Contents

1 Contents 3
This document is a brief step-by-step tutorial on installing and running Jupyter (IPython) notebooks on local computer for new users who have no familiarity with python.

Briefly, if someone gave you a notebook to run and you don’t know what a notebook is, this document is for you.

Jupyter Notebook App (formerly IPython Notebook) is an application running inside the browser. This guide describes how to install and use Jupyter Notebook App as normal desktop application, without using any remote server.

For other use-cases, please refer to the Official Jupyter Documentation.
CHAPTER 1

Contents

What is the Jupyter Notebook?

In this page briefly introduce the main components of the Jupyter Notebook environment. For a more complete overview see References.

Contents

• What is the Jupyter Notebook?
  – Notebook document
  – Jupyter Notebook App
  – kernel
  – Notebook Dashboard
  – References

Notebook document

Notebook documents (or “notebooks”, all lower case) are documents produced by the Jupyter Notebook App, which contain both computer code (e.g. python) and rich text elements (paragraph, equations, figures, links, etc...). Notebook documents are both human-readable documents containing the analysis description and the results (figures, tables, etc..) as well as executable documents which can be run to perform data analysis.

References: Notebook documents in the project homepage and in the official docs.
Jupyter Notebook App

The Jupyter Notebook App is a server-client application that allows editing and running notebook documents via a web browser. The Jupyter Notebook App can be executed on a local desktop requiring no internet access (as described in this document) or can be installed on a remote server and accessed through the internet.

In addition to displaying/editing/running notebook documents, the Jupyter Notebook App has a “Dashboard” (Notebook Dashboard), a “control panel” showing local files and allowing to open notebook documents or shutting down their kernels.

References: Jupyter Notebook App in the project homepage and in the official docs.

kernel

A notebook kernel is a “computational engine” that executes the code contained in a Notebook document. The ipython kernel, referenced in this guide, executes python code. Kernels for many other languages exist (official kernels).

When you open a Notebook document, the associated kernel is automatically launched. When the notebook is executed (either cell-by-cell or with menu Cell -> Run All), the kernel performs the computation and produces the results. Depending on the type of computations, the kernel may consume significant CPU and RAM. Note that the RAM is not released until the kernel is shut-down.

See also Close a notebook: kernel shut down.

References: from the official docs Opening Notebooks and Decoupled two-process model.

Notebook Dashboard

The Notebook Dashboard is the component which is shown first when you launch Jupyter Notebook App. The Notebook Dashboard is mainly used to open notebook documents, and to manage the running kernels (visualize and shut-down).

The Notebook Dashboard has other features similar to a file manager, namely navigating folders and renaming/deleting files.

References: from the official docs Opening Notebooks.

References

Official Jupyter Project Pages:
- Project Jupyter Homepage
- Old IPython Notebook Homepage

Official Documentation:
- Jupyter Notebook Documentation
- Jupyter Project Documentation

See also:
- What is the IPython Notebook?
- Notebook Basics, an example notebook
- Introducing IPython Notebook
- Jupyter Notebook: The Definitive Guide, an introductory tutorial to Jupyter
The Next button will bring you to the next section (Installation).

**Installation**

**Step 0: The browser**

Step “zero” consists in installing a modern standard-compliant browser. Either Mozilla Firefox or Google Chrome will work well. Try to avoid MS Explorer.

**Step 1: Installation**

The easiest way to install the *Jupyter Notebook App* consists in installing a scientific python distribution which includes it. In this guide, we will use the Anaconda distribution created by Continuum. Note that Anaconda currently (mid 2015) still uses the old name *IPython Notebook* instead of *Jupyter Notebook App* but the software is the same.

- Download Continuum Anaconda (free version, approx. 400MB), python 3, 64 bits.
- Install it using the default settings for a single user.

*Official docs:* Installation: If you are new to Python and Jupyter.

The Next button will bring you to the next section (*Running Jupyter Notebook*).

