Wen.Gong@Oracle.com - IT Consultant

- taught python at Chapel Hill Chinese School (2012.9 - 2014.6)
  - web2py
  - pyGame

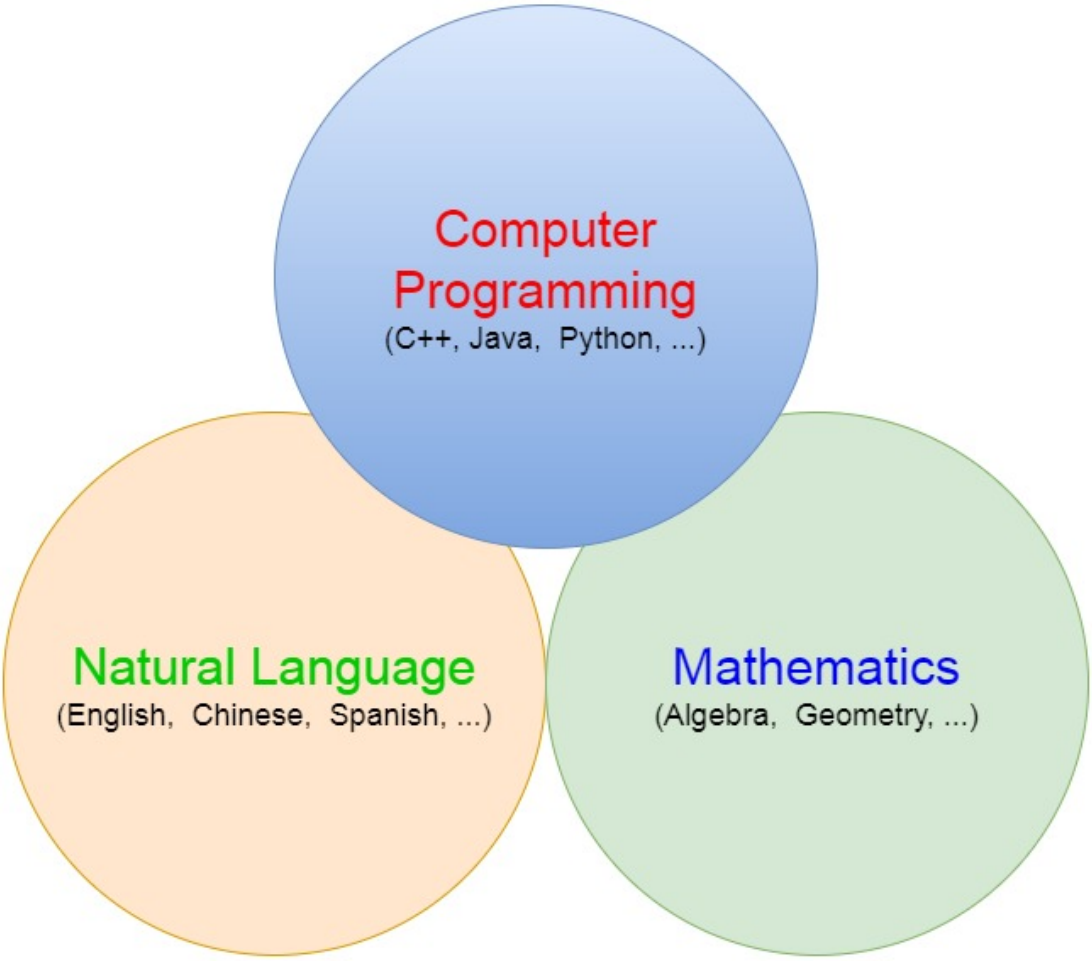
In [1]:
```
from jyquickhelper import add_notebook_menu
add_notebook_menu()
```

Out[1]:

