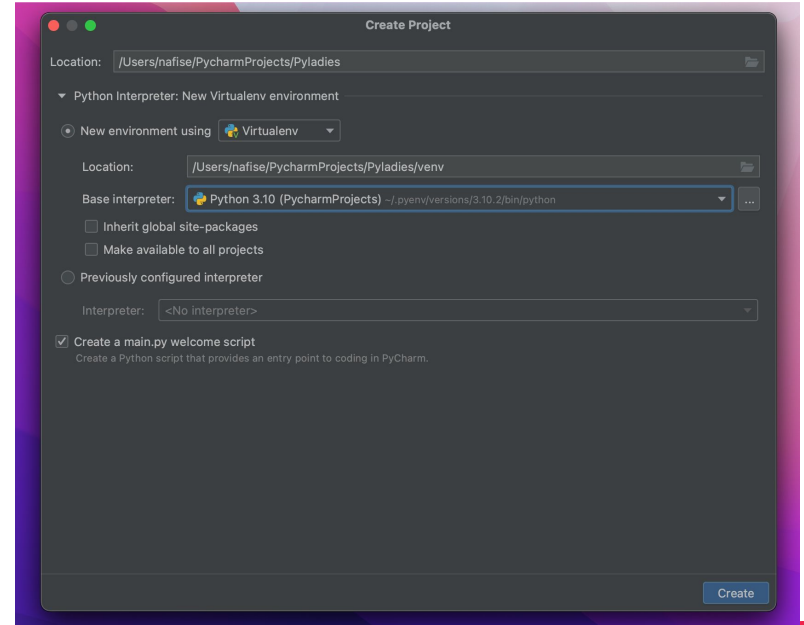
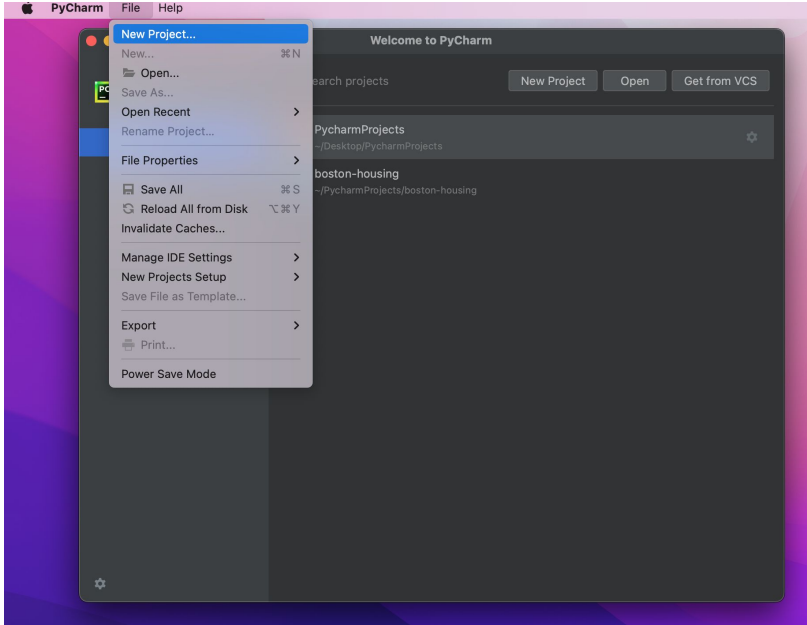
2. Extract the files to a directory
3. Open the Terminal and go to the directory the extracted files are located and then go to “bin” directory
4. In the Terminal type the command below

```
$ cd /home/user/Downloads/pycharm_<version>/bin
```

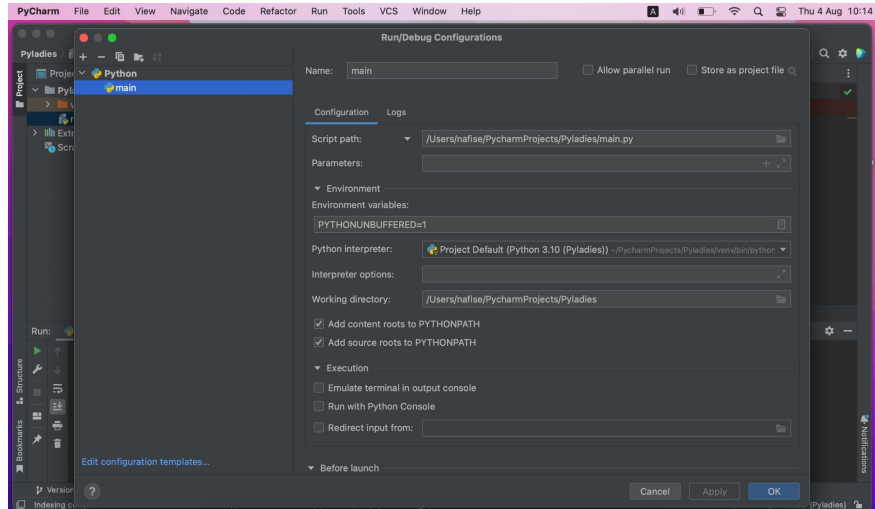
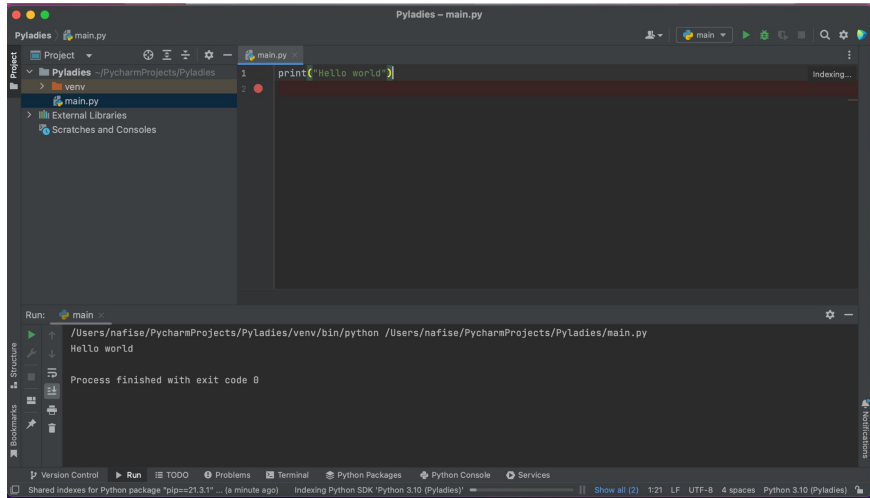
```
$ ./pycharm.sh
```



Making Project on PyCharm



Changing Run Configuration



Adding Tools

