

# PYTHON BASICS (1): INTRO & INSTALLATION

---

Harry Jonghyun Lee

January 8, 2018

CEE 696 & Stanford CEE 268

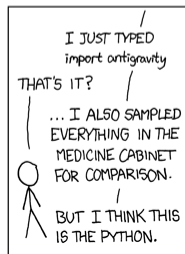
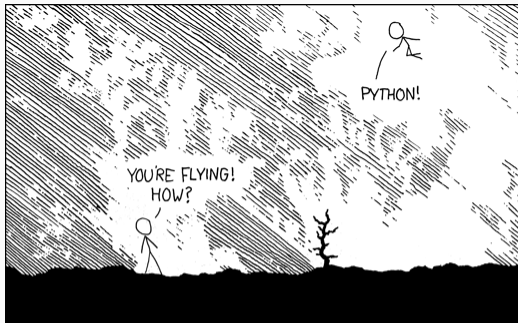


Figure 1: import antigravity! - <https://xkcd.com/353/>

1. Intro

2. Installation

## INTRO

---

# WHY PYTHON?

- **Rapid implementation** - “Python where we can, C/C++/Fortran where we must”)
- **Free** (vs. expensive MATLAB license)
- “**Glue**” language combining many tools easily for specialized purposes
- Versatile - from science to web services
- Python skills are more transferable to other works
- Most importantly, USGS now supports MODFLOW-Python interface to write inputs and executes MODFLOW

## SO, HOW WE LEARN PYTHON SCRIPTING?

How to program Python? Of course, you can write Python scripts using any editor like Notepad in Windows.

We will use PyCharm <https://www.jetbrains.com/pycharm/> because it is one of widely used Python integrated development environment (IDE) that 1) helps write and run your scripts **without hassle** and 2) provides consistent experience in class.

Of course, you can use your own IDE/editor if you have worked with it. Widely used scripting environments are IPython, Spyder, MS Visual Studio (I like it), Jupyter Notebook and so on.

## INSTALLATION

---

1. install Python 3.6, we will use ANACONDA Python (<https://www.anaconda.com/download/>)
2. install PyCharm Professional, please apply for student license (<https://www.jetbrains.com/student>)
3. install numpy, matplotlib, scipy, floy (in PyCharm, File-Settings-Project-Project Interpreter- click “+” on the right panel)

See the next slides for more information



## Anaconda

- Open source Python distribution known for its simple package management
- In other words, easy to install on any kind of operating systems
- We will use **Anaconda installer** for Windows/MacOS/Linux

## Installation:

1. Download Python 3.6  
<https://www.anaconda.com/download/>
2. Double-click the downloaded file
3. Accept the defaults (you can change them later)
4. To test your installation, open Anaconda Prompt, run the command “conda list”

You can follow instruction <https://conda.io/docs/user-guide/install/index.html#regular-installation>

## INSTALLATION (2) - PYTHON PACKAGES

A collection of Python files that do specific tasks, distributed by scientific and engineering communities. We will use

- `numpy` : linear algebra module
- `scipy` : optimization module (for CEE 696)
- `flopy` : MODFLOW Python interface
- `matplotlib` : plotting module

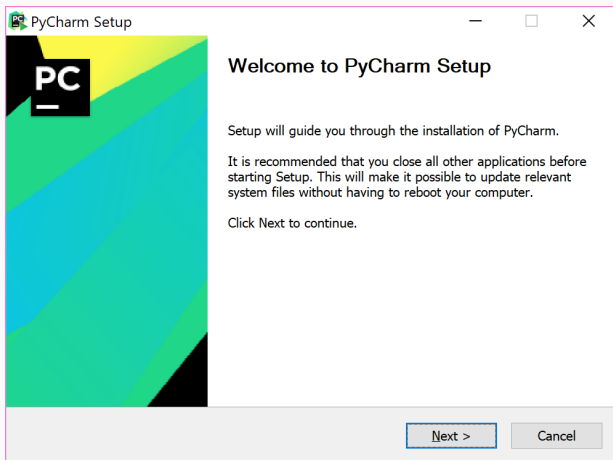
You may install packages in “Anaconda Navigator”, but we will do package installation in PyCharm.