Motivation

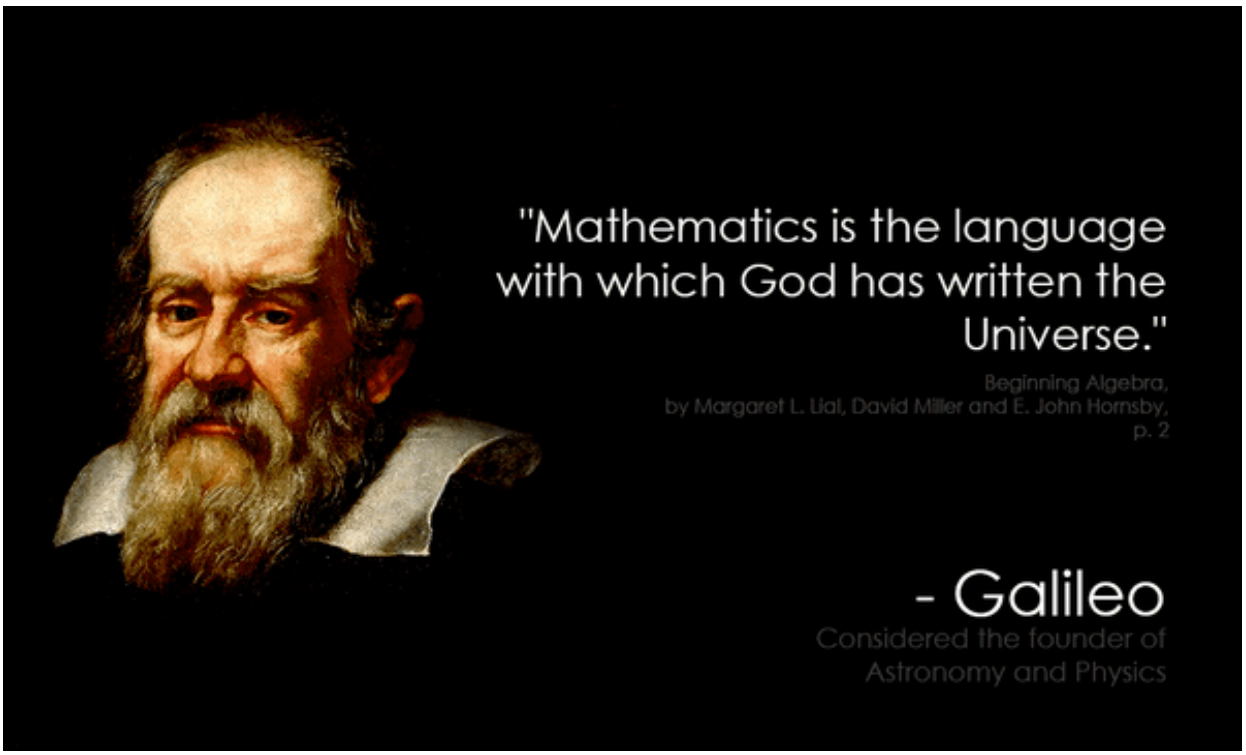
3 Basic Language skills

3 basic language skills



Natural Language - Talk to People

Mathematics - Talk to Nature



Programming Lang - Talk to Computer

Google DeepMind AI beats world chess master

Why Python?

Popular programming langs

The TIOBE Programming Community index is an indicator of the popularity of programming languages.

https://www.tiobe.com/tiobe-index// (https://www.tiobe.com/tiobe-index//)

Programming Language	2017	2012	2007	2002	1997	1992	1987
Java	1	1	1	1	15	-	-
C	2	2	2	2	1	1	1
C++	3	3	3	3	2	2	5
C#	4	4	7	14	-	-	-
Python	5	7	6	11	27	-	-
Visual Basic .NET	6	19	-	-	-	-	-
PHP	7	6	4	5	-	-	-
JavaScript	8	9	8	8	22	-	-
Perl	9	8	5	4	4	10	-
Assembly language	10	-	-	-	-	-	-
COBOL	25	27	17	9	3	9	9
Lisp	31	12	15	12	9	5	2
Prolog	33	31	26	16	20	11	3
Pascal	112	14	19	97	8	3	4

A Comparison of Programming Languages (https://fusion809.github.io/comparison-of-programming-languages/)

What is Python?

Python

Python (`dev-lang/python` [package]: ES, GPO, PT; `dev-python` [category]: ES, GPO, PT, WP) is a widely and extensively-used high-level general-purpose multi-paradigm programming language that is particularly invaluable as a cross-platform scripting language. It is named after the BBC TV series *Monty Python's Flying Circus*. Python is licensed under its own free, permissive (BSD-like) license called the Python Software Foundation License. It is probably the most flexible programming language I have seen and it is used for numerical computations, scientific computing, writing and working with web applications, application software and package management systems. Its design philosophy emphasizes code readability and concision. It also automatically performs some tasks that users would have to perform manually if they were working with lower-level languages like C. For these reasons it, and JavaScript, are usually the programming languages that people interested in programming, are recommended to learn first, before they learn more complicated programming languages like C, C++ and Java. Its major caveat is its speed, however, it is worthwhile noting that its speed is significantly dependent on how it is implemented. The standard, official implementation of Python is CPython which while it is more efficient than most implementations (like Jython), is less efficient than the PyPy implementation. Regardless of the implementation used, however, it is usually significantly slower than compiled languages like C, C++ and Java.

