# **Jupyter Notebook Tutorial: The Definitive Guide**

This tutorial explains how to install, run, and use Jupyter Notebooks for coding including tips, best practices, and examples.

As a web application in which you can create and share documents that contain live code, equations, visualizations as well as text, the Jupyter Notebook is one of the ideal tools to help you to gain the coding skills you need.

This tutorial will cover the following topics:

l A basic overview of the Jupyter Notebook App and its components.

l How to install and use Jupyter Notebook.

l An overview of the three most popular ways to run your notebooks: with the help of a Python distribution, with pip or in a Docker container.

l A practical introduction to the components that were covered in the first section, complete with examples of Pandas DataFrames, an explanation on how to make your notebook documents magical, and answers to frequently asked questions.

l The best practices and tips that will help you to make your notebook an added value to any data science project!

1. Introduction

1.1 Overview

Jupyter Notebook is a nonprofit organization created to "develop open-source software, open-standards, and services for interactive computing across dozens of programming languagesIn this case, "notebook" or "notebook documents" denote documents that contain both code and rich text elements, such as figures, links, equations, ... Because of the mix of code and text elements, these documents are the ideal place to bring together an analysis description, and its results, as well as, they can be executed perform the data analysis in real time.

For now, you should know that "Jupyter" is a loose acronym meaning Julia, Python, and R. These programming languages were the first target languages of the Jupyter application, but nowadays, the notebook technology also supports many other languages.

As you just saw, the main components of the whole environment are, on the one hand, the notebooks themselves and the application. On the other hand, you also have a notebook kernel and a notebook dashboard.

1.2 The Jupyter Notebook App

As a server-client application, the Jupyter Notebook App allows you to edit and run your notebooks via a web browser. The application can be executed on a PC without Internet access, or it can be installed on a remote server, where you can access it through the Internet.

Its two main components are the kernels and a dashboard.

A kernel is a program that runs and introspects the user’s code. The Jupyter Notebook App has a kernel for Python code, but there are also kernels available for other programming languages.

The dashboard of the application not only shows you the notebook documents that you have made and can reopen but can also be used to manage the kernels: you can which ones are running and shut them down if necessary.

**2. Basic Instructions**

**2.1 Install Jupyter Notebook.**

**Running Jupyter Notebooks With The Anaconda Python Distribution**

One of the requirements here is Python, either Python 3.3 or greater or Python 2.7. The general recommendation is that you use the Anaconda distribution to install both Python and the notebook application.

The advantage of Anaconda is that you have access to over 720 packages that can easily be installed with Anaconda's conda, a package, dependency, and environment manager. You can follow the instructions for the installation of Anaconda here for Mac or Windows: <https://www.anaconda.com/>

**Running Jupyter Notebook The Pythonic Way: Pip**

If you don't want to install Anaconda, you just have to make sure that you have the latest version of pip. If you have installed Python, you will typically already have it.

What you do need to do is upgrading pip:

# On Windows

python -m pip install -U pip setuptools

# On OS X or Linux

pip install -U pip setuptools

Once you have pip, you can just run:

# Python2

pip install jupyter

# Python 3

pip3 install jupyter

If you need more information about installing packages in Python, you can go to this page: <https://packaging.python.org/tutorials/installing-packages/>

**2.2 Use Jupyter Notebook**

Getting Started With Jupyter Notebooks.

Run the following command to open up the application:

jupyter notebook

Then you'll see the application opening in the web browser on the following address: http://localhost:8888. This all is demonstrated in the gif below:

