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# **Jupyter/IPython Notebook Quick Start Guide Documentation**

*Release 0.1*

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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](#).



## 1.1 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*.

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### 1.1.1 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](#).

## 1.1.2 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](#).

## 1.1.3 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](#).

## 1.1.4 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](#).

## 1.1.5 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*).

## 1.2 Installation

### 1.2.1 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.

### 1.2.2 Step 1: Installation

The easiest way to install the *Jupyter Notebook App* is installing a scientific python distribution which also includes scientific python packages. The most common distribution is called **Anaconda**:

- Download [Anaconda Distribution](#) (a few 100MB), 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.*

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

## 1.3 Running the Jupyter Notebook

### 1.3.1 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). No configuration is necessary if you place your notebooks in your home folder or subfolders. Otherwise, you need to choose a *Jupyter Notebook App* start-up folder which will contain all the notebooks.

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*. The notebook interface will appear in a new browser window or tab. A secondary terminal window (used only for error logging and for shut down) will be also opened.

## Change Jupyter Notebook startup folder (Mac OS)

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*. The notebook interface will appear in a new browser window or tab.

### 1.3.2 Shut down the *Jupyter Notebook App*

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*.

### 1.3.3 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).

### 1.3.4 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](#))

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**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.

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**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*).