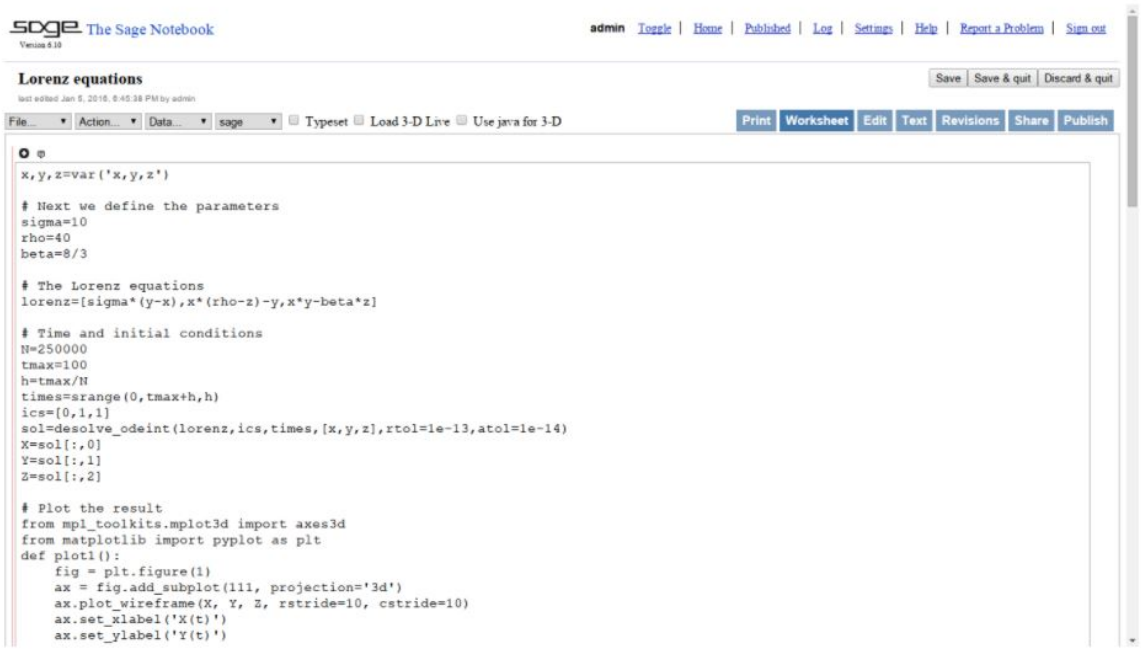
There are also two main versions of Python presently in widespread use: Python 2 and Python 3. Most programs I have come across have greater support for Python 2 than for Python 3. Python also has its own command-line package manager called pip (`pip`). Some programs I am particularly familiar with that are written predominantly (if not exclusively) in Python that are compatible with Linux systems include:

- Anaconda — an operating system installer used by Fedora and most of its derivatives, see the Fedora section for details.
- DNF — the default package manager of Fedora ≥22.
- `Entropy` — the default binary package manager of Sabayon Linux.

