Python

What is Python?

- General purpose, high-level language invented by Guido van Rossum

- Multiple paradigms
  - scripting
  - object-oriented
  - imperative
  - functional

Python Editors

- jupyter(notebooks): It is good for presentations and sharing finished code. It is not so good for code development.
- Python IDEs:
  - Spyder(Scientific Python Developement EnviRonment)
  - Emacs jupyter Notebook
  - Enthought Canopy Editor
  - Wakari, a hosted Python data analysis environment
  - Python Tools for Visual Studio

Installation of python

- Download anaconda distribution and install it using specified instructions for OS
- Anaconda comes up with both jupyter and spyder components
- Using jupyter
- Using spyder

Working with jupyter (ipython)

What is jupyter notebook?

The Jupyter Notebook is a web application that allows you to create and share documents that contain live code, equations, visualizations and explanatory text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, machine learning and much more. (http://jupyter.org)

Open source, interactive data science and scientific computing
across over 40 programming languages.

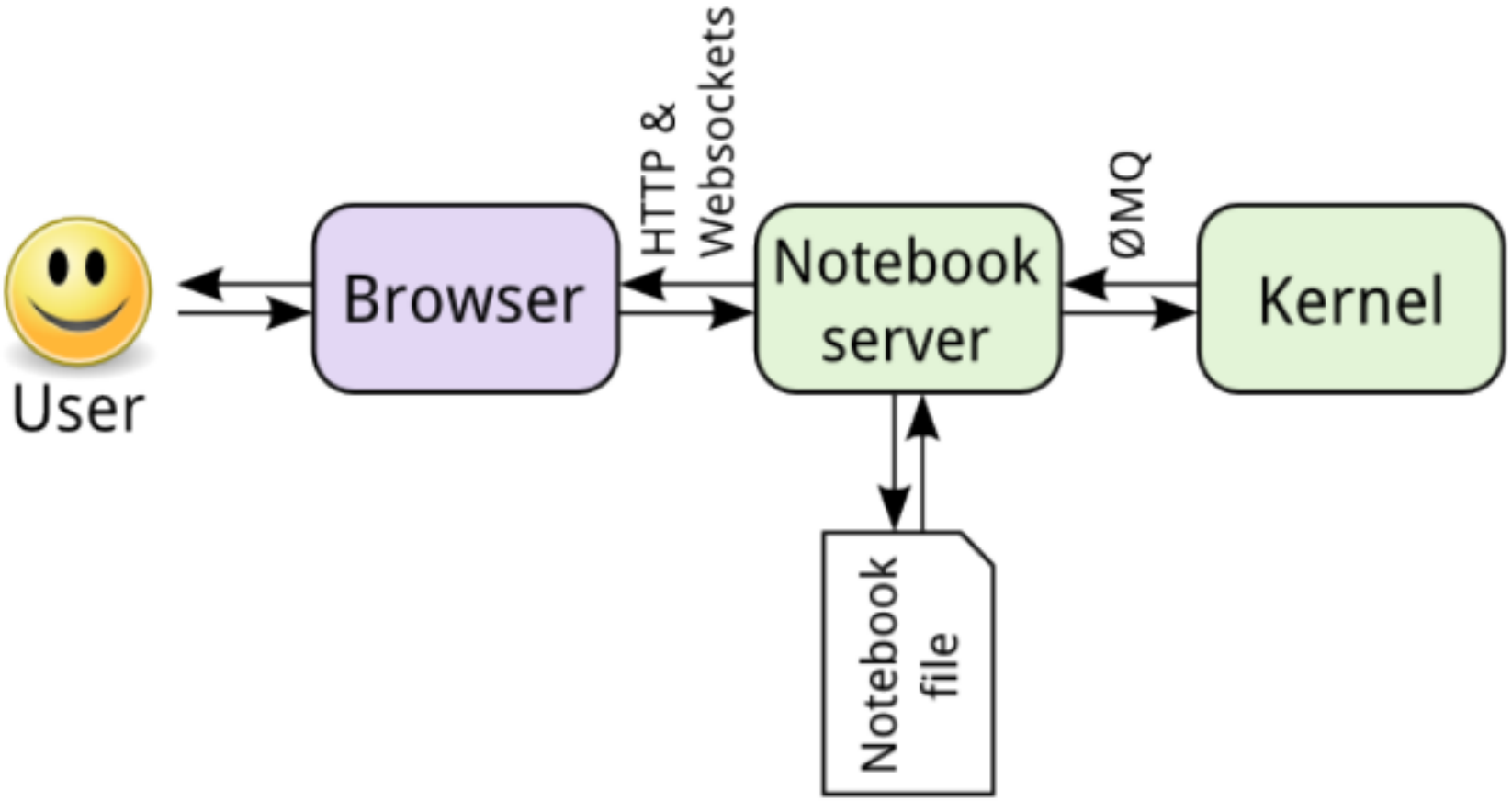
What is jupyter notebook?

