

Installing Python + PyCharm

CSE101: COMPUTER SCIENCE PRINCIPLES

1

1

Announcements

Acknowledgement: These slides are revised versions of slides prepared by Prof. Arthur Lee, Tony Mione, and Pravin Pawar for earlier CSE 101 classes. Some slides are based on Prof. Kevin McDonald at SBU CSE 101 lecture notes and the textbook by John Conery.

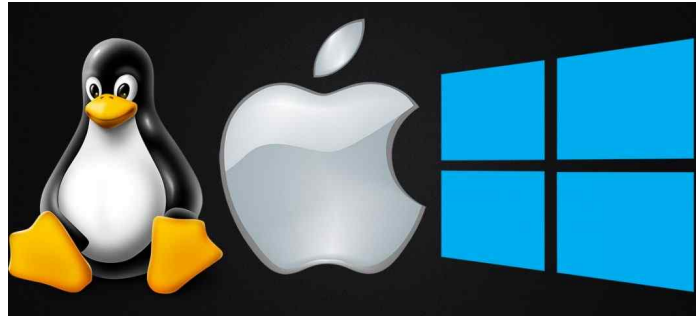
2

2

What is an Operating System?

Operating System is a program that manages computer hardware and software resources, and provide common services for computer applications.

- For example: Windows, Mac, Linux



3

3

What is Python?

Python is a computer programming language

Python can be used to write many types of programs

- Programs to do basic calculations
- Games
- Popular with scientists because they can do complex data analysis by writing short programs

Python can be installed on computers with different operating systems

4

4

Installing Python

5

5

Python Installation on Windows

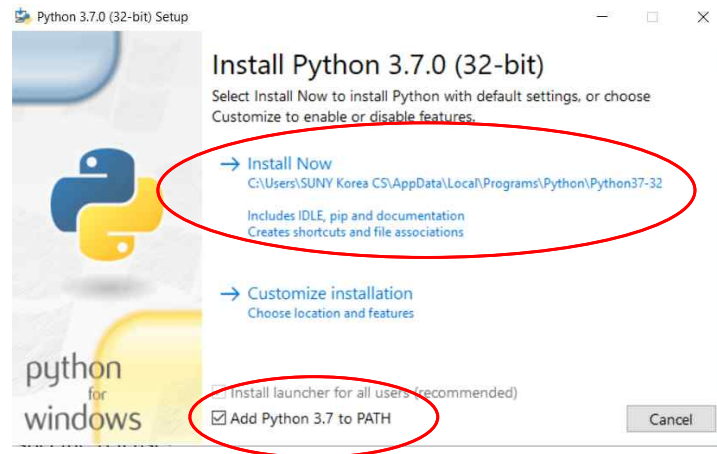
<https://www.python.org/downloads/> – Note Python version is now 3.8.5



6

6

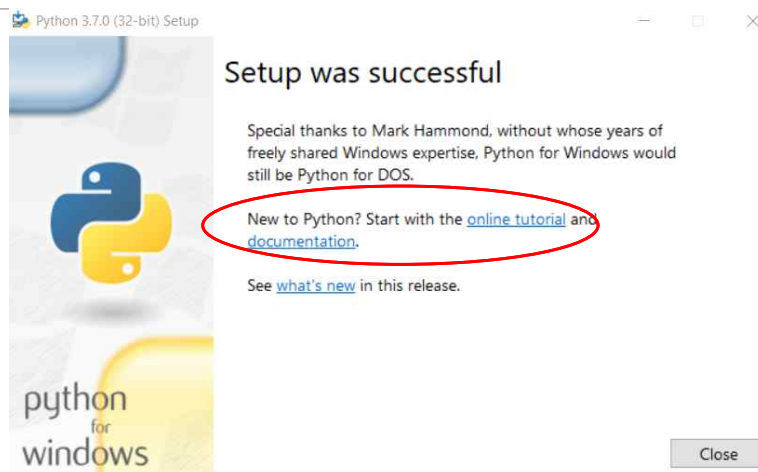
Python Installation on Windows



7

7

Python Installation on Windows



8

8

Python Installation on Mac

1. Go to <https://www.python.org/downloads/>
2. Download Python 3.8.5. It should save a file named "python-3.8.5-macosx10.9.pkg" to your computer.
3. Double click on the file and run the install with default options and agree with the license. You'll need to type in your password to install it.

Video tutorial at: <https://www.youtube.com/watch?v=8BiYGIDCvVA>

9

9

Trying Out Python

10

10

What is a computer program?