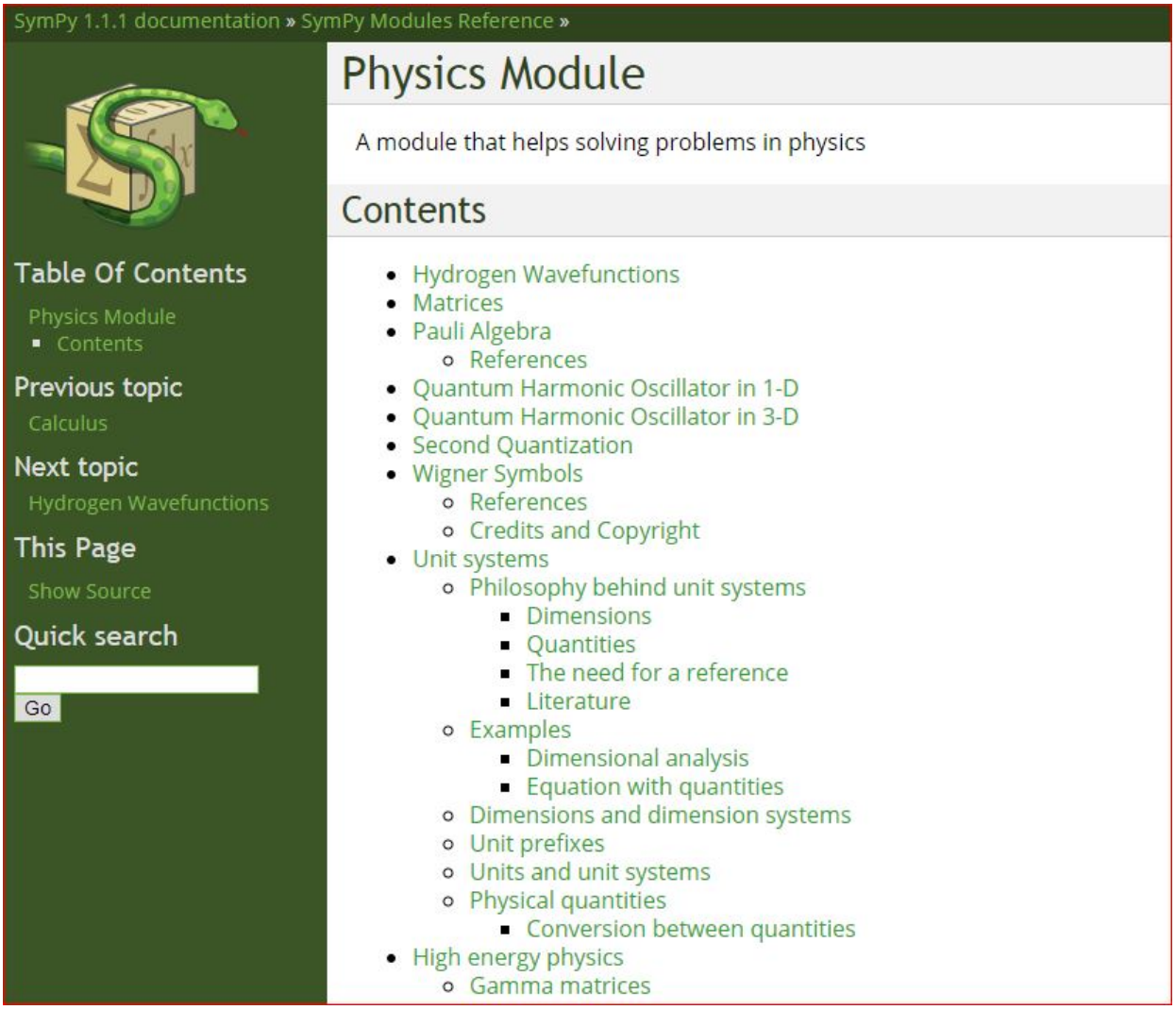
Doing Science in Python

Doing Math in Python

- SageMath — a mathematics program that uses a Python-like syntax and integrates several free pieces of mathematics software in a single command-line and notebook interface, with interfaces available for several proprietary mathematics programs too.

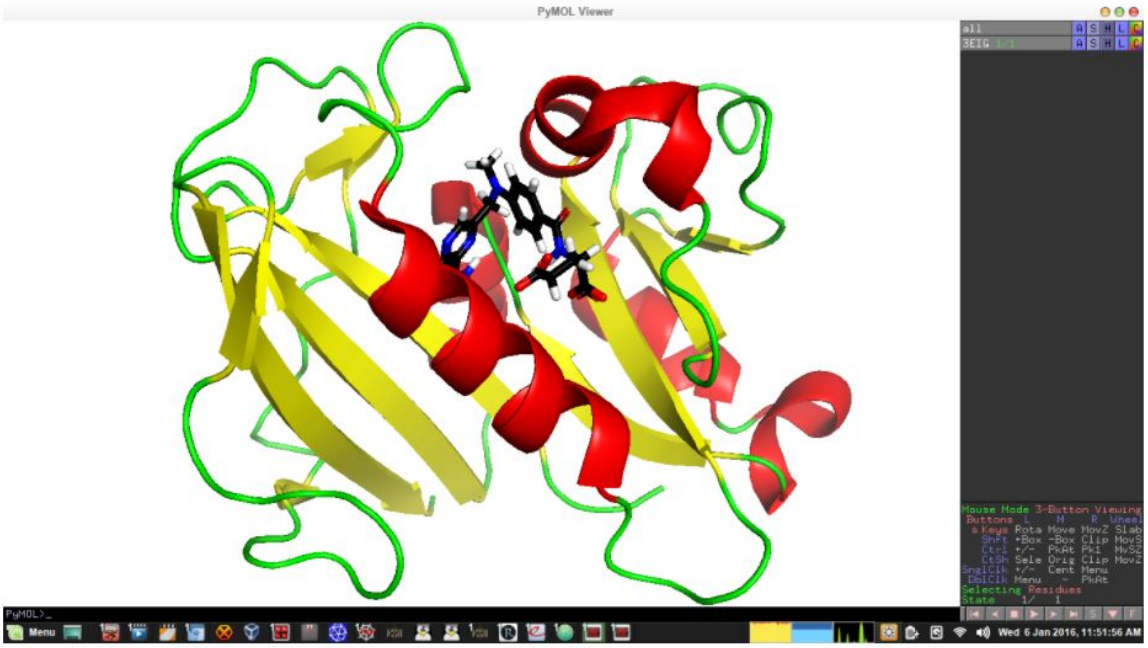


Doing Physics in Python



Doing Biology/Chemistry in Python

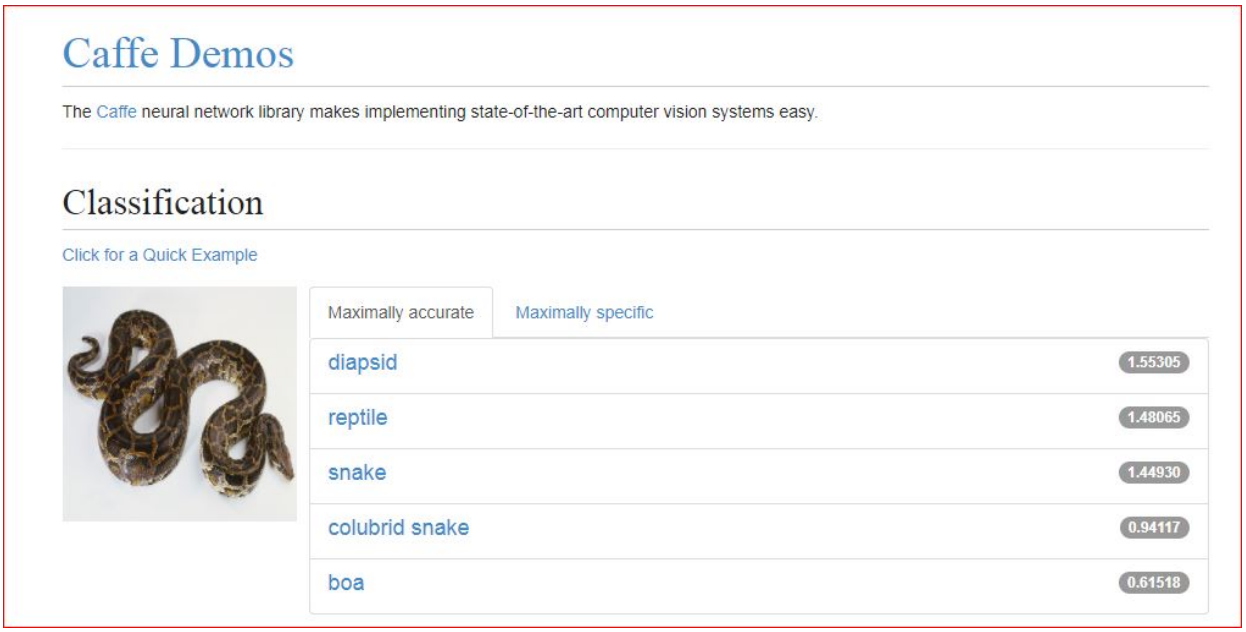
- PyMOL — an application for viewing and performing calculations relating to molecules, especially macromolecules like proteins, DNA double helices and RNA helices. Which is managed by pip, so running `user_$ sudo pip install pymol` should install it.



AI - Computer Vision

Caffe Demo (http://demo.caffe.berkeleyvision.org/classify_upload)

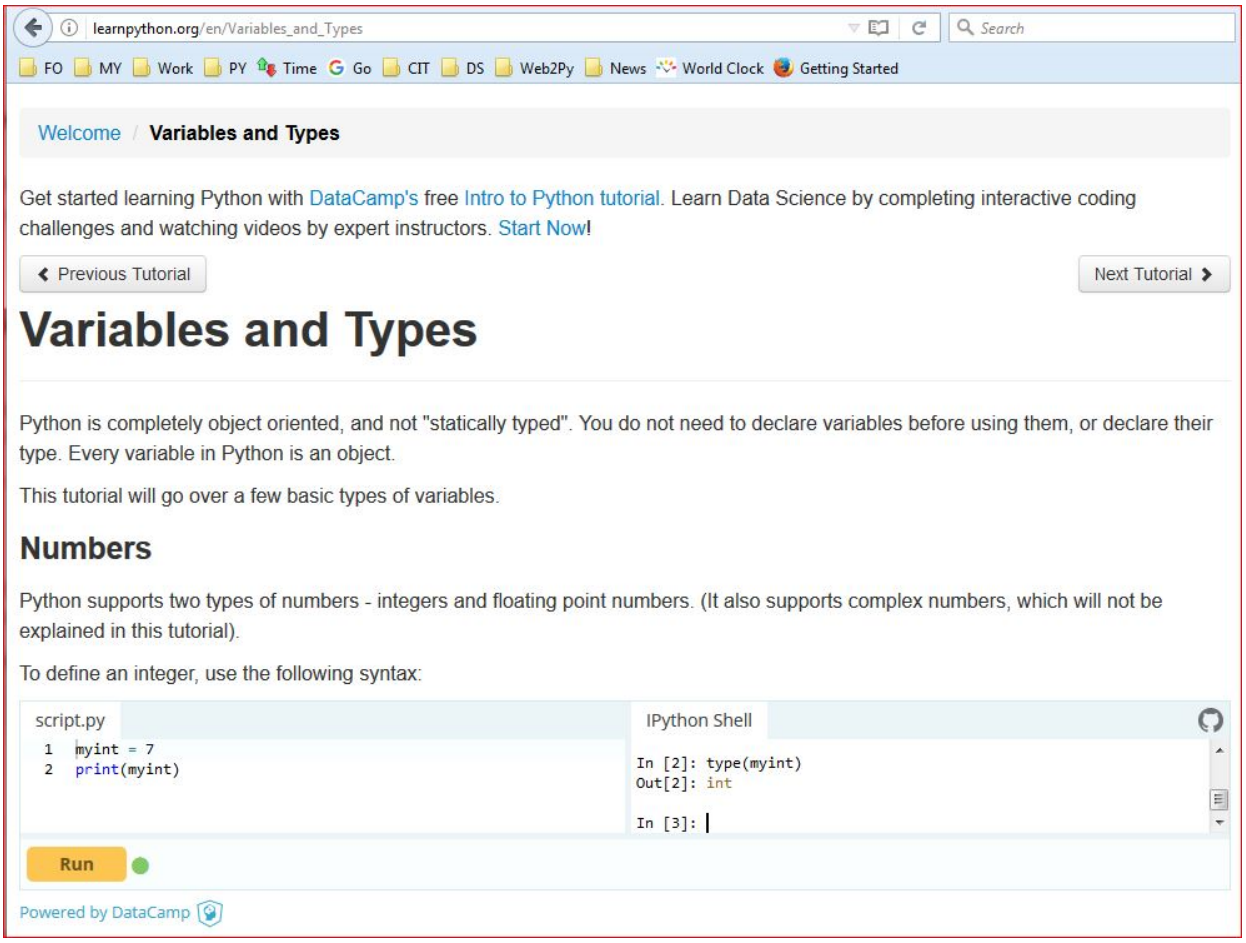
EVA System (http://www.image-net.org/eva/) (not working)



4 ways to interact with Python

Online Demo

Need to install, access it anywhere, may not work all the time.