Before PyCharm Installation, apply for professional license from <https://www.jetbrains.com/student/>

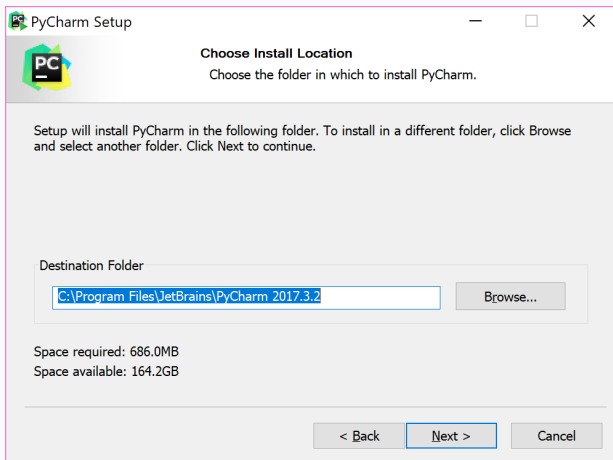
With your university email, you should get the license soon.

Then, go to <https://www.jetbrains.com/pycharm/download> and download PyCharm installation file and execute it.

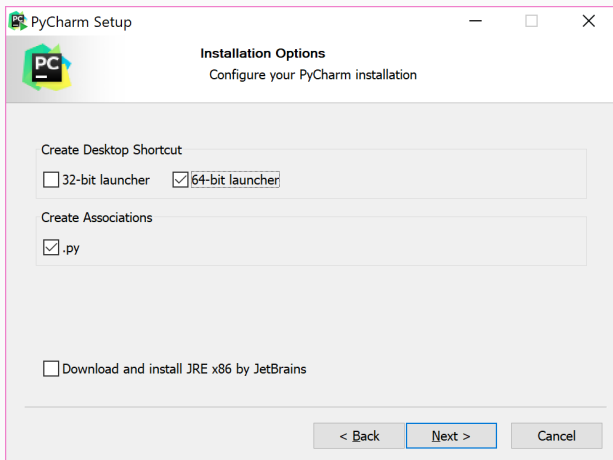
# INSTALLATION (4) - PYCHARM



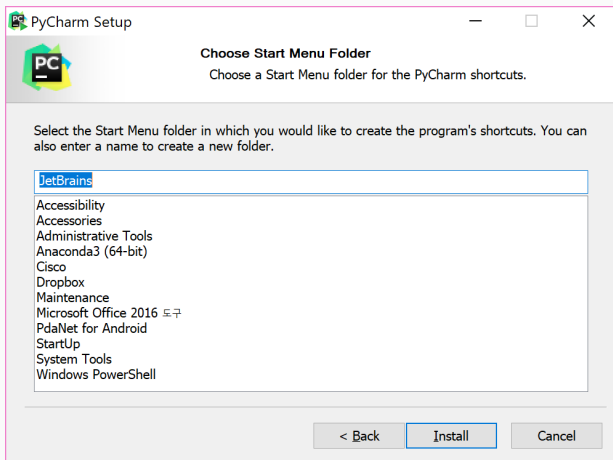
# INSTALLATION (5) - PYCHARM



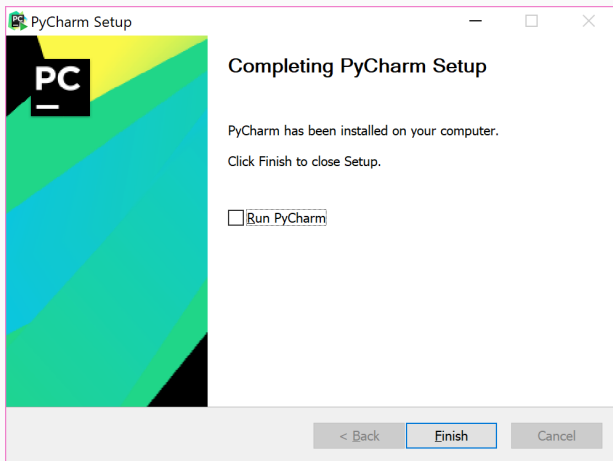
# INSTALLATION (6) - PYCHARM



# INSTALLATION (7) - PYCHARM

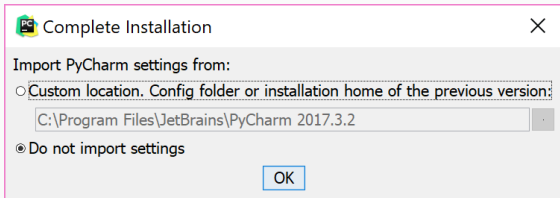


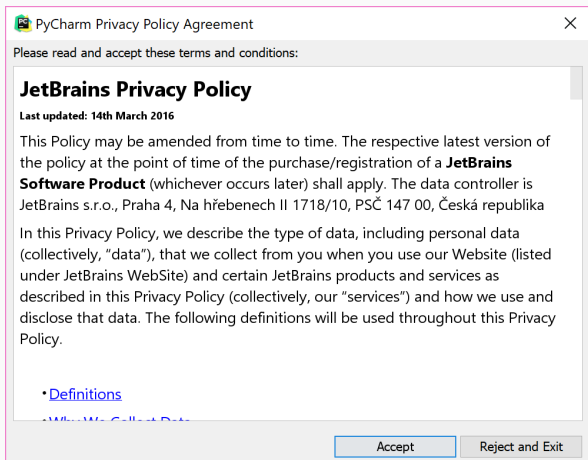
# INSTALLATION (8) - PYCHARM



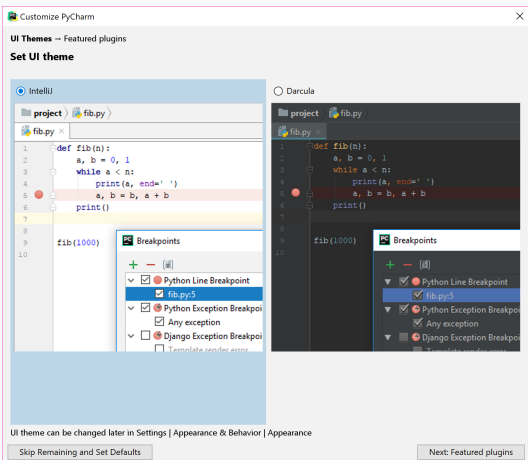


# INSTALLATION (9) - PYCHARM

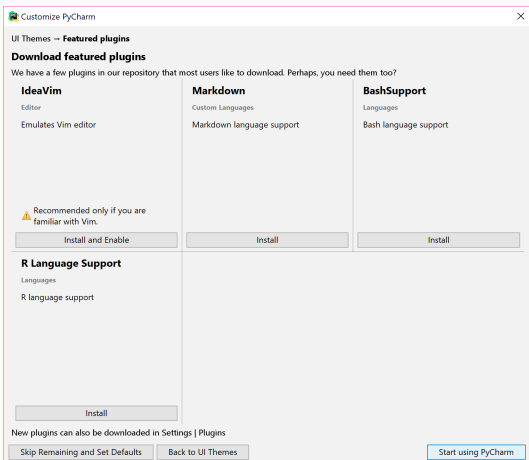




# INSTALLATION (11) - PYCHARM



# INSTALLATION (12) - PYCHARM



While you can use PyCharm professional version without activation for a month, activate it once you get a confirmation mail for your student license.

Please finish two beginner's Python courses in a week

- <https://www.codecademy.com/en/tracks/python>
- <https://www.learnpython.org/en/Welcome>

and submit a copy of your badges in codeacademy - click your account button on the top right panel - "View my profile" - badges (see the next slide for example)

The screenshot displays the Codecademy user interface. At the top left is the Codecademy logo. To its right is a button labeled "Upgrade to Pro". Further right are navigation links for "Learn", "Community", and "Catalog", followed by a notification bell icon and a user profile icon. The main content area features a notification: "Jonghyun Harry Lee has collected:" with a small profile icon. Below this are two achievement cards, each with a circular "CODE ACHIEVEMENT" badge. The first card is titled "Lesson Completed: Python Syntax" and dated "Jan 3, 2018". The second card is titled "Max Streak Count of 1" and dated "Dec 19, 2017". On the right side, a user profile dropdown menu is open, showing the user's name "Jonghyun Harry Lee" with "13 pts" and a "View my profile" button. Below this are menu items: "My account", "Community Forums", "Help", and "Log out".

You should finish all the lessons in codecademy's basic course.