A computer program is a sequence of instructions the computer executes to solve a well-defined problem

The instructions or steps the programmer writes constitute the source code of the program

In Python, many of these instructions look like regular, everyday English with some extra punctuation thrown in

There are two basic ways to give commands written in Python to the computer:

1. Type individual instructions via an interactive shell, a program that executes the commands immediately
2. Write a complete, stand-alone application that we can run over and over

11

11

Python console / interactive shell

The **console** (or interactive shell) is

- A window where a single command or short set of commands can be typed to the computer
- The computer tries to execute those commands

Python **interpreter**

- Reads Python instructions typed into the console by the user
- The interpreter converts them into a form the computer's hardware understands
- The language that the hardware understands is called **machine language**

No matter what programming language is used, at some point the source code must be translated into machine language for the computer to execute it

12

12

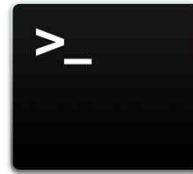
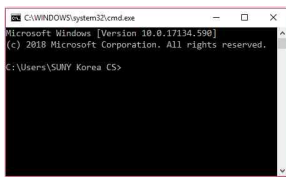
Opening a Terminal (Command Prompt)

Windows

- Press "Win-R," type "cmd" and press "Enter" to open a Command Prompt session using just your keyboard.

Mac OS

- Finder -> Applications -> Utilities -> Terminal



13

13

Start the Python Interpreter

In your Terminal:

On Windows:

Type "python" and press "Enter"

On Mac:

Type "python3" and press "Enter"

14

14

Some Python Statements

- `print("hello world")`
- `1 + 5`
- `a = 1`
- `b = 2`
- `a + b`
- `name = "SUNY"`
- `country = "Korea"`
- `print(name + country)`
- `Pi = 22/7`
- `print(type(name))`
- `print(type(Pi))`

15

15

Installing Jupyter Notebooks

16

16

Jupyter Notebooks

Another tool you can use in addition to the command prompt is IPython Jupyter Notebooks

- You can learn about the project at <https://ipython.org>

Jupyter Notebooks are an interactive environment to run Python code and see the results

- You may find it easier to use than the command prompt

The installation instructions vary depending on your OS – see next slide.

- You can try using it online at: <https://jupyter.org/try>

17

17

Installing Jupyter Notebooks

On Mac:

Open Terminal and type the following commands:

```
pip3 install --upgrade pip
pip3 install --upgrade ipython jupyter
```

Note: you may be asked to install command line tools – install them if asked.

On Windows:

Open the Command Prompt and type the following commands:

```
pip install --upgrade pip
pip install --upgrade ipython jupyter
```

18

18

To Run Jupyter Notebooks

Open the Command Prompt / Terminal

To start the notebook in your current directory type:

```
jupyter notebook
```

Once you run the command, the Jupyter Notebook window should appear

- You can then get started creating a notebook and writing Python code.

19

19

Installing PyCharm

20

20

The PyCharm IDE

In this course, we will use an integrated development environment (IDE) called PyCharm

PyCharm is a tool used by professional software developers

- Good tool for beginning programmers to use
- Go to <https://www.jetbrains.com/pycharm/download/> to download and install the free **Community Edition of PyCharm**.

The next slides have a walkthrough of important steps of the process, though the screens may look a little different on your computer. The screenshots are taken on a Windows machine, though it will be similar on the Mac. There is a summary and video walkthrough for the Mac at the end.

21

21

PyCharm Installation

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

Download PyCharm

Windows

macOS

Linux

Professional

Full-featured IDE
for Python & Web
development

[DOWNLOAD](#)

Free trial

Community

Lightweight IDE
for Python & Scientific
development

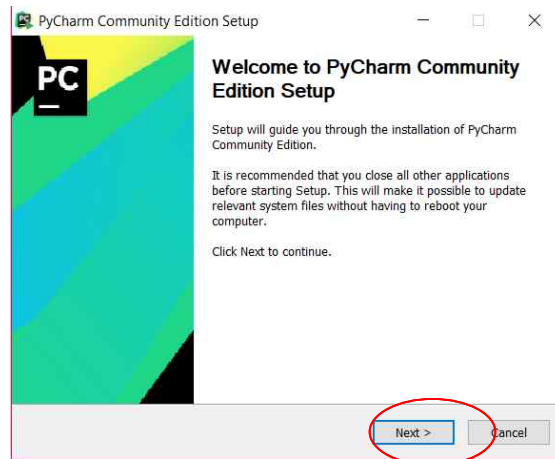
[DOWNLOAD](#)