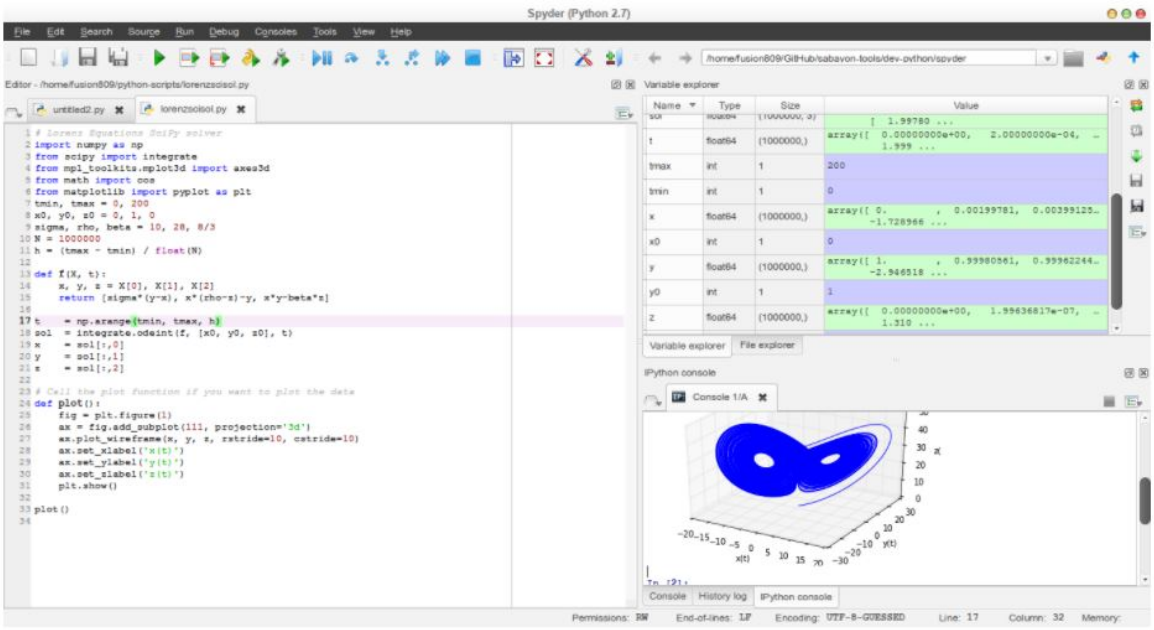
Command Console

Need basic DOS / Unix knowledge and skill

Integ. Development Env (IDE) - Spyder

Productivity tool for professional developers (syntax highlighting, debugging, dependency, ...)

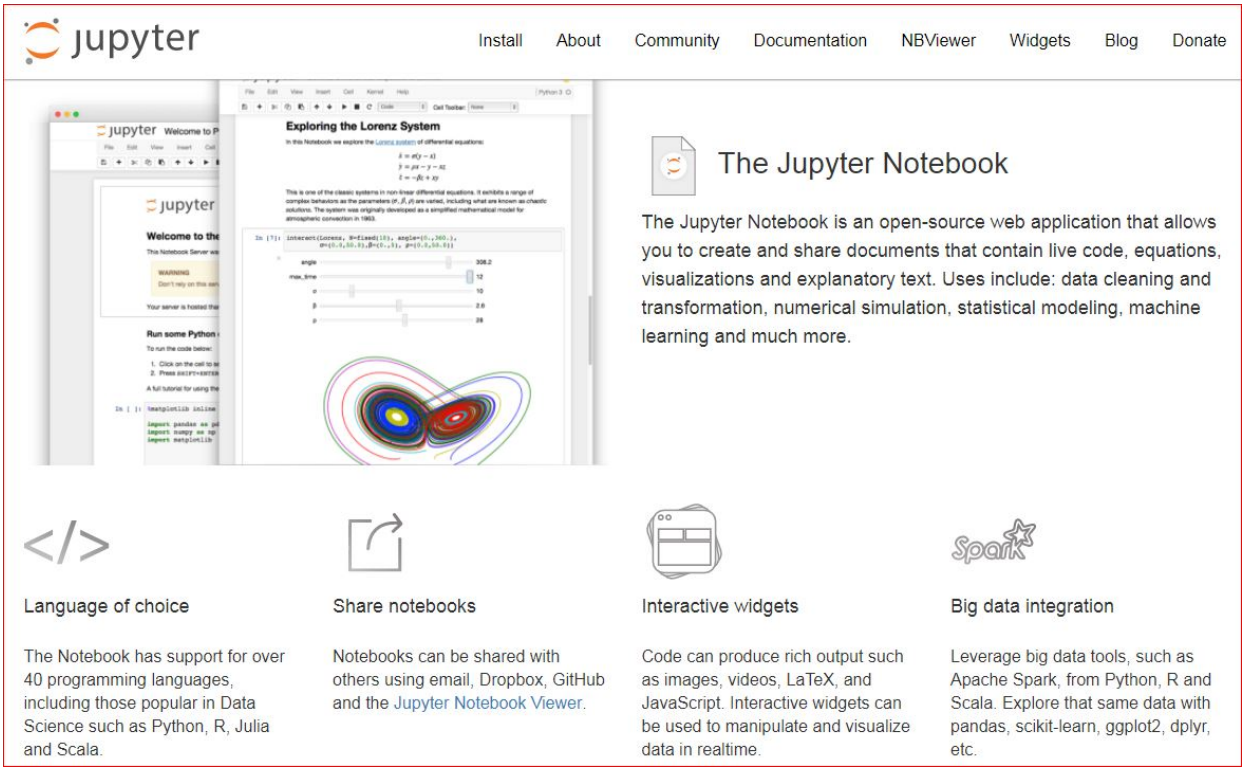
- Spyder — a cross-platform free and open-source IDE for scientific computing in Python. It is managed by pip, so running `user:$ sudo pip install spyder` should install it, provided its dependency PyQt4/PyQt5 is already installed.



Jupyter Notebook

Python in a browser, web-server running locally.

