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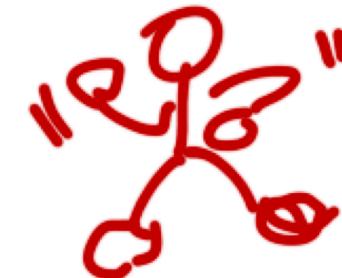
PANTHÉON SORBONNE

ÉCOLE DE MANAGEMENT
DE LA SORBONNE

C'est quoi
Python ??



- C'est quoi ??
 - Langage de **programmation**
 - Très populaire dans la **data analyse**
- Plusieurs versions
 - Python2 → créé en 2000, arrêtée en 2020
 - **Python3 → créé en 2008**



Attention !

Ces versions sont **incompatibles** !



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- Comment ça marche ?

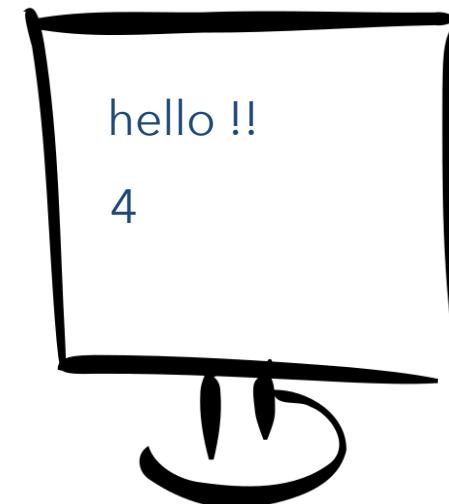
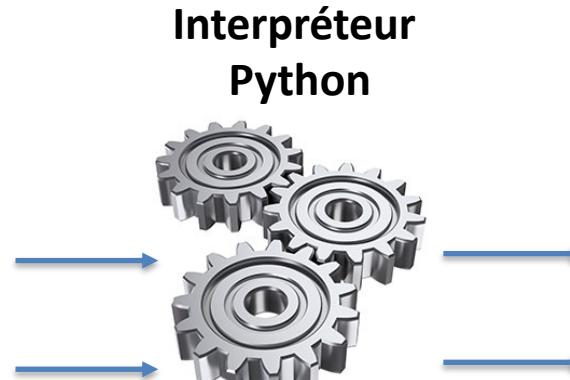
Mode itératif

C'est lui qui interprète et exécute le code en Python



```
print('hello !!')
```

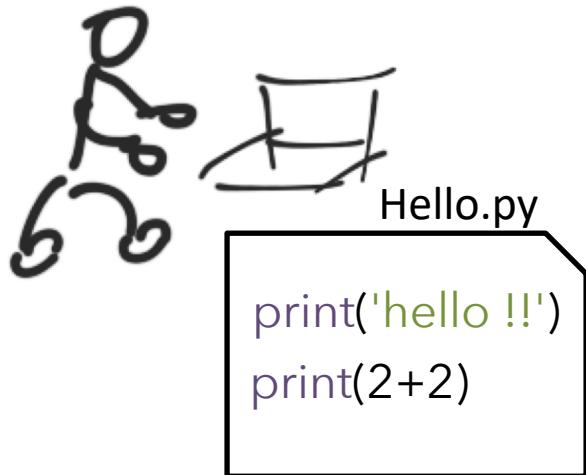
```
print(2+2)
```



Ligne par ligne

- Comment ça marche ?

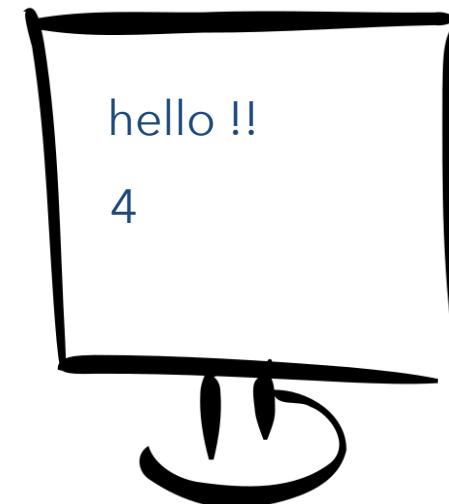
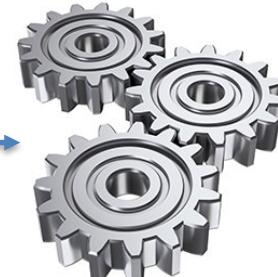
Mode « batch »



