Informatik 1 - Biomedical Engineering

Tutor Session 0 - Setup / anaconda / packages / jupyter

1) Installing python on your system

Plain Python: https://www.python.org/downloads/ (https://www.python.org/downloads/)

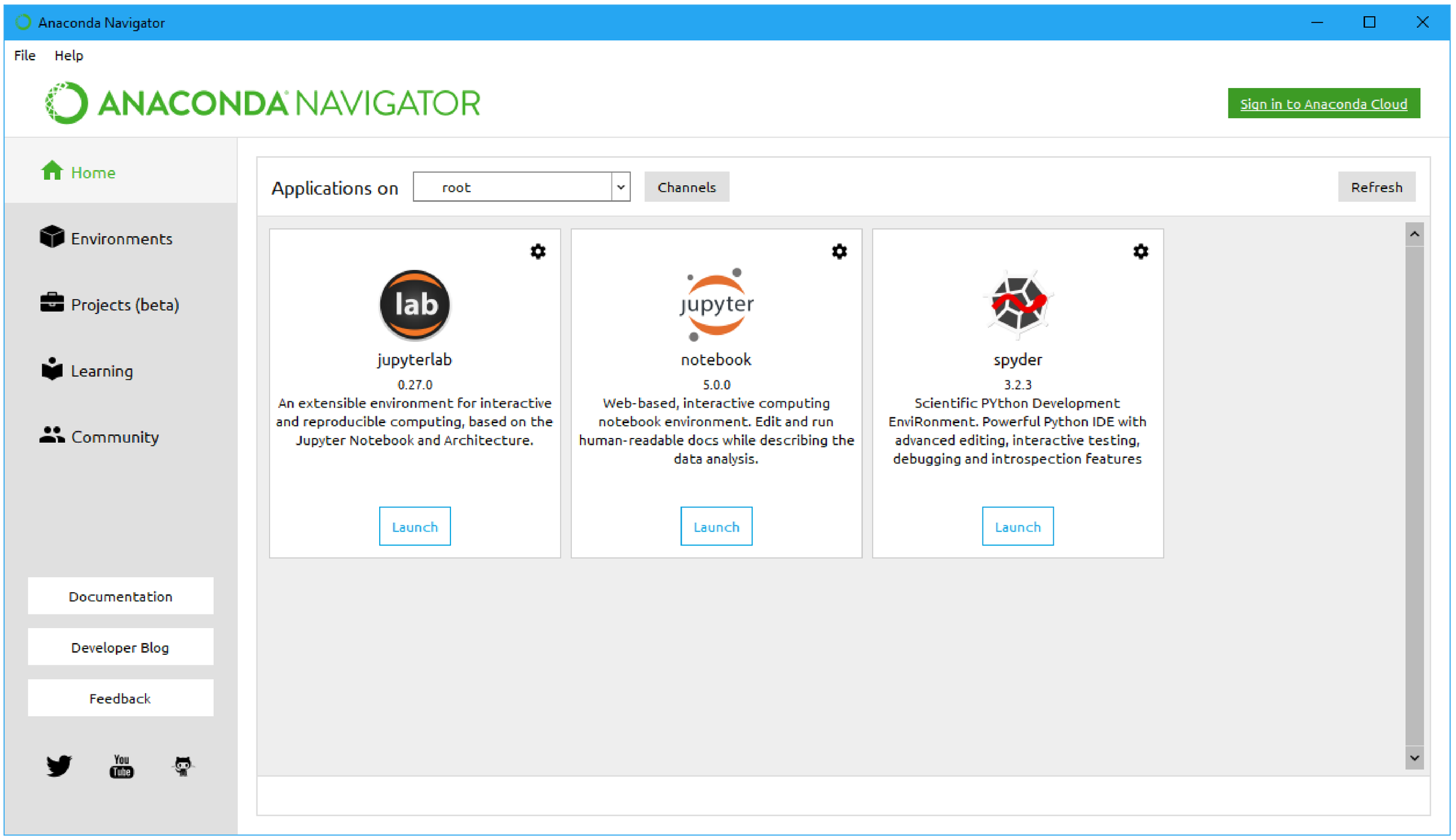
For this course: https://www.anaconda.com/download/ (https://www.anaconda.com/download/) (Select the default Python 3.6 version 64 bit version)

1.1) What is Anaconda?