- We will use notebook for instructions and assignments



Learning Plan

1. Lectures in ZOOM cloud meeting

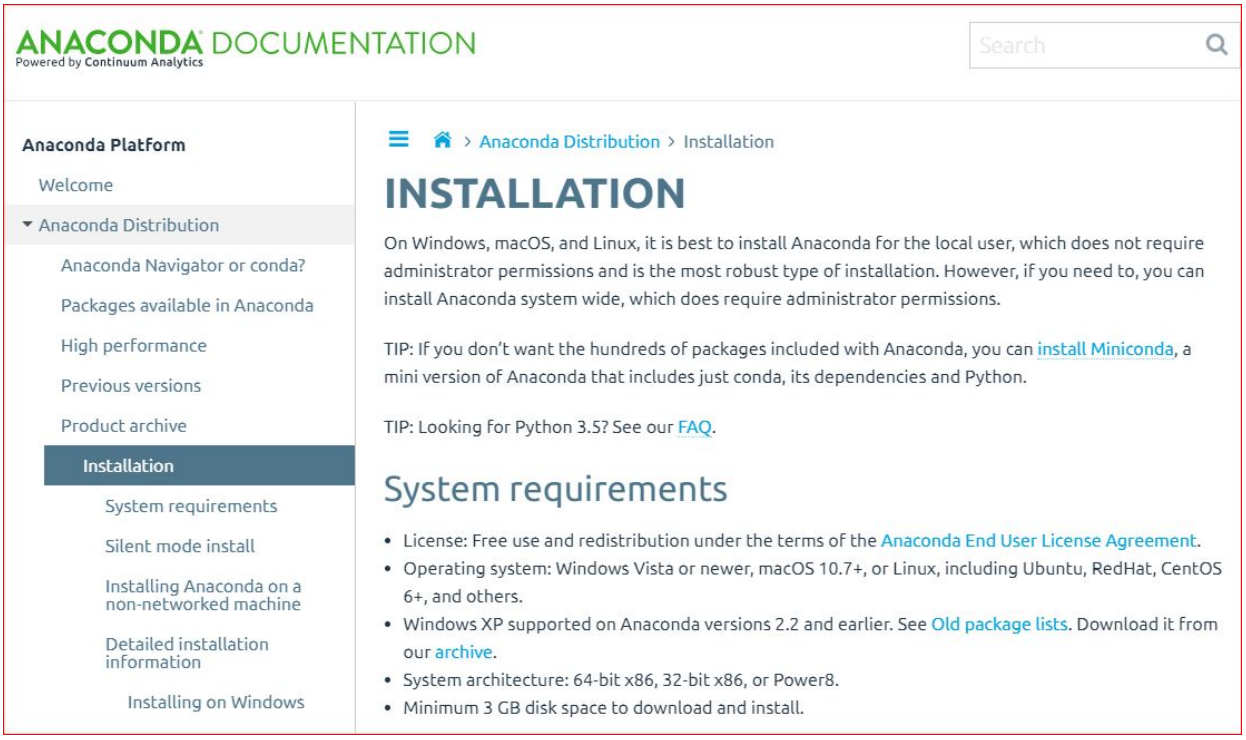
2. Hand-on lab with TA (Teaching Assistant)

3. Homework

4. Study & Practise on your own

learn python : teaching plan (https://docs.google.com/spreadsheets/d/1AWb_c5c8adzWlC_BLRKcKqr3-IR-JBQDP5HMJE3PPaU/edit?usp=sharing)

Install Anaconda (https://www.anaconda.com/)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Anaconda Navigator or conda?
Packages available in Anaconda
High performance
Previous versions
Product archive
Installation
System requirements
Silent mode install
Installing Anaconda on a non-networked machine
Detailed installation information
Installing on Windows
Anaconda Distribution › Installation
INSTALLATION
On Windows, macOS, and Linux, it is best to install Anaconda for the local user, which does not require administrator permissions and is the most robust type of installation. However, if you need to, you can install Anaconda system wide, which does require administrator permissions.
TIP: If you don't want the hundreds of packages included with Anaconda, you can install Miniconda, a mini version of Anaconda that includes just conda, its dependencies and Python.
TIP: Looking for Python 3.5? See our FAQ.
System requirements
License: Free use and redistribution under the terms of the Anaconda End User License Agreement.
Operating system: Windows Vista or newer, macOS 10.7+, or Linux, including Ubuntu, RedHat, CentOS 6+, and others.
Windows XP supported on Anaconda versions 2.2 and earlier. See Old package lists. Download it from our archive.
System architecture: 64-bit x86, 32-bit x86, or Power8.
Minimum 3 GB disk space to download and install.

In [ ]: