



Módulo 1 – Fundamentos de Programación Python

Generalidades del lenguaje Python

Ciencia de Datos

Contenido

1. ¿Por qué Python?
2. Zen de Python.
3. Características del lenguaje Python.
4. Crecimiento de Python.
5. Webs de utilidad.
6. Entorno de trabajo.



¿Por qué Python?

Python es un lenguaje **libre, sencillo, legible** y con una curva de aprendizaje exponencial. El zen de Python es la **sencillez** y **entendibilidad**.



Java
C++
Visual Basic

Python

Zen de Python

```
1 import this  
2
```

The Zen of Python, by Tim Peters

Beautiful is better than ugly.
Explicit is better than implicit.
Simple is better than complex.
Complex is better than complicated.
Flat is better than nested.
Sparse is better than dense.
Readability counts.
Special cases aren't special enough to break the rules.
Although practicality beats purity.
Errors should never pass silently.
Unless explicitly silenced.
In the face of ambiguity, refuse the temptation to guess.
There should be one-- and preferably only one --obvious way to do it.
Although that way may not be obvious at first unless you're Dutch
.
Now is better than never.
Although never is often better than *right* now.
If the implementation is hard to explain, it's a bad idea.
If the implementation is easy to explain, it may be a good idea.
Namespaces are one honking great idea -- let's do more of those!

Zen de Python (traducción)

El Zen de Python, por Tim Peters

Bello es mejor que feo.

Explícito es mejor que implícito.

Simple es mejor que complejo.

Complejo es mejor que complicado.

Plano es mejor que anidado.

Disperso es mejor que denso.

La legibilidad cuenta.

Los casos especiales no son lo suficientemente especiales como para romper las reglas.

Aunque la practicidad le gana a la pureza.

Los errores nunca deberían pasar en silencio.

A menos que se silencien explícitamente.

Ante la ambigüedad, rechaza la tentación de adivinar.

Debería haber una –y preferiblemente solo una– forma obvia de hacerlo.

Aunque esa forma puede no ser obvia al principio a menos que seas holandés.

Ahora es mejor que nunca.

Aunque nunca es a menudo mejor que *ahora* mismo.

Si la implementación es difícil de explicar, es una mala idea.

Si la implementación es fácil de explicar, puede ser una buena idea.

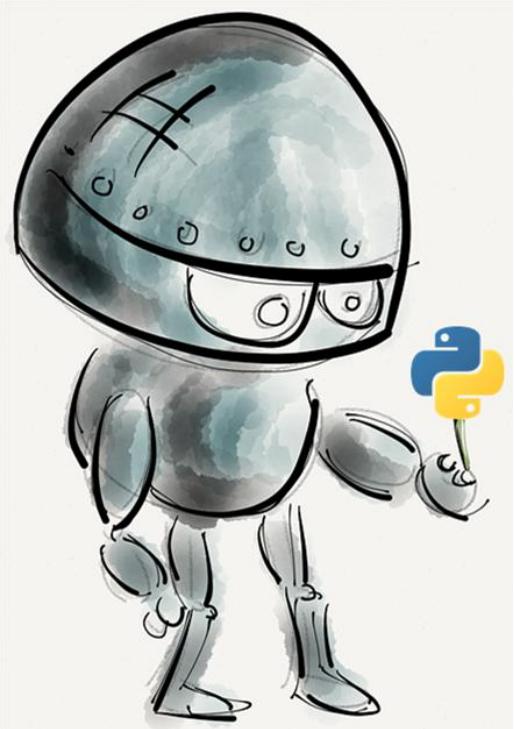
Los espacios de nombres son una gran idea – ¡hagamos más de esos!

Características del Lenguaje Python

Python es un lenguaje de programación de **alto nivel**, de **propósito general, multiparadigma, interpretado, de tipado dinámico, multiplataforma**, cuya filosofía apunta a la **legibilidad de su código**.



Múltiples propósitos



Python puede ser aplicado para **automatización** de tareas, **machine learning**, **big data**, **computación científica**, **desarrollo web**, **aplicaciones GUI**, **programación IoT**, entre otras.

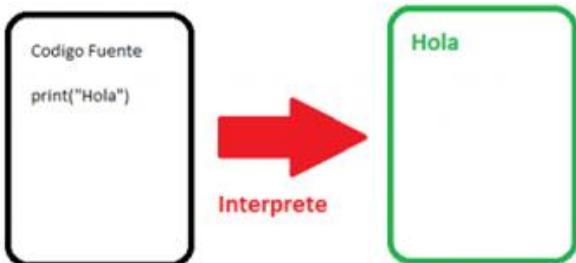
Multiparadigma



Python no obliga a utilizar un paradigma particular, permite varios estilos: programación **procedural**, programación **orientada a objetos**, programación **imperativa**, programación **funcional**.

Lenguaje Interpretado

Lenguaje Interpretado



El código es traducido mediante un **intérprete** a medida que es necesario. Ej: “**Python**”, “Ruby”, “Javascript”, etc.

Lenguaje Compilado



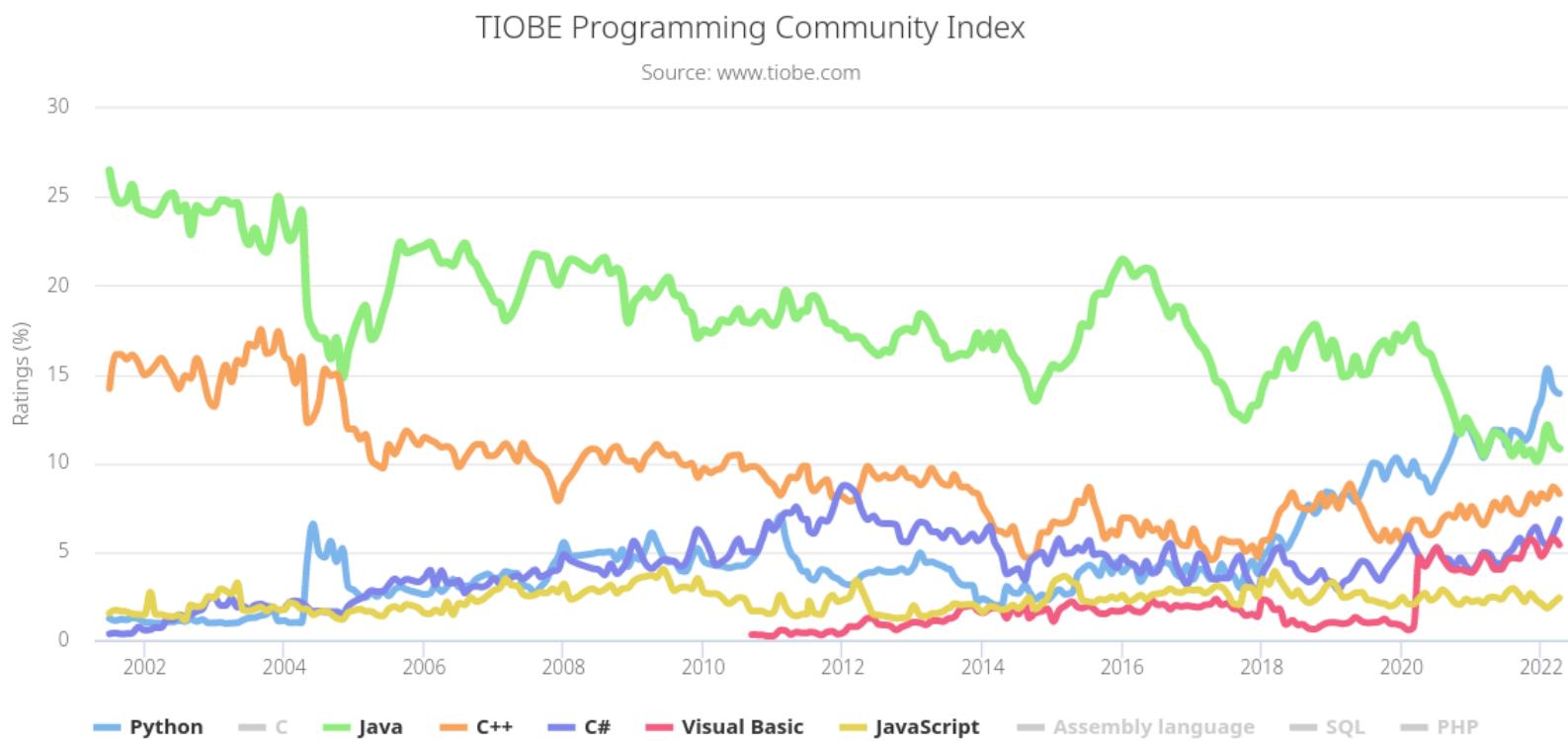
El código es traducido por completo de una sola vez mediante un proceso llamado **compilación** para ser ejecutado por un sistema predeterminado. Ej: “C”, “C++”, Java, etc.

Una gran comunidad

Es un lenguaje de **código abierto**, con una curva de **aprendizaje alta**, soportado por una **gran comunidad de desarrolladores** alrededor del mundo, contribuyendo en el desarrollo de **librerías para múltiples propósitos**, contestando preguntas en los **foros** especializados, con muchos instructores construyendo maravillosos **cursos**.



Crecimiento de Python



Webs de utilidad

Sitio Oficial

The screenshot shows the official Python website (<https://www.python.org/>). The header features a dark blue navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below the header is the Python logo and a search bar. The main content area has a dark blue background with a central white box. On the left, there's a code snippet demonstrating a Fibonacci series generator:

```
# Python 3: Fibonacci series up to n
>>> def fib(n):
    >>>     a, b = 0, 1
    >>>     while a < n:
    >>>         print(a, end=' ')
    >>>         a, b = b, a+b
    >>>     print()
    >>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

To the right of the code, there's a section titled "Functions Defined" with the following text:

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

Below this text are five small numbered buttons (1, 2, 3, 4, 5). At the bottom of the main content area, there's a promotional message:

Python is a programming language that lets you work quickly and integrate systems more effectively. [» Learn More](#)

<https://www.python.org/>

Documentación Oficial

The screenshot shows the Python 3.9.7 documentation website. At the top, there is a navigation bar with the Python logo, dropdown menus for "English" and "3.9.7", and a link to "Documentation". On the left, a sidebar contains links for "Download" (with a "Download these documents" link), "Docs by version" (listing Python 3.11, 3.10, 3.9, 3.8, 3.7, 3.6, 3.5, 3.4, 3.3, 3.2, 3.1, 3.0, and All versions), and "Other resources" (listing PEP Index, Beginner's Guide, Book List, Audio/Visual Talks, and Python Developer's Guide). The main content area features the title "Python 3.9.7 documentation" and a welcome message: "Welcome! This is the official documentation for Python 3.9.7." Below this, there is a section titled "Parts of the documentation:" with links to various parts: "What's new in Python 3.9?", "Tutorial" (with a "start here" link), "Library Reference" (with a "keep this under your pillow" link), "Language Reference" (with a "describes syntax and language elements" link), "Python Setup and Usage" (with a "how to use Python on different platforms" link), "Python HOWTOs" (with a "in-depth documents on specific topics" link), "Installing Python Modules" (with a "installing from the Python Package Index & other sources" link), "Distributing Python Modules" (with a "publishing modules for installation by others" link), "Extending and Embedding" (with a "tutorial for C/C++ programmers" link), "Python/C API" (with a "reference for C/C++ programmers" link), and "FAQs" (with a "frequently asked questions (with answers!) link").

<https://docs.python.org/3/>

W3C Schools

The screenshot shows the W3Schools website's Python tutorial section. The top navigation bar includes links for Home, HTML, CSS, JavaScript, SQL, Python (which is highlighted in green), PHP, Bootstrap, How To, More, References, and Exercises. On the left, a sidebar lists various Python topics: Python HOME, Python Intro, Python Get Started, Python Syntax, Python Comments, Python Variables, Python Data Types, Python Numbers, Python Casting, Python Strings, Python Booleans, Python Operators, Python Lists, Python Tuples, Python Sets, Python Dictionaries, Python If...Else, Python While Loops, Python For Loops, Python Functions, Python Lambda, and Python Arrays. The main content area features a large title "Python Tutorial". Below it are two green buttons: "Home" on the left and "Next >" on the right. A green box contains the text "Python is a programming language. Python can be used on a server to create web applications." and a "Start learning Python now »" button. A section titled "Learning by Examples" follows, with the subtext "With our 'Try it Yourself' editor, you can edit Python code and view the result." An "Example" section shows the code "print("Hello, World!")".

<https://www.w3schools.com/python/>

Tutorial Learn Python

Español

Bienvenidos a los tutoriales de learnpython.org sobre Python.

Seas un programador experimentado o no, este sitio web es creado para cualquiera que desea aprender el lenguaje de programación Python.

La idea de crear la versión en español es tener a disposición este sitio a más interesado sin que el idioma sea una barrera.

Como primer paso es traducir al español todos los tutoriales que existen en la versión en inglés creando nuevos tutoriales adicionando el texto "(es)" al final del nombre para indicar que es la versión en español, toda ayuda es bienvenida!

Ahora sólo da click en el capítulo que quieras iniciar y sigue las instrucciones o [platica](#) con otros estudiantes de Python. Buena suerte!

Si quieres unirte al grupo de [Facebook](#) bienvenido!

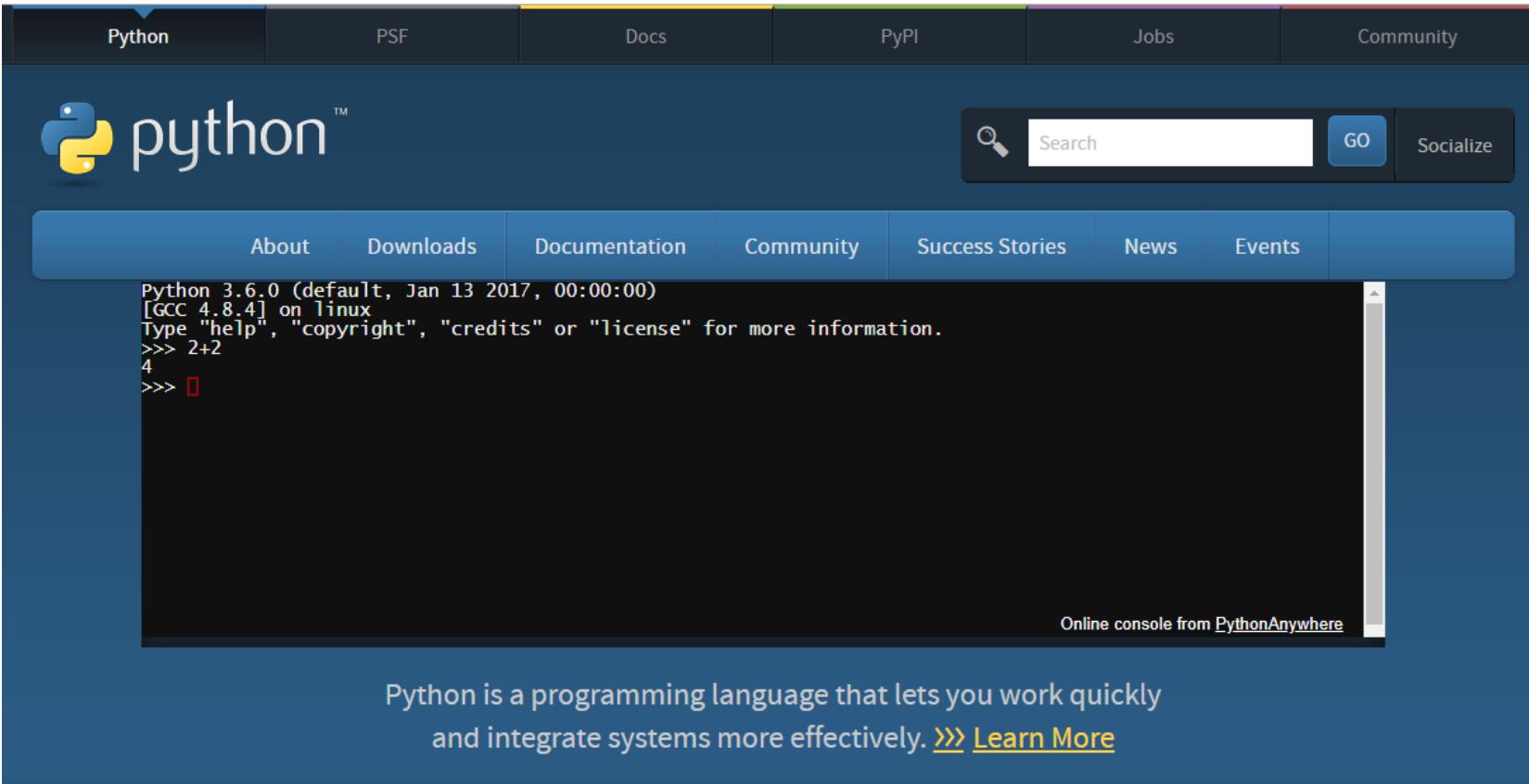
Indice

Aprende las bases

- [Hola Mundo](#)
- [Variables y Tipos de datos](#)
- [Listas](#)
- [Operadores basicos](#)
- [Formato de texto](#)
- [Operaciones basicas con texto](#)

<https://www.learnpython.org/es/>

Consola Online



The screenshot shows the Python.org homepage with a focus on the "Docs" section. A large, dark blue rectangular area contains an online Python shell. The shell displays the following text:

```
Python 3.6.0 (default, Jan 13 2017, 00:00:00)
[GCC 4.8.4] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> 2+2
4
>>> □
```

Below the shell, a small white text box reads "Online console from PythonAnywhere". At the bottom of the page, there is a promotional message:

Python is a programming language that lets you work quickly
and integrate systems more effectively. [» Learn More](#)

<https://www.python.org/shell/>

¡Python donde sea!

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 pythonanywhere

Host, run, and code Python in the cloud!

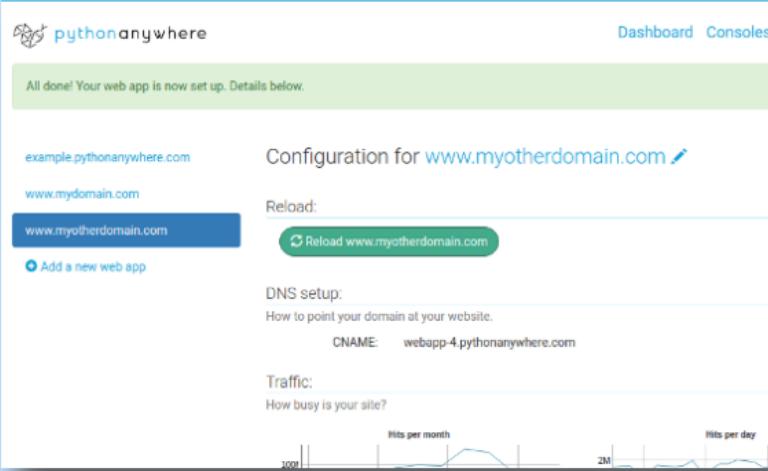
Get started for free. Our basic plan gives you access to machines with a full Python environment already installed. You can develop and host your website or any other code directly from your browser without having to install software or manage your own server.

Need more power? Upgraded plans start at \$5/month.

[Start running Python online in less than a minute! »](#)

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<https://www.pythonanywhere.com/>

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Try Jupyter

You can try Jupyter out right now, without installing anything. Select an example below and you will get a temporary Jupyter server just for you, running on mybinder.org. If you like it, you can [install Jupyter](#) yourself.

[Try Jupyter with Python](#)



A tutorial introducing basic features of Jupyter notebooks and the IPython kernel.

[Try JupyterLab](#)



JupyterLab is the new interface for Jupyter notebooks and is ready for testing. Give it a try!

[Try Jupyter with Julia](#)



A basic example of using Jupyter with Julia.

<https://jupyter.org/try>

Google Collab

The screenshot shows a Google Colab notebook titled "Deep Learning for Computer Vision.ipynb". The interface includes a toolbar with File, Edit, View, Insert, Runtime, Tools, Help, and a CO logo. Below the toolbar are buttons for CODE, TEXT, and CELL navigation. The main area displays a section titled "Deep Learning for Computer Vision" with the subtext "This chapter introduces convolutional neural networks." A code cell contains the following Python code:

```
[ ]: from keras import layers  
from keras import models  
  
model = models.Sequential()  
model.add(layers.Conv2D(32, (3, 3), activation='relu', input_shape=(28, 28))  
model.add(layers.MaxPooling2D((2, 2)))  
model.add(layers.Conv2D(64, (3, 3), activation='relu'))  
model.add(layers.MaxPooling2D((2, 2)))  
model.add(layers.Conv2D(64, (3, 3), activation='relu'))
```

Below the code cell, a note states: "A convnet is a stack of Conv2D and MaxPooling2D layers. A convnet takes as input tensors of shape (image_height, image_width, image_channels)."

<https://colab.research.google.com/>

Entorno de trabajo



KIBERNUM

Anaconda

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Data science technology for human sensemaking.

A movement that brings together millions of data science practitioners,
data-driven enterprises, and the open source community.

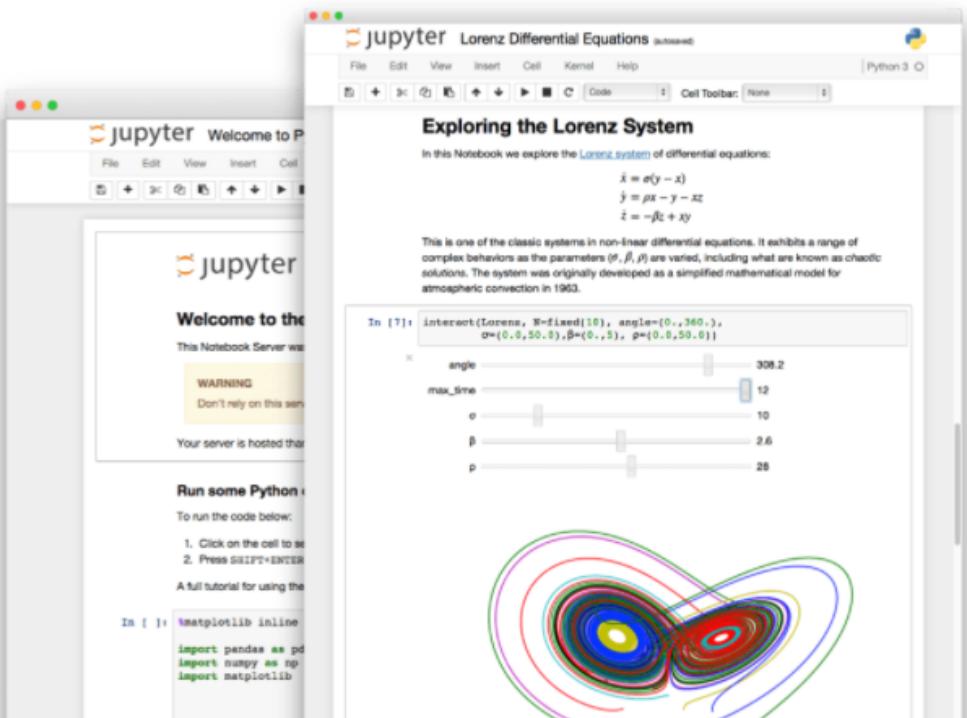
[Get Started](#)

<https://www.anaconda.com/>

Jupyter Notebooks



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The Jupyter Notebook

The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more.

Try it in your browser

Install the Notebook

<https://jupyter.org/>

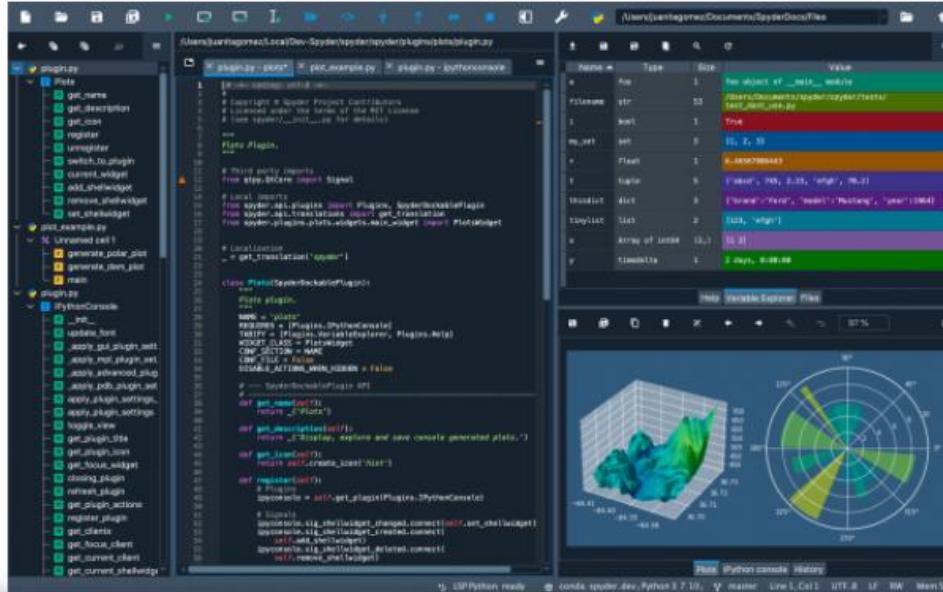
Spyder



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Spyder

The
Scientific
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Development
Environment



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<https://www.spyder-ide.org/>



Dudas y consultas



Fin Presentación



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