Anaconda is a complete suite for Python development in the scientific domain. And it takes care of the setup for you...

It contains:

- The interpreter
- A large number of useful packages
- A command line interface. (Anaconda prompt/anaconda command prompt)
- Anaconda Navigator (launching can take a bit)
  - A package manager
  - The Spyder IDE
  - jupyter notebooks
  - Extensive learning ressources



1.2) Environment Variables (if not set automatically)

System

Systemsteuerung › Alle Systemsteuerungselemente › System

Systemsteuerung durchsuchen

Startseite der Systemsteuerung

- Geräte-Manager
- Remoteeinstellungen
- Computerschutz
- Erweiterte Systemeinstellungen

Basisinformationen über den Computer anzeigen

Windows-Edition

Windows 10

,40 GHz

ngabe verfügbar.

Einstellungen ändern

Product Key ändern

Siehe auch

Sicherheit und Wartung

Systemeigenschaften

Computername | Hardware | Erweitert | Computerschutz | Remote

Sie müssen als Administrator angemeldet sein, um diese Änderungen durchführen zu können.

Leistung

Visuelle Effekte, Prozessorzeitplanung, Speichernutzung und virtueller Speicher

Einstellungen...

Benutzerprofile

Desktopeinstellungen bezüglich der Anmeldung

Einstellungen...

Starten und Wiederherstellen

Systemstart, Systemfehler und Debuginformationen

Einstellungen...

Umgebungsvariablen...

OK | Abbrechen | Übernehmen

Environment Variables

User variables for Patrick

Variable	Value
GIT_SSH	C:\Program Files\TortoiseGit\bin\TortoiseGitPlink.exe
JD2_HOME	C:\Users\Patrick\AppData\Local\JDownloader 2.0
OneDrive	C:\Users\Patrick\OneDrive
Path	C:\texlive\2017\bin\win32;C:\Users\Patrick\AppData\Local\Progra...
SVN_SSH	C:\Program Files\TortoiseGit\bin\TortoiseGitPlink.exe
TEMP	C:\Users\Patrick\AppData\Local\Temp
TMP	C:\Users\Patrick\AppData\Local\Temp

New... | Edit... | Delete

System variables

Variable	Value
NUMBER_OF_PROCESSORS	8
OculusBase	C:\Program Files\Oculus\
OS	Windows_NT
Path	C:\Program Files\Oculus\Support\oculus-runtime;C:\Anaconda\Li...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 58 Stepping 9, GenuineIntel

New... | Edit... | Delete

OK | Cancel

Edit environment variable

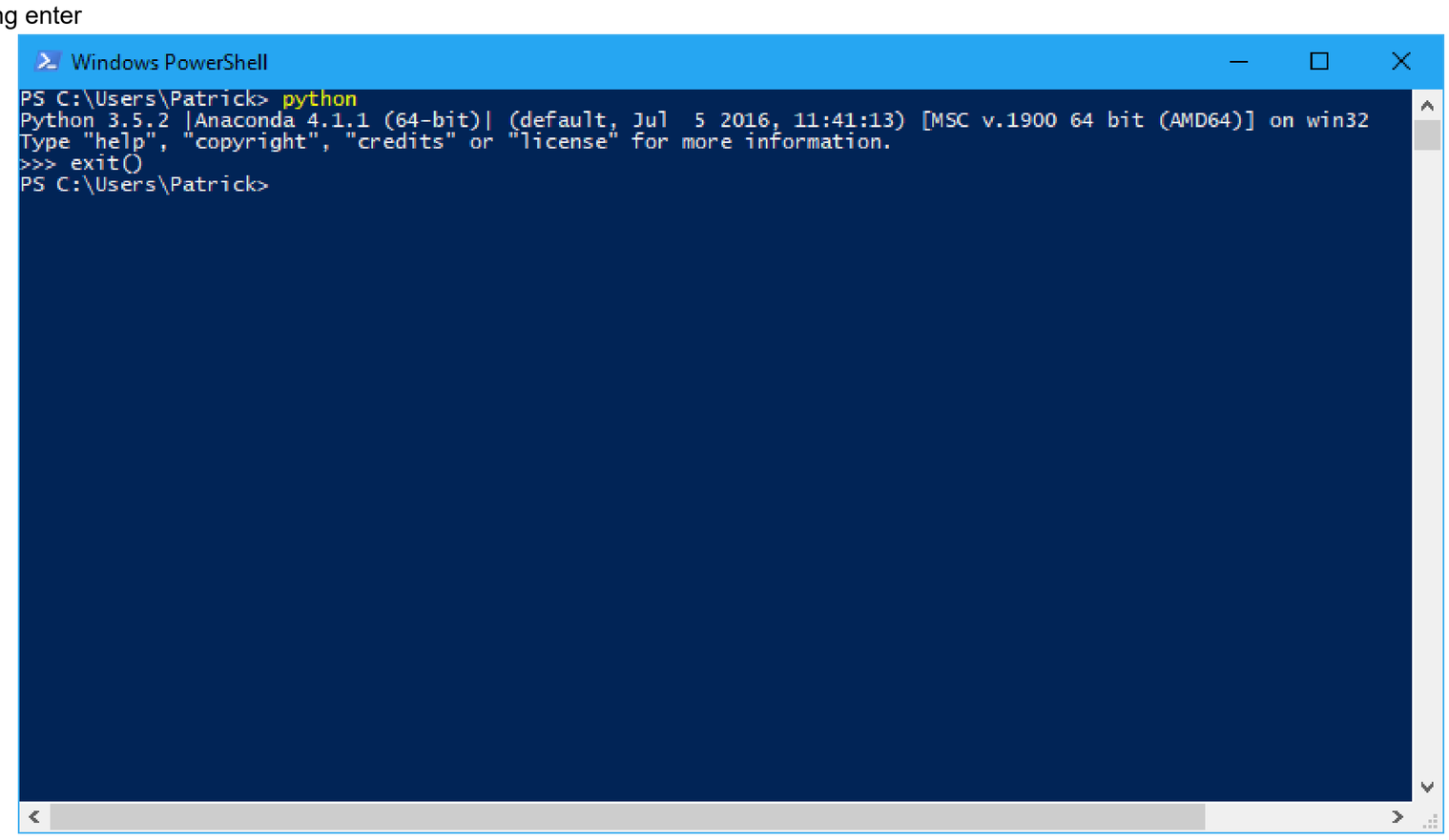
C:\Users\Patrick\.dnx\bin
C:\Program Files\Microsoft DNX\Dnvm\
C:\Program Files (x86)\Windows Kits\8.1\Windows Performance To...
C:\Program Files\Microsoft SQL Server\120\Tools\Binn\
C:\WINDOWS\system32
C:\WINDOWS
C:\WINDOWS\System32\Wbem
C:\WINDOWS\System32\WindowsPowerShell\v1.0\
C:\texlive\2015\bin\win32
C:\Program Files\TortoiseSVN\bin
C:\Anaconda3
C:\Anaconda3\Scripts
C:\Anaconda3\Library\bin
C:\Program Files\nodejs\
C:\Program Files (x86)\Skype\Phone\
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
C:\Program Files\TortoiseGit\bin

New | Edit | Browse... | Delete | Move Up | Move Down | Edit text...

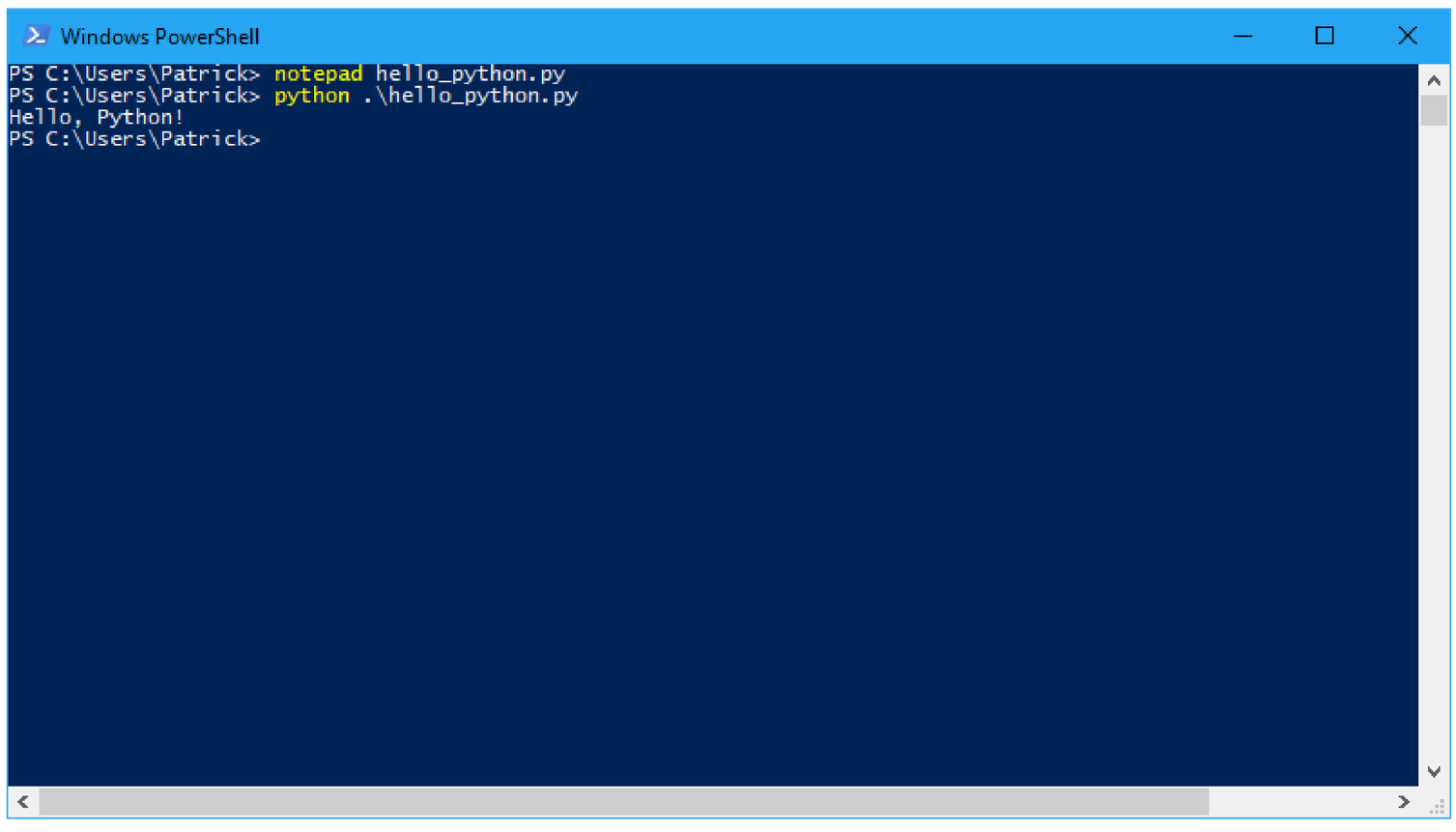
OK | Cancel

2) See if it works

1. Open your console of choice
2. Type `python`
3. See what happens. Your precise text might be different (i.e.:version number...)
4. Exit by typing `exit()` and pressing enter



1. Create a textfile and name it `hello_python.py`
2. Open the file and write the following: `print("Hello, Python!")`
3. Save the file
4. Use a console (cmd or powershell for windows) and navigate to the folder of the previously created file
5. type `python hello_python.py`



3) Jupyter

Launch via Anaconda Navigator

Default address: http://127.0.0.1:8888/tree (http://127.0.0.1:8888/tree) (localhost on unix systems)

Upload Tutorial sheets and play around

3.1) Basic Usage

- Code is written in cells
- Cells can be executed individually and out of sequence. (You can run cell 1, cell 2 and then cell 1 again)
- System state is saved
- Hotkey to run a cell: Shift + Enter
- "File -> Download as -> Python (.py) " to get the full source
  - Open in editor and clean up the comments if you use this for submitting
- It can do a lot more which is not needed for now...

3.2) Example

```
In [ ]: print("Hello, World!")
```

3.3) Working with cells

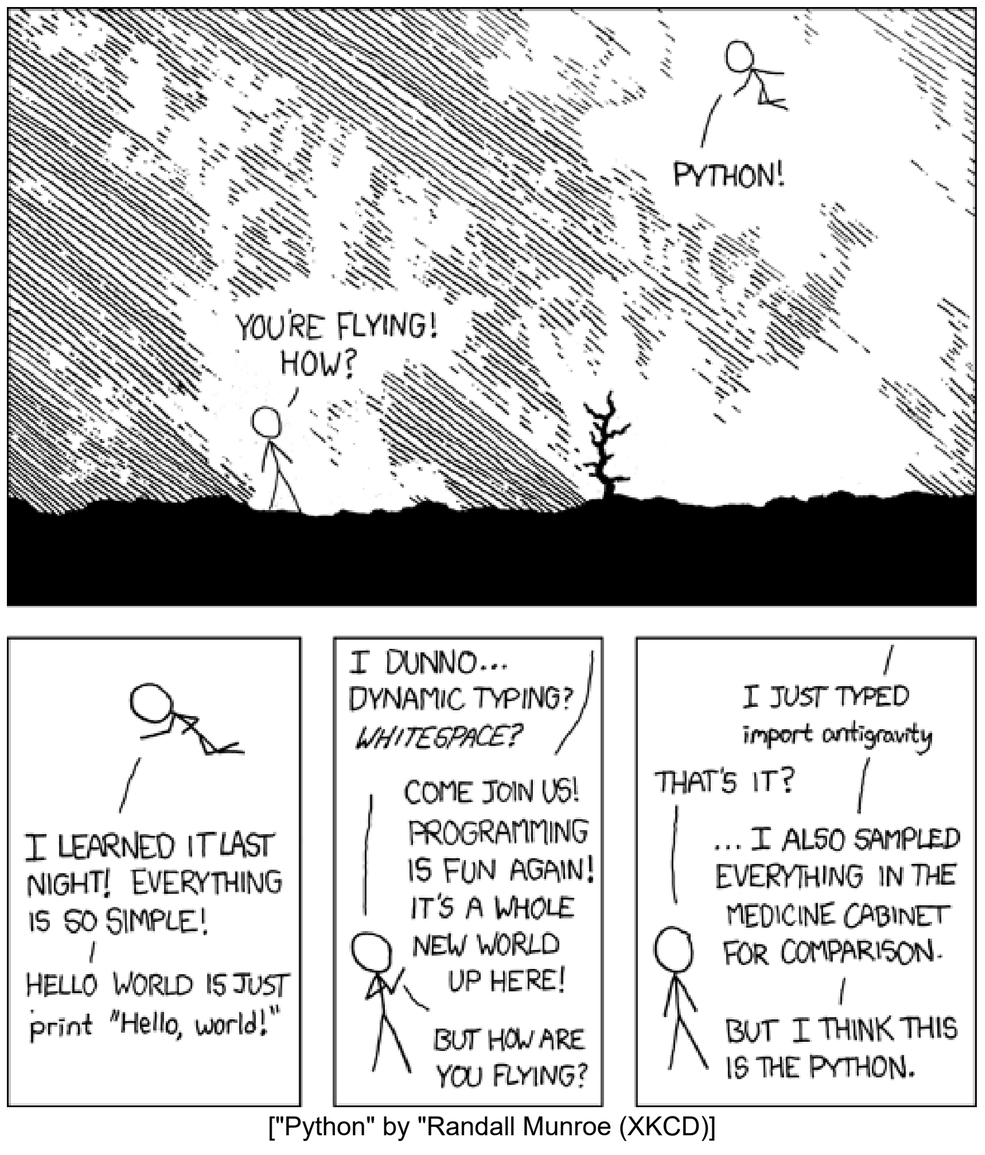
1. Run the 1st cell (a = 0) below
2. Run the 3rd cell (print(a))
3. Run the 2nd cell (a = a + 1). That increases the value by 1. Repead as often as wanted.
4. Run the 3rd cell (print(a)) again

In [ ]:
```
a = 0
```

In [ ]:
```
a = a+1
```

In [ ]:
```
print(a)
```

4) You are good to go!



["Python" by "Randall Munroe (XKCD)]