**Running the Jupyter Notebook**

**Launching Jupyter Notebook App**

The *Jupyter Notebook App* can be launched by clicking on the *Jupyter Notebook* icon installed by Anaconda in the start menu (Windows) or by typing in a terminal (*cmd* on Windows):

```
jupyter notebook
```

This will launch a new browser window (or a new tab) showing the *Notebook Dashboard*, a sort of control panel that allows (among other things) to select which notebook to open.

When started, the *Jupyter Notebook App* can access only files within its start-up folder (including any sub-folder). If you store the notebook documents in a subfolder of your user folder no configuration is necessary. Otherwise, you need to choose a folder which will contain all the notebooks and set this as the *Jupyter Notebook App* start-up folder.

See below for platform-specific instructions on how to start *Jupyter Notebook App* in a specific folder.

**Change Jupyter Notebook startup folder (Windows)**

- Copy the *Jupyter Notebook* launcher from the menu to the desktop.
- Right click on the new launcher and change the *Target field*, change `%USERPROFILE%` to the full path of the folder which will contain all the notebooks.
• Double-click on the Jupyter Notebook desktop launcher (icon shows [IPy]) to start the Jupyter Notebook App, which will open in a new browser window (or tab). Note also that a secondary terminal window (used only for error logging and for shut down) will be also opened. If only the terminal starts, try opening this address with your browser: .

Change Jupyter Notebook startup folder (OS X)

To launch Jupyter Notebook App:
• Click on spotlight, type terminal to open a terminal window.
• Enter the startup folder by typing cd /some_folder_name.
• Type jupyter notebook to launch the Jupyter Notebook App (it will appear in a new browser window or tab).

Shut down the Jupyter Notebook App

In a nutshell, closing the browser (or the tab) will not close the Jupyter Notebook App. To completely shut it down you need to close the associated terminal.

In more detail, the Jupyter Notebook App is a server that appears in your browser at a default address (http://localhost:8888). Closing the browser will not shut down the server. You can reopen the previous address and the Jupyter Notebook App will be redisplayed.

You can run many copies of the Jupyter Notebook App and they will show up at a similar address (only the number after “:”, which is the port, will increment for each new copy). Since with a single Jupyter Notebook App you can already open many notebooks, we do not recommend running multiple copies of Jupyter Notebook App.

Close a notebook: kernel shut down

When a notebook is opened, its “computational engine” (called the kernel) is automatically started. Closing the notebook browser tab, will not shut down the kernel, instead the kernel will keep running until is explicitly shut down.

To shut down a kernel, go to the associated notebook and click on menu File -> Close and Halt. Alternatively, the Notebook Dashboard has a tab named Running that shows all the running notebooks (i.e. kernels) and allows shutting them down (by clicking on a Shutdown button).

Executing a notebook

Download the notebook you want to execute and put it in your notebook folder (or a sub-folder of it).

Then follow these steps:
• Launch the Jupyter Notebook App (see previous section).
• In the Notebook Dashboard navigate to find the notebook: clicking on its name will open it in a new browser tab.
• Click on the menu Help -> User Interface Tour for an overview of the Jupyter Notebook App user interface.
• You can run the notebook document step-by-step (one cell a time) by pressing shift + enter.
• You can run the whole notebook in a single step by clicking on the menu Cell -> Run All.
• To restart the kernel (i.e. the computational engine), click on the menu Kernel -> Restart. This can be useful to start over a computation from scratch (e.g. variables are deleted, open files are closed, etc...).
More information on editing a notebook:

- Notebook Basics (or alternate link)

**Note:** Save notebooks: modifications to the notebooks are automatically saved every few minutes. To avoid modifying the original notebook, make a copy of the notebook document (menu File -> Make a copy ...) and save the modifications on the copy.

**Warning:** Pay attention to not open the same notebook document on many tabs: edits on different tabs can overwrite each other! To be safe, make sure you open each notebook document in only one tab. If you accidentally open a notebook twice in two different tabs, just close one of the tabs.

More info on the Jupyter Notebook App environment see References.

The Next button will bring you to the first item in the tables of content (What is Jupyter Notebook).