Free, open-source

22

22

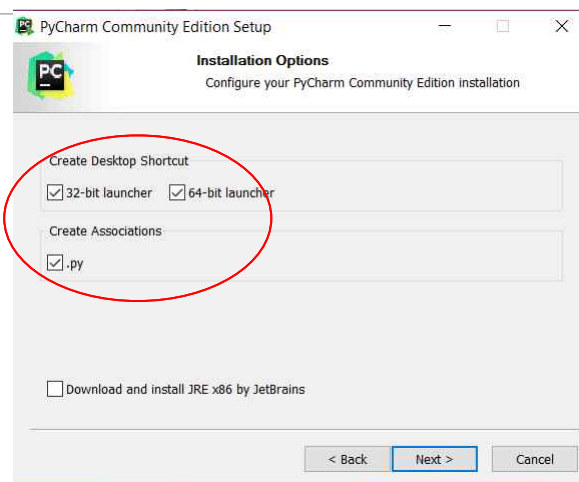
PyCharm Installation



23

23

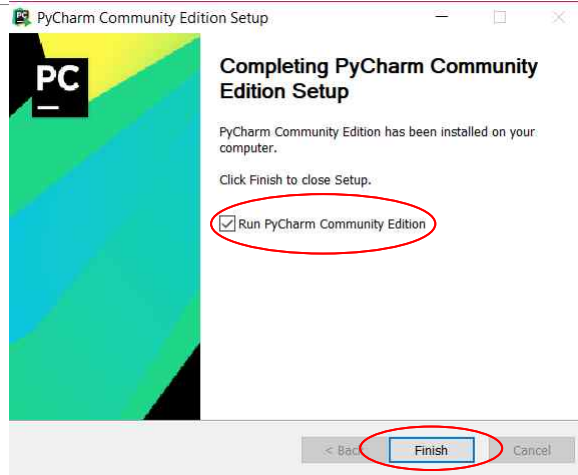
PyCharm Installation



24

24

PyCharm Installation



25

25

PyCharm Installation on Mac

1. Go to <https://www.jetbrains.com/pycharm/download/> to download and install the **free Community Edition of PyCharm**.
2. Now, go to the Applications folder and start **PyCharm CE.app**. You might want to put it on the dock.

Video tutorial at: <https://www.youtube.com/watch?v=wb4HNqQtIII>

26

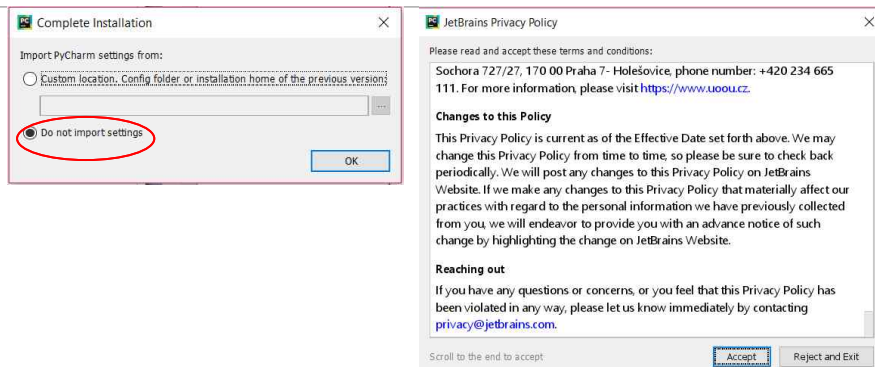
26

Running and configuring PyCharm for the first time

27

27

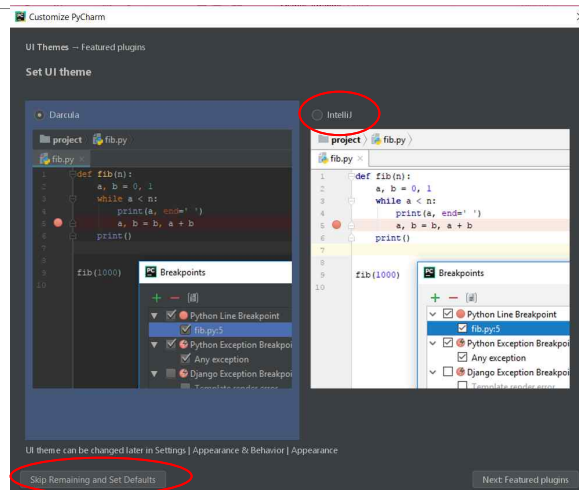
PyCharm Configuration



28

28

PyCharm Configuration

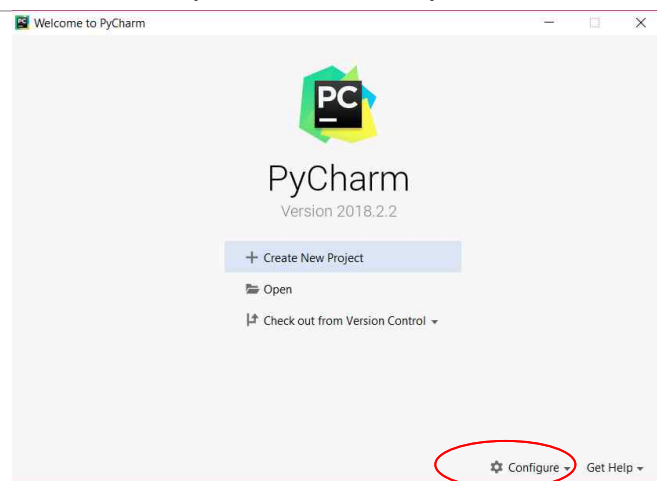


29

29

One More Configuration: Setting Default Python Interpreter in PyCharm

Step 1:
Select Configure -> Preferences



30

30

Setting Default Python Interpreter in PyCharm

Step 2: Find out installation location of Python:

Go to your Terminal window

On Windows terminal, type in this command:

- `where python`

On Mac terminal, type in this command

- `which python3`

Note the path that is printed out. This is where your Python is installed – you will need this next.

The path can be different for each computer.

On my Mac it is:

```
/Library/Frameworks/Python.framework/Versions/3.8/bin/python3
```

On my Windows machine:

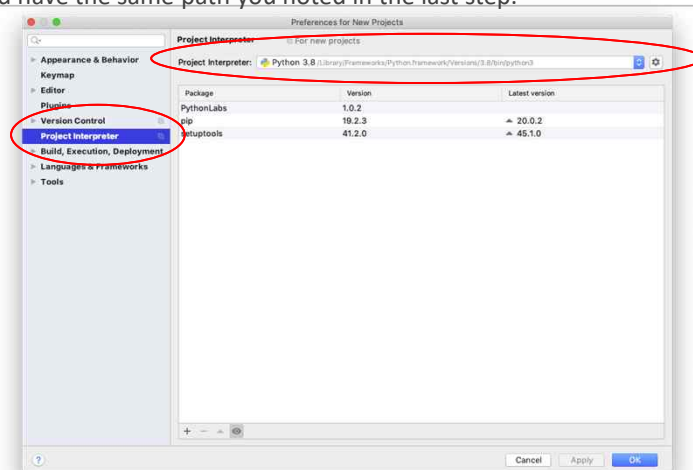
```
C:\Users\SUNYCS\AppData\Local\Programs\Python\Python38-32\python.exe
```

31

31

Setting Default Python Interpreter in PyCharm

Step 3: Go back to PyCharm's Configuration Screen. Click on the Project Interpreter tab on the left side. Then click on the "Project Interpreter" box and select or add the Python 3.8 interpreter. This box should have the same path you noted in the last step.



32

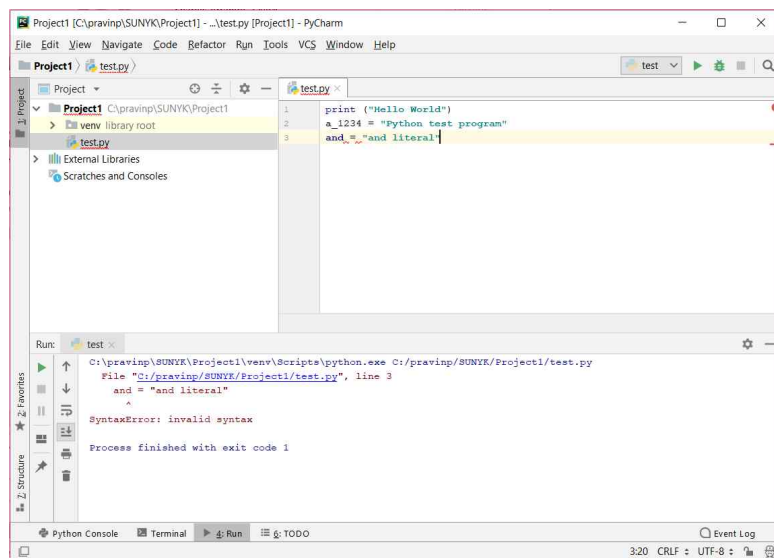
32

PyCharm Basics

33

33

PyCharm IDE



34

34

PyCharm basics

To create and run a stand-alone Python program:

1. Start PyCharm and press the "Create New Project" button.
2. Pick a "Location" and name for the Project (e.g., "CSE 101").
3. Select File Menu > New > Python File and enter the name of the file for the source code (e.g., "test.py")
4. Write the program and save the file.
5. After saving, go to Run Menu > Run.
6. Select the name of the program file (e.g. "test.py") to run it .

The next time the program is to be run:

- Click the green triangle in the lower-left corner of the screen.
- Or, right-click the name of the file and choose Run.

35

35

Questions?

36

36