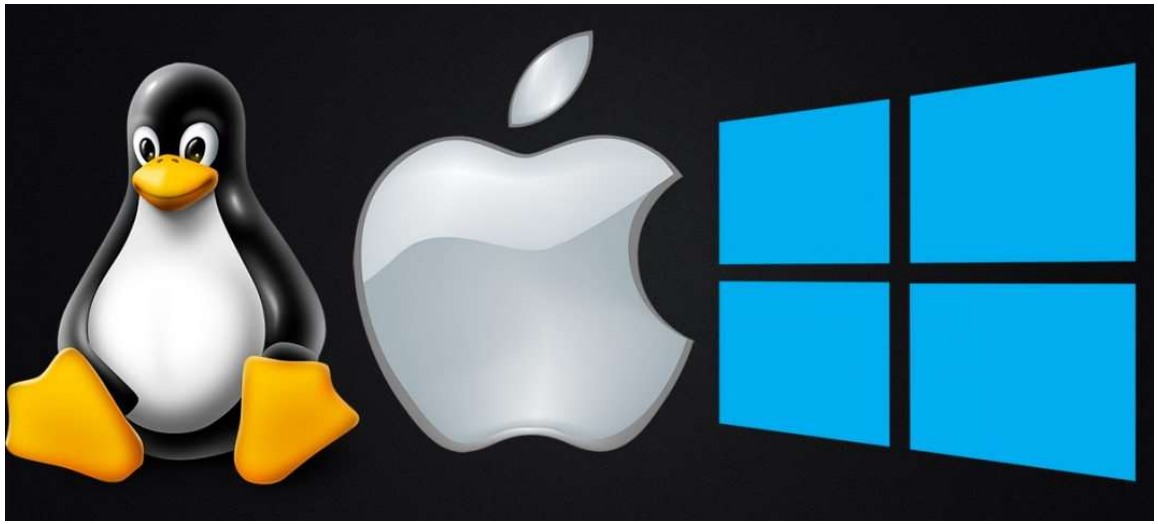
Python and PyCharm Installation

Announcements

This lecture: Python and PyCharm Installation

What is an Operating System?

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



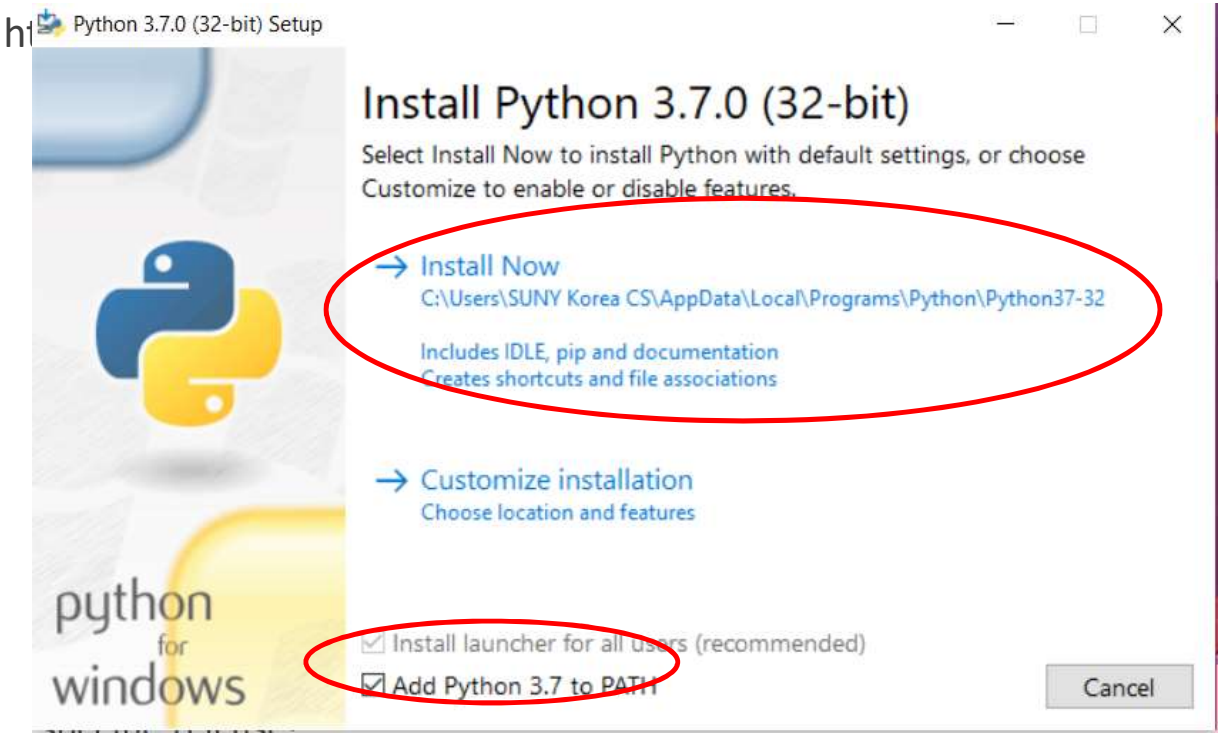
What is Python?

- Python is a computer programming language
  - Relatively simple **syntax** (set of rules programmers must follow when writing programs)
- Python can be used to write simple programs that do basic calculations or very complicated ones
  - Can write basic games!
  - Python is popular with scientists because they can do complex data analysis by writing short programs
- Python can be installed on a wide variety of computer types and operating systems

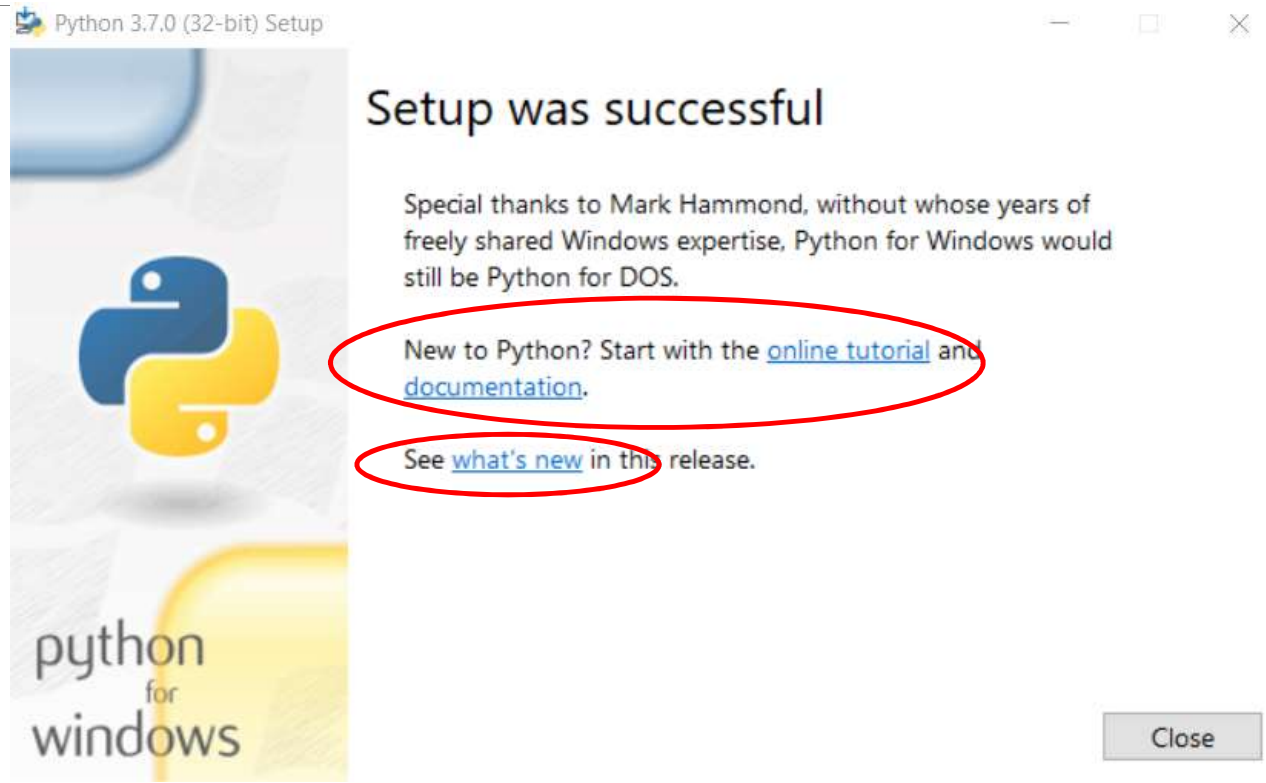
Python Installation on Windows

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

Python Installation on Windows



Python Installation on Windows



Python Installation on MacBook

https://www.youtube.com/watch?v=8BiYGIDCvvA

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 a **shell**, an interactive program that executes the commands
2. Write a complete, stand-alone **application** that we can run over and over

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 command
- 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 language is used, at some point the source code must be translated into machine code for the computer to execute it

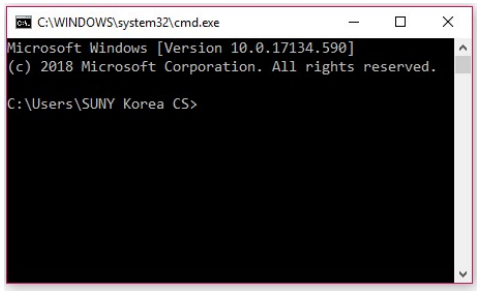
Opening a Terminal

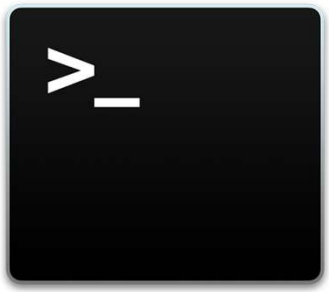
Windows

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

Mac OS

- Finder -> Applications -> Utilities -> Terminal





Some Python Statements

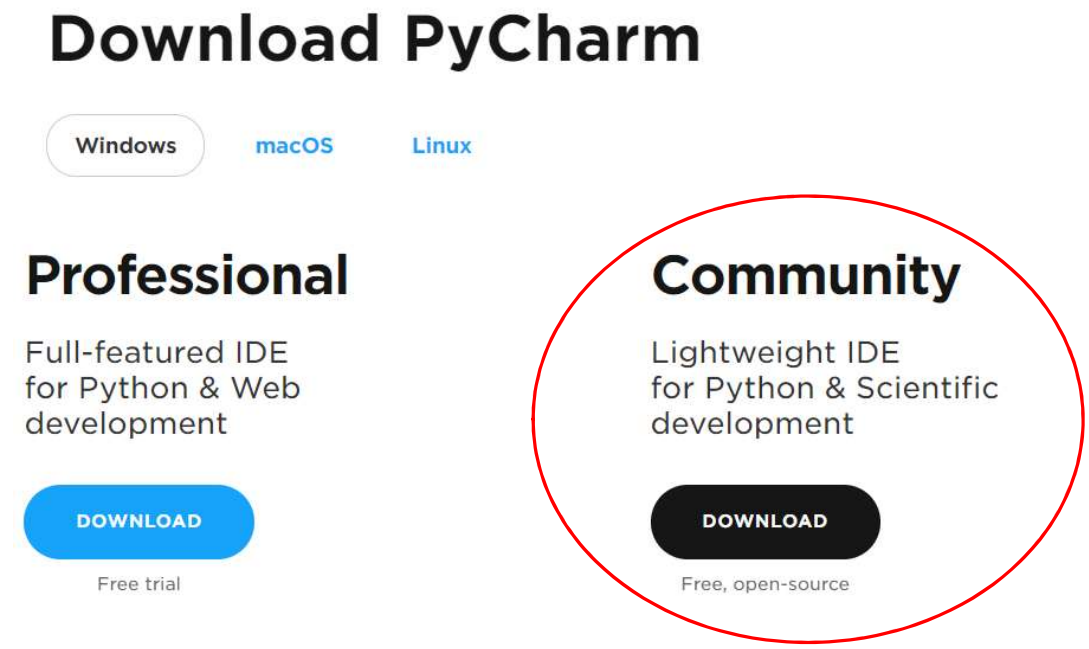
- print (“helloworld”)
- 1 + 1
- a = 1;
- b = 2;
- a + b
- name = “SUNY”
- country = “Korea”
- print (name + country)
- Pi = 22/7
- print (type(name))
- print (type(Pi))

The PyCharm IDE

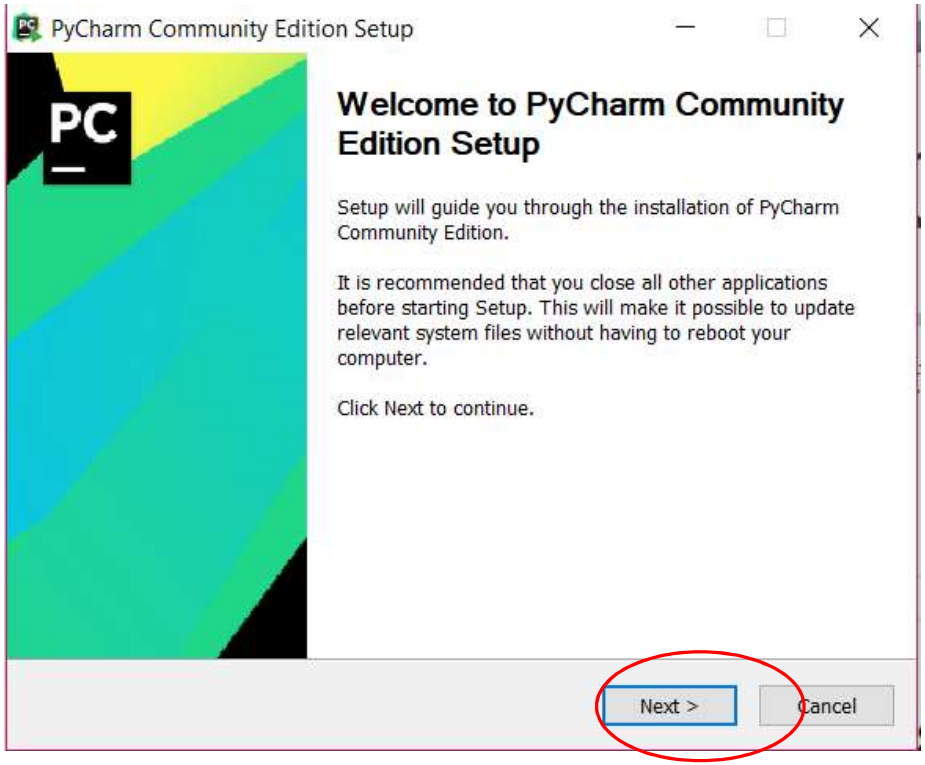
- In this course, an **integrated development environment** (IDE) called PyCharm will be used
- PyCharm is industry-grade software used by professional software developers
  - still easy enough for novice programmers to use
  - First download and install Python from www.python.org
  - Go to www.jetbrains.com/pycharm to download and install the free Community Edition of PyCharm

PyCharm Installation

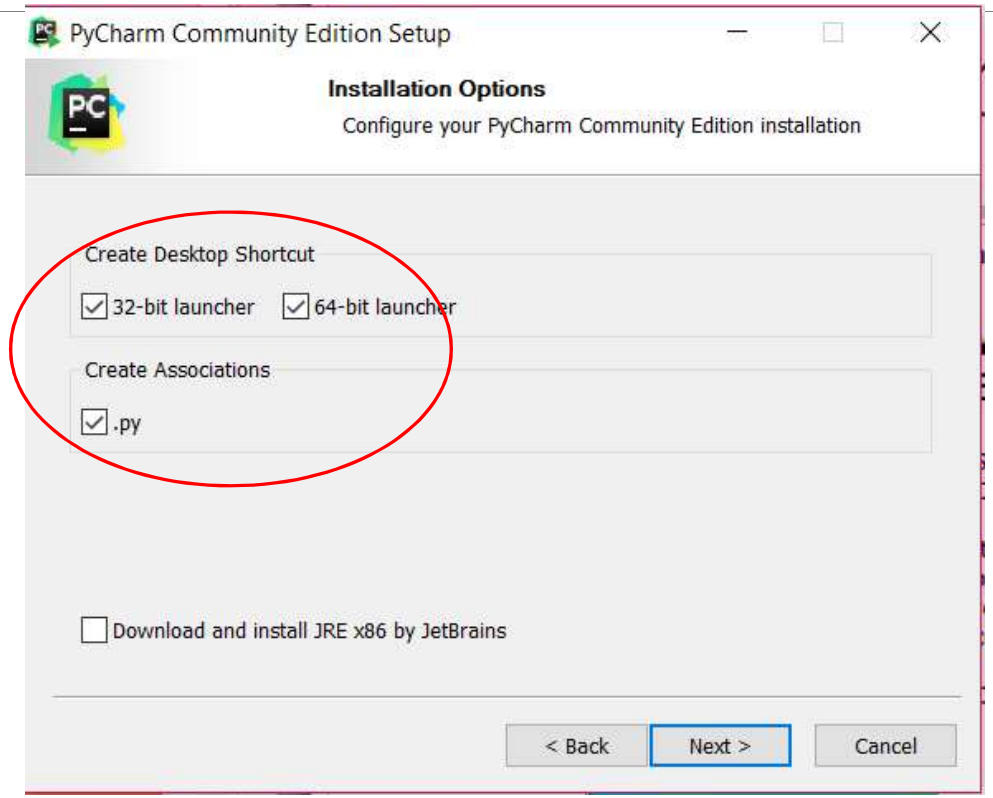
https://www.jetbrains.com/pycharm/download/#section=windows



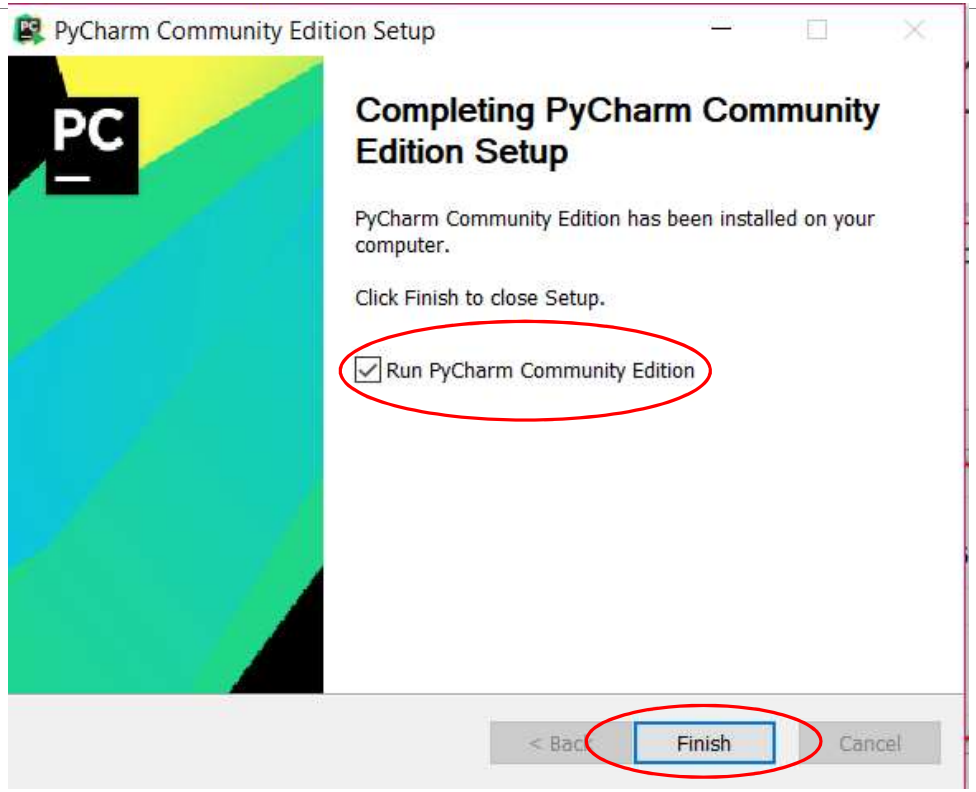
PyCharm Installation



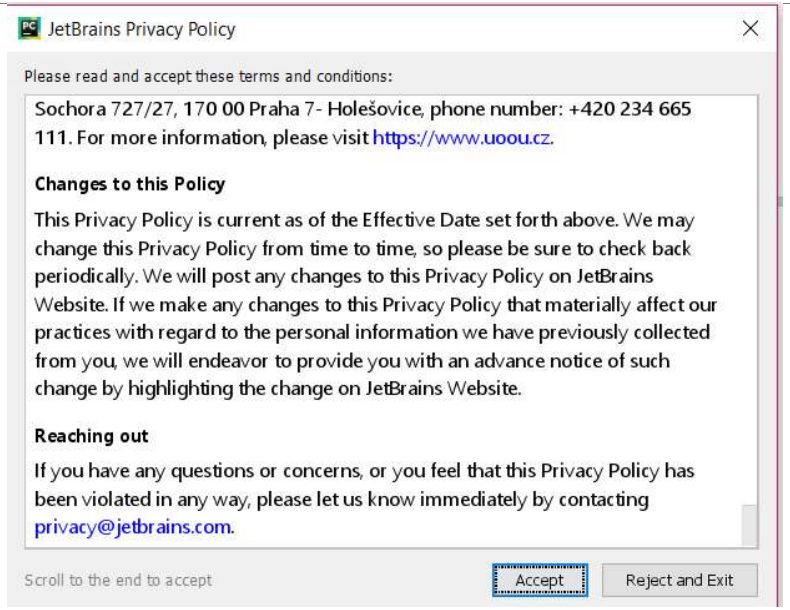
PyCharm Installation



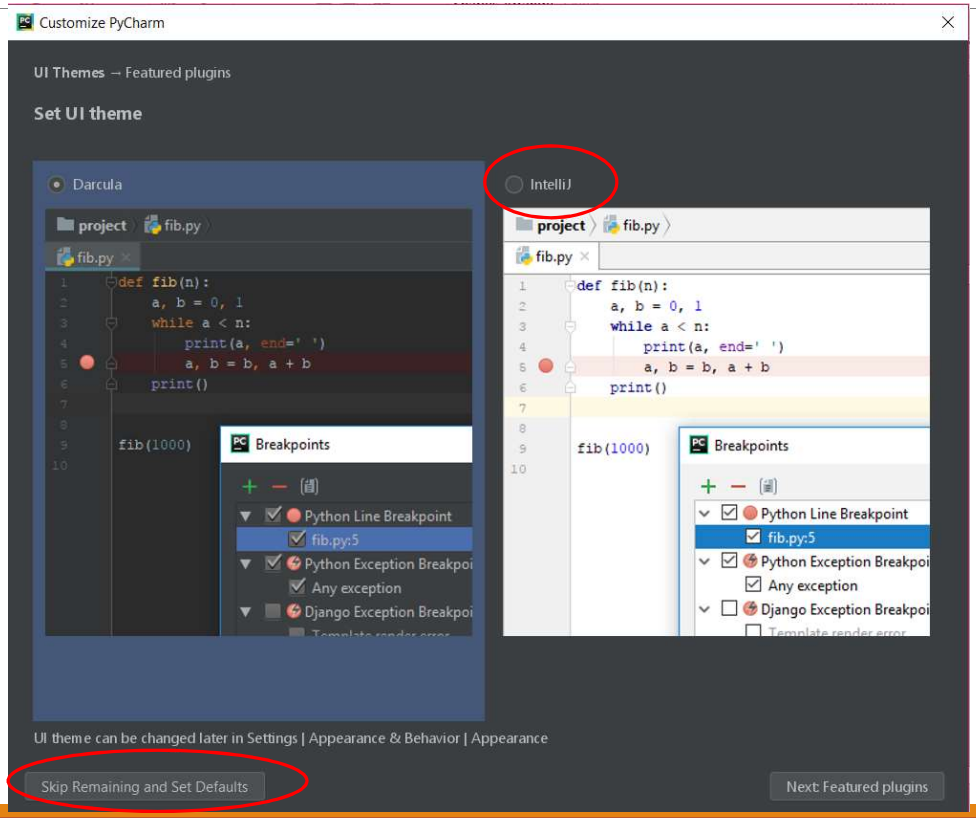
PyCharm Installation



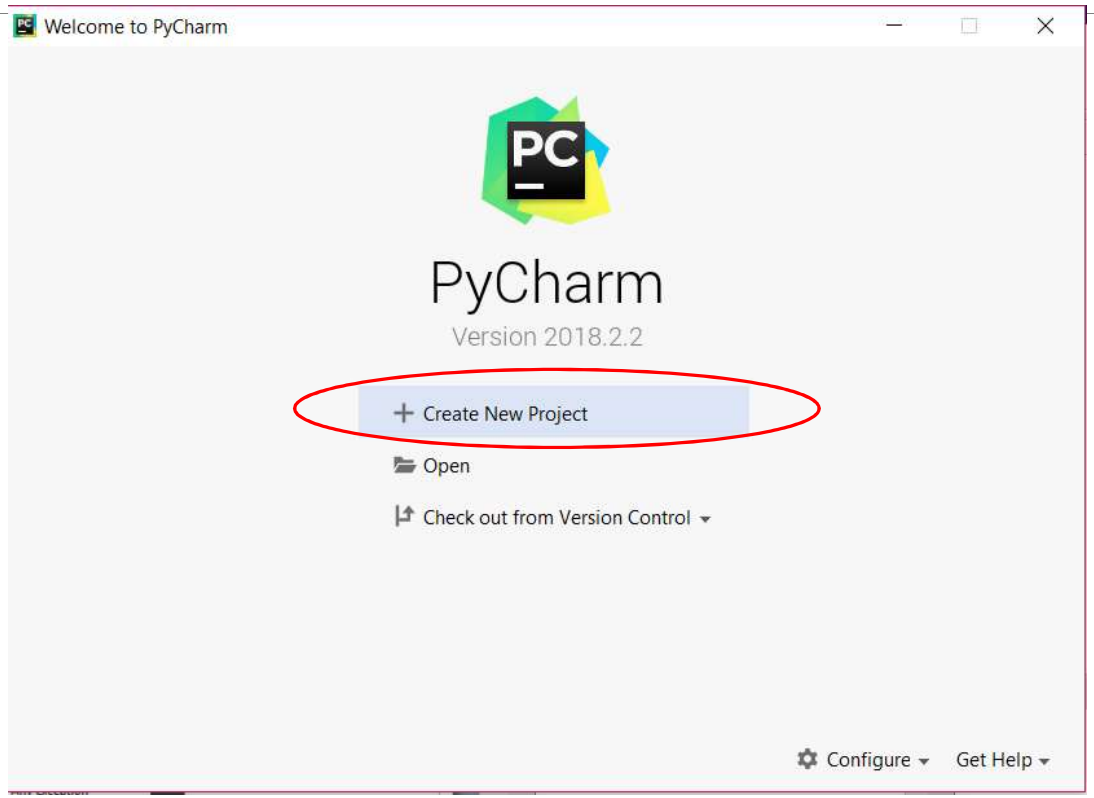
PyCharm Installation



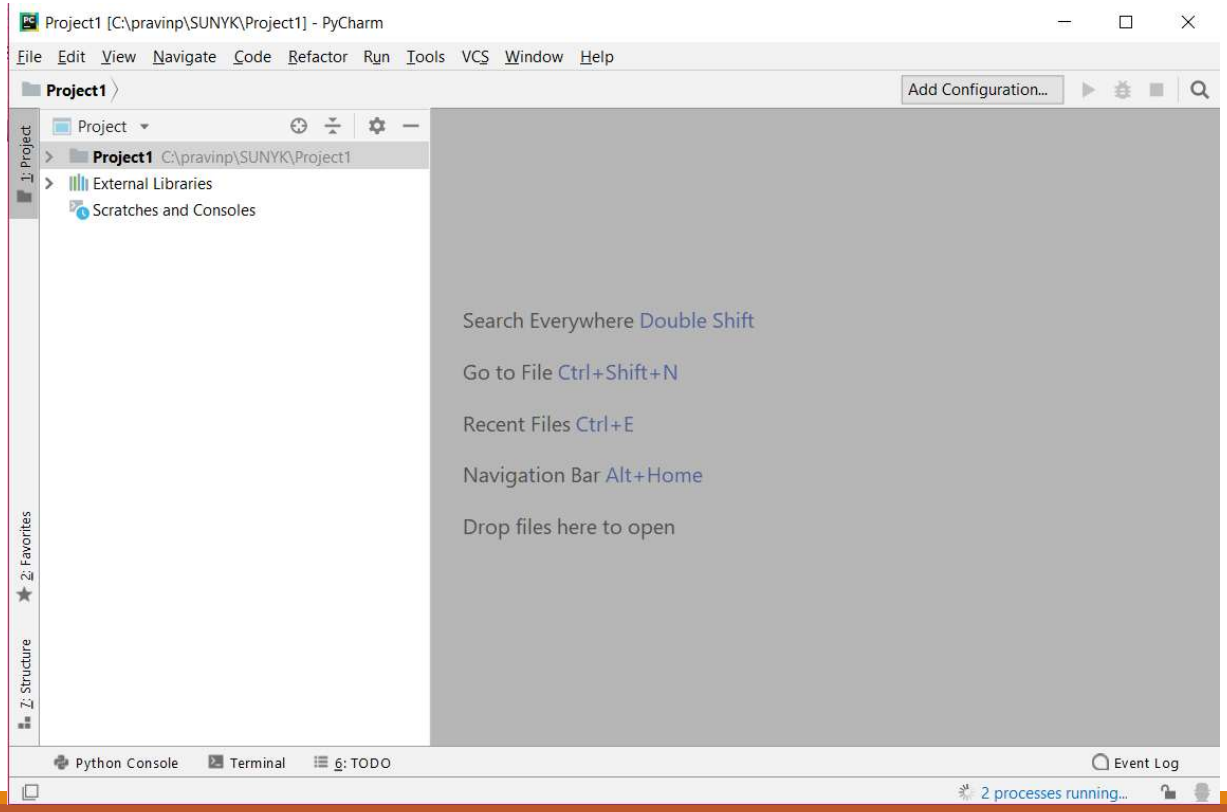
PyCharm Installation



PyCharm Project



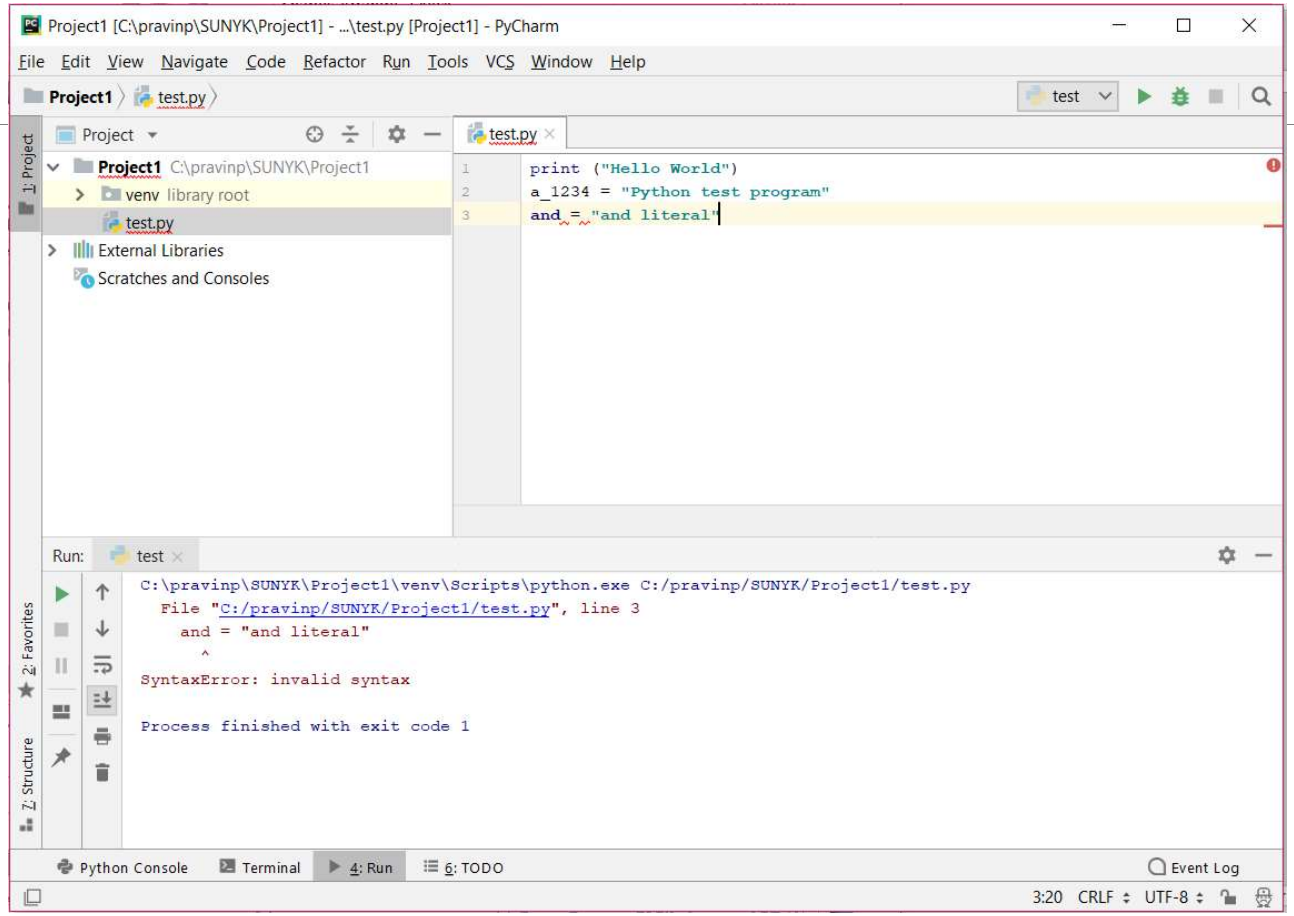
PyCharm IDE


Project1 [C:\pravinp\SUNYK\Project1] - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
Project1
Add Configuration...
Project
Project1 C:\pravinp\SUNYK\Project1
External Libraries
Scratches and Consoles
Search Everywhere Double Shift
Go to File Ctrl+Shift+N
Recent Files Ctrl+E
Navigation Bar Alt+Home
Drop files here to open
1: Project
2: Favorites
7: Structure
Python Console
Terminal
6: TODO
Event Log
2 processes running...

PyCharm Installation on Mac

https://www.youtube.com/watch?v=wb4HNqQtIlI

PyCharm IDE


Project1 [C:\pravinp\SUNYK\Project1] - ...\test.py [Project1] - PyCharm
File Edit View Navigate Code Refactor Run Tools VCS Window Help
Project1 test.py
test
Project
Project1 C:\pravinp\SUNYK\Project1
venv library root
test.py
External Libraries
Scratches and Consoles
test.py
1 print ("Hello World")
2 a_1234 = "Python test program"
3 and = "and literal"
Run: test
C:\pravinp\SUNYK\Project1\venv\Scripts\python.exe C:/pravinp/SUNYK/Project1/test.py
File "C:/pravinp/SUNYK/Project1/test.py", line 3
and = "and literal"
^
SyntaxError: invalid syntax
Process finished with exit code 1
Python Console
Terminal
4: Run
6: TODO
Event Log
3:20 CRLF UTF-8
1: Project
2: Favorites
7: Structure

Setting Default Python Interpreter in PyCharm

Step 1: Find out installation location of Python program:

Windows terminal command

- where python

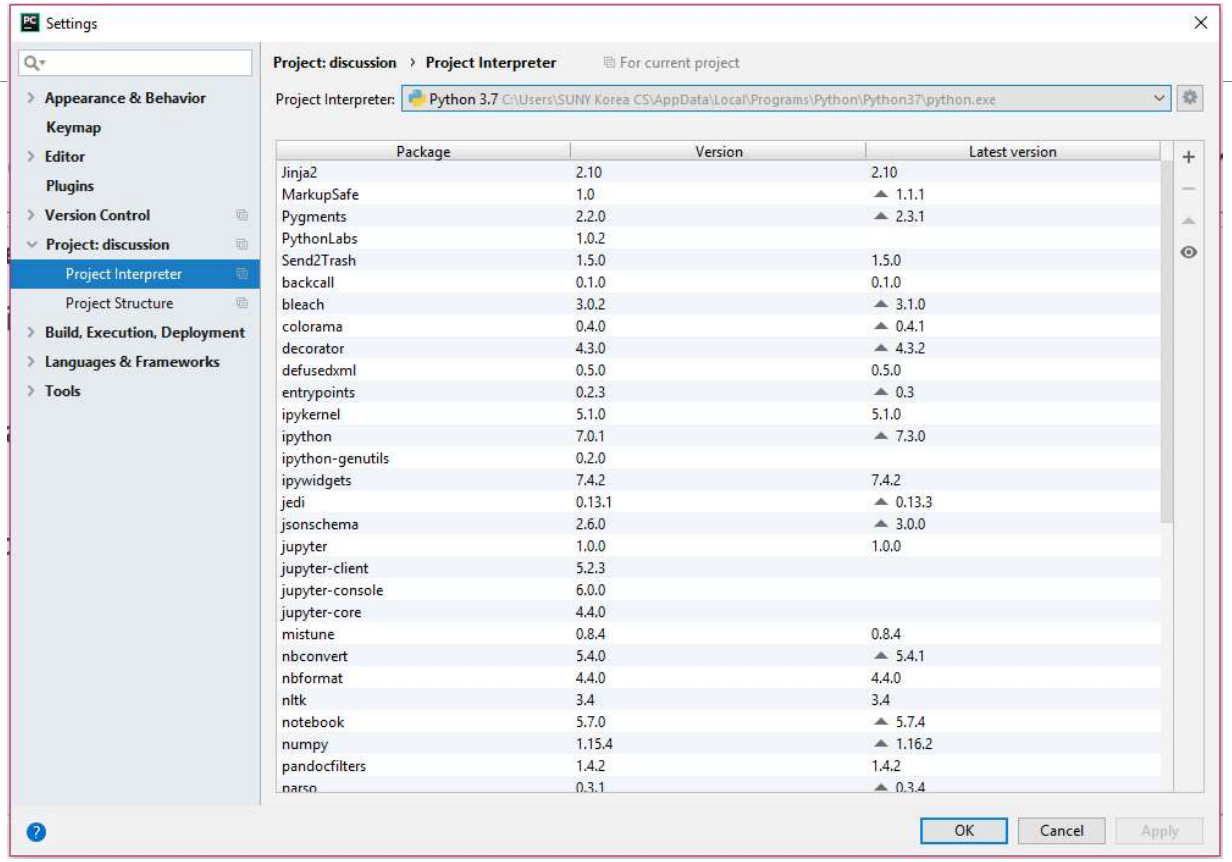
Mac terminal command

- which python3

Note down the paths of python installation.

Setting Default Python Interpreter in PyCharm

Step 2: Change project settings (and New Project Settings) in PyCharm:



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.
  4. Write the program and save the file.
  5. After saving, go to Run Menu > Run.
  6. Select the name of the program file to run it.
- The next time the program is to be run:
  - Hit the green triangle in the lower-left corner of the screen.
  - Or, right-click the name of the file and choose Run.

Questions?