

WEEK 1

Introduction to Python

Week 1

Overview

- Basic programming terms
- Brief introduction of python and its interpreter
- Areas of application of python programming language
- Installation of necessary tools
- First python code
- Basics of working with files

What is Python?



Python is one of the most popular programming languages in the world. It gained prominence owing to its simplicity and ease of use. Its syntax is very similar to english language.

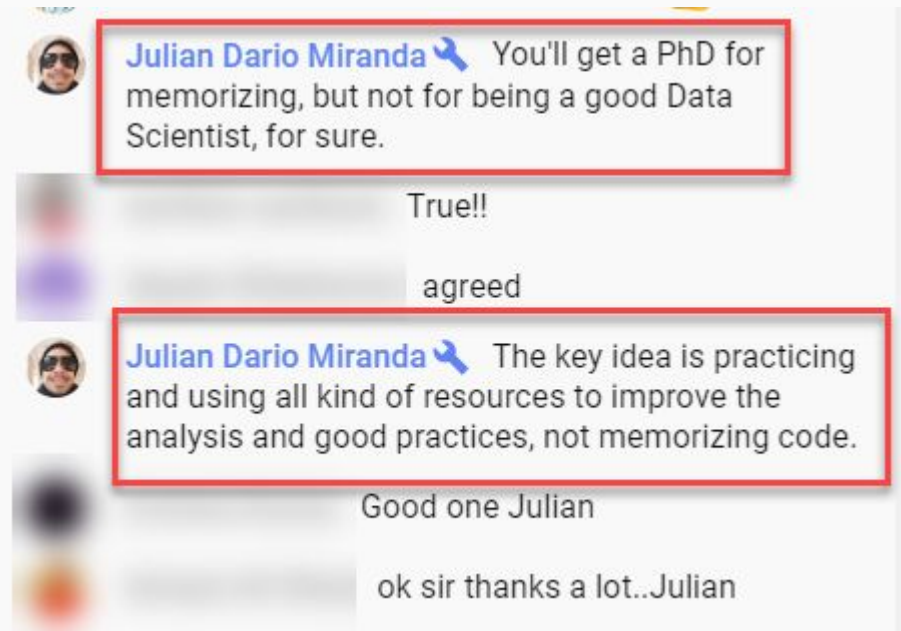
It is an open source free for use tool and has a vast community that contributed over 70K+ libraries. These rich set of libraries makes coding easy for developers and data scientists. Often libraries replace long codes with fewer lines of code.

What is Python?

Important Guideline

Never memorize code!

Here's the response for the question "Do we need to memorize code?"



Basic Programming Lingo



ALGORITHM

An algorithm is a step by step method of solving a problem. It is commonly used for data processing, calculation and other related computer and mathematical operations.

PROGRAM

A program is a set of instruction written in a programming language to solve a particular problem.

SOFTWARE

A software is a collection programs written in one or more programming language to a problem or set of problems

IDE

Integrated Development Environments (IDEs) are coding tools that make writing, debugging, and testing your code easier. Many provide helpful features like code completion, syntax highlighting, debugging tools, variable explorers, visualization tools, and many other features.

Why Python for Data Science ?



- Free and open source
- Great community
- Plenty of libraries for Data Science & Machine Learning
- Easy and intuitive to use

Data Science is not about programming languages/tools such as Python, R, Excel, Jupyter Notebook, Google Colab, etc
Data Science is about using the above tools and techniques, and, if required, inventing new tools and techniques, to solve a problem using “data” in a “scientific” way.

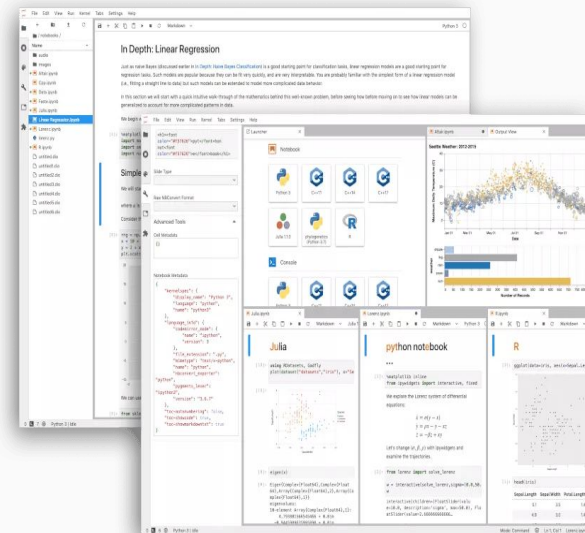
Best Python IDEs for Data Science

JupyterLab Notebook & Jupyter Notebook

[JupyterLab](#) and [Jupyter Notebook](#) are two of the most popular free notebook software for data science. They are both web-based tools. Jupyter Notebook is the original web notebook application and is very beginner friendly with a simple document-centric interface.

JupyterLab is the next iteration of this software. It provides an interactive and modular development environment, making setting up a personalized workflow easy. You can use JupyterLab for workflows in data science, scientific computing, computational journalism, and machine learning.

Jupyter supports over 40 programming languages, including Python and R, and other data languages like Julia and Scala. It is also very easy to install with a simple pip command, and you can also try it on your browser before you install it.



Best Python IDEs for Data Science

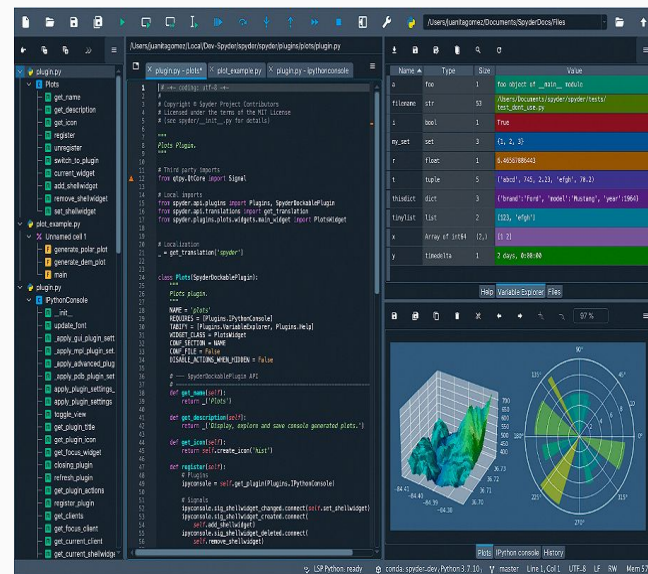


Spyder

[Spyder](#) is a free and open-source environment developed for coding in Python. The tool features some advanced editing, debugging, and profiling tools that make coding in Python a lot easier and more efficient.

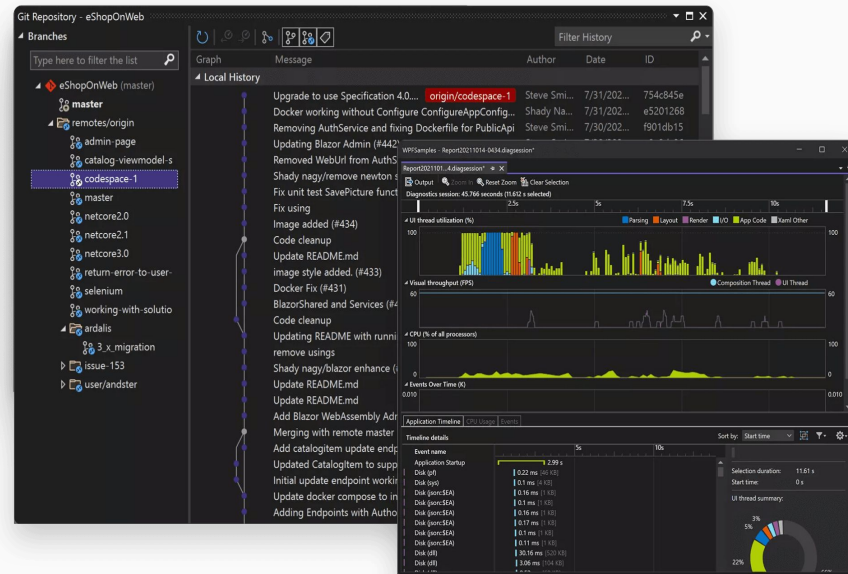
For example, the editor features autocomplete functionality, syntax highlighting, horizontal and vertical splitting, and other coding efficiency tools. These all help make the coding and debugging experience easier and more customizable. The tool also has advanced features like a variable explorer, which allows you to see variables you have created with your code, and an easy-to-use plots explorer to look at and save plots your code has created.

Spyder also offers other plugins to extend the software's functionality, including a notebook, a terminal, and testing software.



Best Python IDEs for Data Science

Visual Studio also offers tips when certain code is written, like defining a function, which makes this a great tool for beginners to learn on. This IDE works on Windows, Mac, and Linux and supports most programming languages.



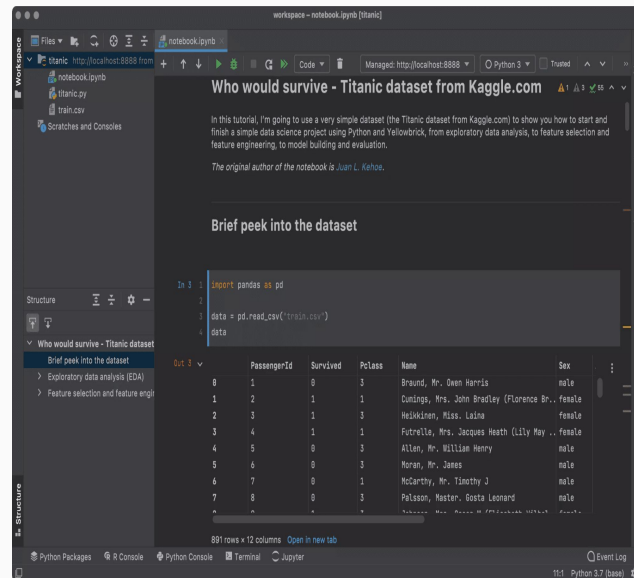
Best Python IDEs for Data Science



DataSpell

[DataSpell](#) is an IDE and notebook platform developed by JetBrains that was specifically developed for data scientists. It is the newest tool on this list and was released in late 2021. They have built-in version control, a terminal, and a database tool to access databases directly in the IDE.

DataSpell also provides code completion, variable explorers, a debugger, and SQL support. There are also plugins available to customize the interface and add more functionality. DataSpell is on the pricier side of things but provides many premium features if you are looking for a strong data science IDE.



Best Python IDEs for Data Science

Google Colab

[Google Colaboratory](#) is Google's cloud-based notebook environment. Colab is integrated with the Google suite of products and is easy to get started with if you have a Google account. You can import data into Colab notebooks from your Google Drive account and from other sources like Github.

Colab is also very popular in the Machine learning community and allows you to leverage Google's cloud hardware, including GPUs and TPUs, to run machine learning code regardless of how powerful your own computer is. You can also share Colab notebooks with others, similar to a Google doc file, making it easy to share your work. It also supports over 40 programming languages, including Python, R, and Scala.



Anaconda and Jupyter Notebook



What is Anaconda and Jupyter Notebook?

- You know by now Python is a programming language. Now what is Anaconda?
- Anaconda is a free and open-source distribution of Python. In a nutshell, it makes it easy for you to run Python code on your laptop/computer.
- Again, why Anaconda? - Well, we are humans and we always want user-friendly applications. And that's what Anaconda does for you. It offers a powerful tool called "Jupyter notebook" which is an easy-to-use and interactive Python environment for data science.

Installation of Python and Anaconda



For Windows

- Step1: Install Python
 - [Direct download link](#)
- Step 2: Download and install Anaconda [here.](#)

For Other OS

- [For macOS](#)
- [For Linux](#)

Now Let's Open Anaconda Navigator



Home



Environments



Learning



Community

Documentation

Developer Blog



Applications on

base (root)

Channels

Refresh



CMD.exe Prompt

0.1.1

Run a cmd.exe terminal with your current environment from Navigator activated

Launch



JupyterLab

1.2.6

An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.

Launch



Notebook

6.0.3

Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.

Launch



Powershell Prompt

0.0.1

Run a Powershell terminal with your current environment from Navigator activated

Launch



Qt Console

4.6.0

PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.



Spyder

4.0.1

Scientific PYTHON Development Environment. Powerful Python IDE with advanced editing, interactive testing,



Glueviz

0.15.2

Multidimensional data visualization across files. Explore relationships within and among related datasets.



Orange 3

3.23.1

Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows

Files Running Clusters

Select items to perform actions on them.

Upload

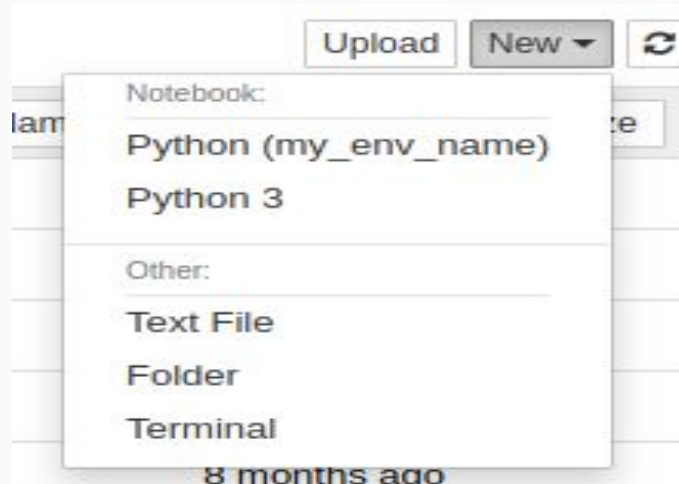
New ▾



<input type="checkbox"/> ▾ 	Name ▾	Last Modified
<input type="checkbox"/>  images		2 days ago
<input type="checkbox"/>  L1_workspaces		an hour ago
<input type="checkbox"/>  L2_workspaces		a day ago
<input type="checkbox"/>  project-i		19 minutes ago
<input type="checkbox"/>  project-ii		an hour ago
<input type="checkbox"/>  quizzes		a month ago
<input type="checkbox"/>  binomial_distribution_exercise.ipynb	Running	a day ago
<input type="checkbox"/>  college_enrollment.ipynb	Running	a day ago
<input type="checkbox"/>  distribution_images.ipynb	Running	7 days ago
<input type="checkbox"/>  intro_stats_numpy.ipynb	Running	2 days ago
<input type="checkbox"/>  normal_distribution_exercise.ipynb	Running	a day ago
<input type="checkbox"/>  numpy_test.ipynb		a month ago

Create a New Notebook

To create a new notebook, go to New at the top right corner and select Notebook - Python 3.



THANK YOU



See You Next Week