Alternatively: Jupyter Notebook is an interactive computing environment that enables users to author notebook documents that include:

- Live code
- Interactive widgets
- Plots
- Narrative text
- Equations
- Images
- Video

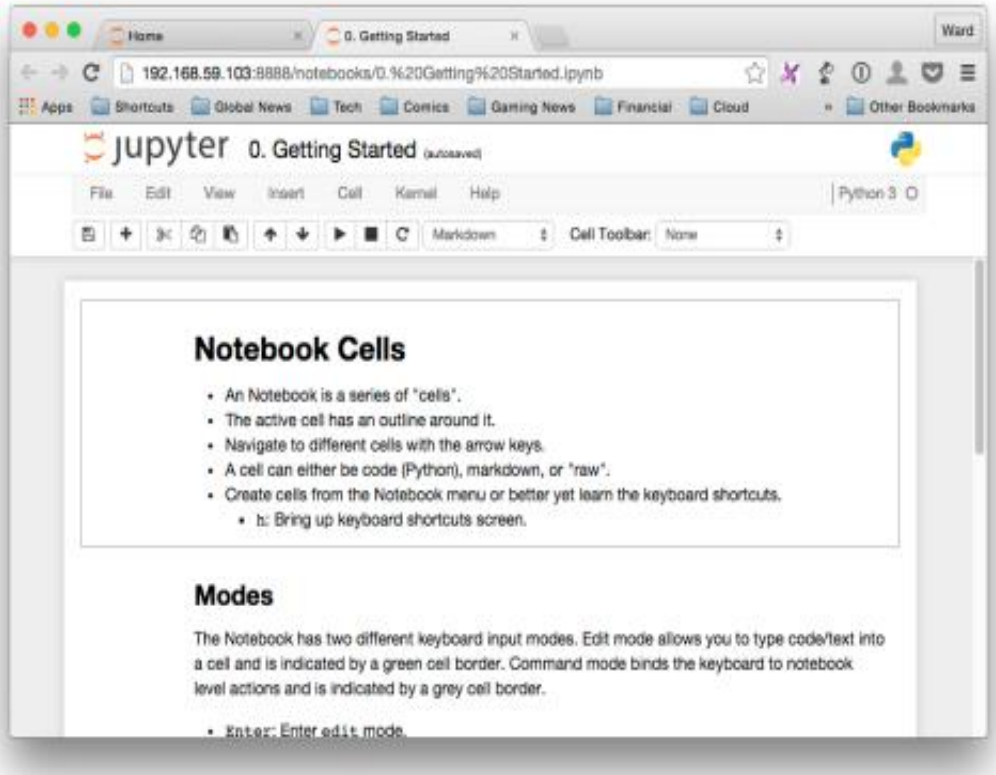
These documents provide a complete and self-contained record of a computation that can be converted to various formats and shared with others using email, Dropbox, version control systems (like git/GitHub) or nbviewer.jupyter.org.

Jupyter notebook components



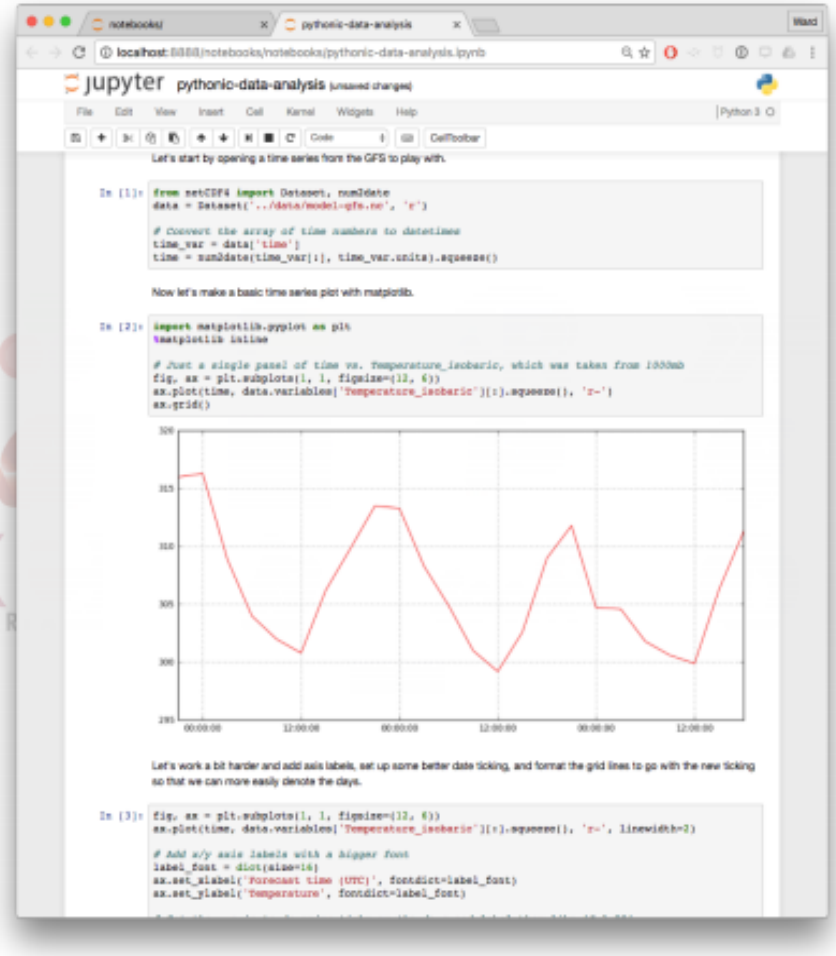
Jupyter notebook document

- A Jupyter Notebook is a collection of *cells*.
  - Markdown
  - Code
  - “Raw” - Raw cells are left ‘as is’ and are not processed.

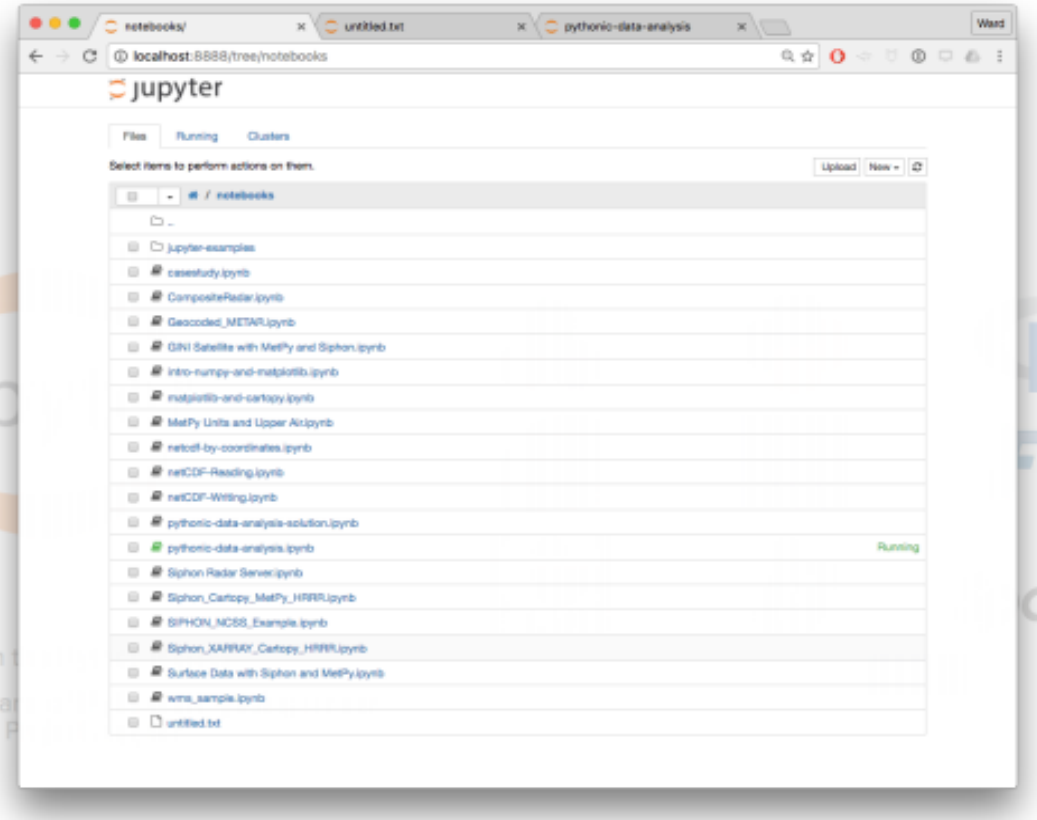


Jupyter notebook document

- A sharable document with embedded, reproducible experimental data analysis.



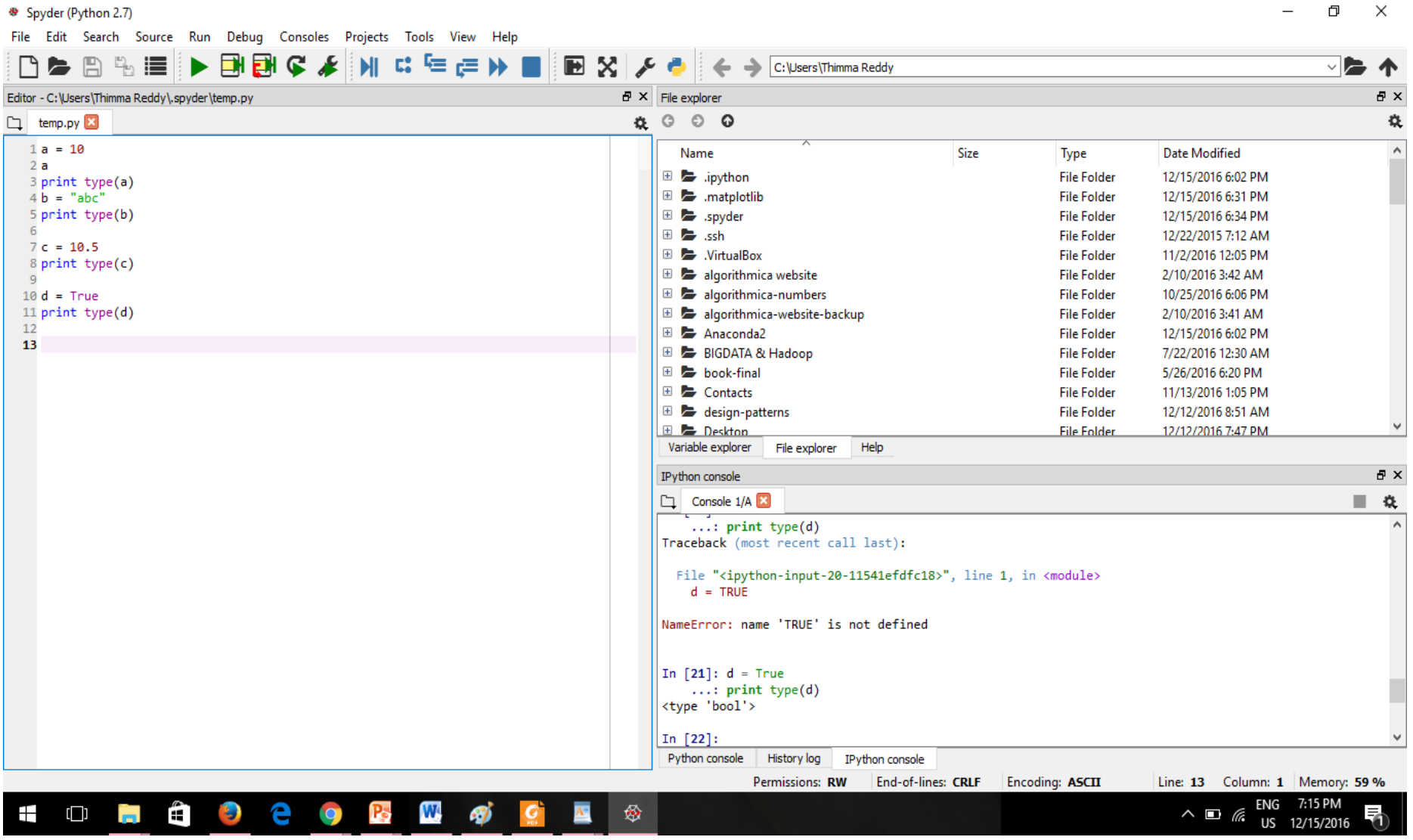
Jupyter web application



- The Jupyter Web application acts as a dashboard for collections of individual notebooks.

Working with spyder

spyder IDE


Spyder (Python 2.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:\Users\Thimma Reddy
Editor - C:\Users\Thimma Reddy\.spyder\temp.py
temp.py
1 a = 10
2 a
3 print type(a)
4 b = "abc"
5 print type(b)
6
7 c = 10.5
8 print type(c)
9
10 d = True
11 print type(d)
12
13
File explorer
Name Size Type Date Modified
.ipython File Folder 12/15/2016 6:02 PM
.matplotlib File Folder 12/15/2016 6:31 PM
.spyder File Folder 12/15/2016 6:34 PM
.ssh File Folder 12/22/2015 7:12 AM
.VirtualBox File Folder 11/2/2016 12:05 PM
algorithmica website File Folder 2/10/2016 3:42 AM
algorithmica-numbers File Folder 10/25/2016 6:06 PM
algorithmica-website-backup File Folder 2/10/2016 3:41 AM
Anaconda2 File Folder 12/15/2016 6:02 PM
BIGDATA & Hadoop File Folder 7/22/2016 12:30 AM
book-final File Folder 5/26/2016 6:20 PM
Contacts File Folder 11/13/2016 1:05 PM
design-patterns File Folder 12/12/2016 8:51 AM
Desktop File Folder 12/12/2016 7:47 PM
Variable explorer File explorer Help
IPython console
Console 1/A
...: print type(d)
Traceback (most recent call last):
File "<ipython-input-20-11541efdfc18>", line 1, in <module>
d = TRUE
NameError: name 'TRUE' is not defined
In [21]: d = True
...: print type(d)
<type 'bool'>
In [22]:
Python console History log IPython console
Permissions: RW End-of-lines: CRLF Encoding: ASCII Line: 13 Column: 1 Memory: 59 %
ENG US 7:15 PM 12/15/2016

Python language overview

Python language overview

- Basic types
- Containers
- Functions
- Control statements
- Packages
  - Numpy
  - Scipy
  - Pandas
  - Sklearn
  - matplotlib