Fichier en entrée

C'est lui qui interprète et exécute le code en Python

Interpréteur
Python



- **Et les Notebooks ?**

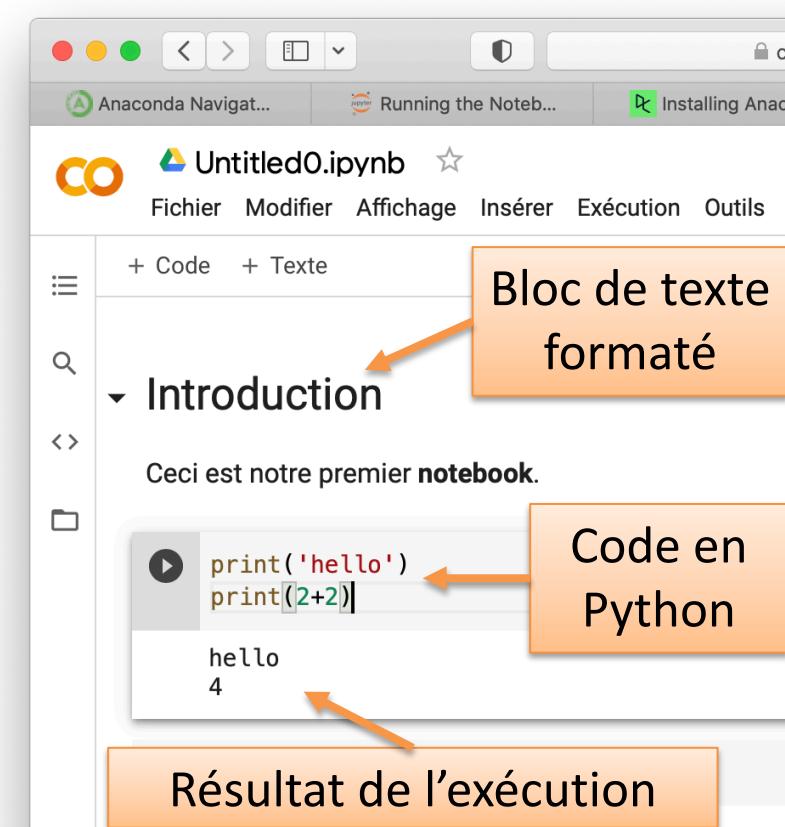
- Documents « **actifs** » où on alterne des **blocs de texte** et de **blocs de code Python** (qui peuvent être **exécutés**)

- **Texte** en format « **markdown** »

- **Code Python** exécuté en **mode « itératif »**

- Très utilisés en **Data Analyse**

- Sur le Web (**navigateur**)



- **Il faut avoir l'interpréteur Python**
 - Disponible avec certains Mac OS
 - Téléchargeable à partir de <https://www.python.org>
 - Mac OS et Windows
- **Il faut un environnement de développement (IDE)**
 - IDLE : disponible avec la distribution Python
 - Visual Studio Code : <https://code.visualstudio.com>
 - PyCharm Community : <https://www.jetbrains.com/pycharm/>
- **Ou un environnement type « Notebook »**
 - Jupyter Notebook & Jupyter Lab : <https://jupyter.org/install>
- **Environnements et Notebooks on-line disponibles**
 - Repl.it : <https://repl.it> ou <https://replit.com/>
 - Google Collab : <https://colab.research.google.com>
 - Binder : <https://mybinder.org/>



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Installation sur Mac



The diagram illustrates the Python Mac installer process through five windows:

- Introduction**: Describes the package (Python 3.9.1 for macOS 10.9 or later) and includes a note about SSL certificates.
- Licence**: Requests acceptance of the license terms. It features a "Lire la licence" button and "Refuser" / "Accepter" buttons.
- Selectionner une destination**: Allows choosing the installation disk (Macintosh HD). It shows available space (236.79 Go disponibles / 499,96 Go au total) and notes the required space (118.4 Mo).
- Installation**: Shows the progress of "Exécution des scripts du paquet..." (Executing the package scripts).
- Final Step**: A small window showing the "Continuer" (Next) button.

Blue arrows indicate the flow from the Licence step to the Selection step, and from the Selection step to the Installation step.

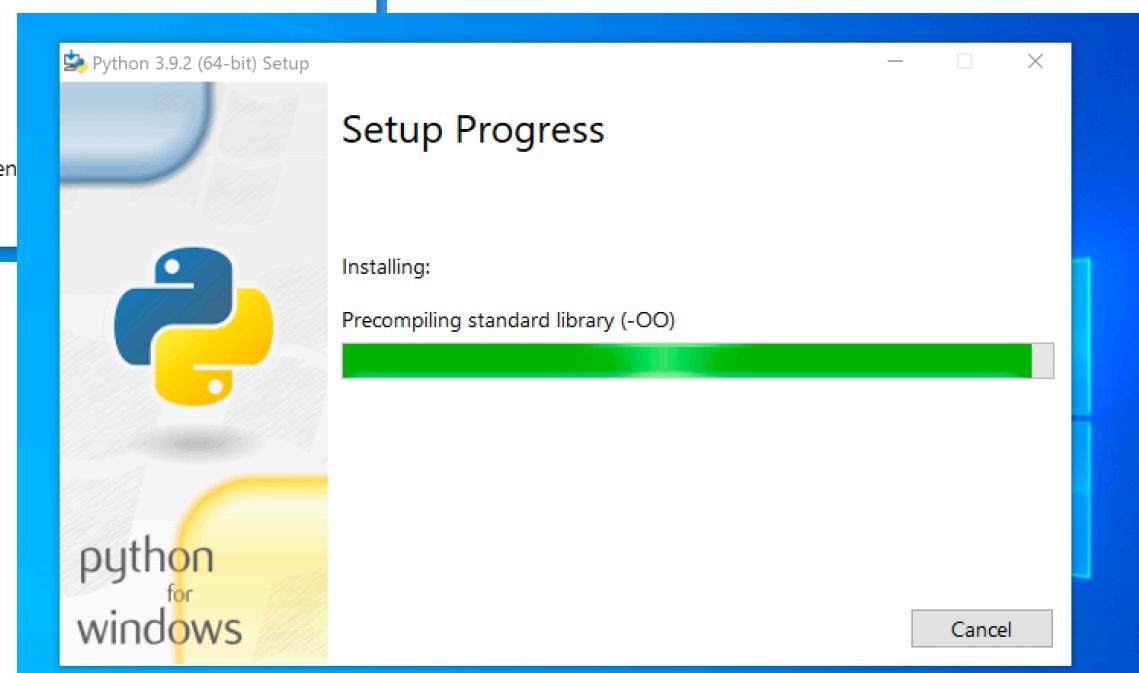
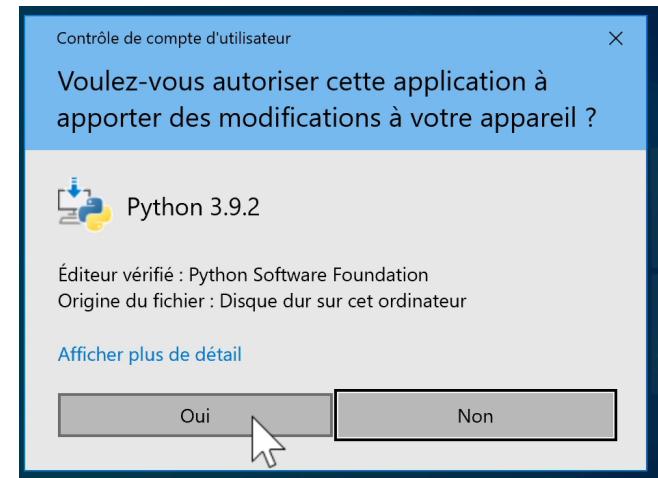
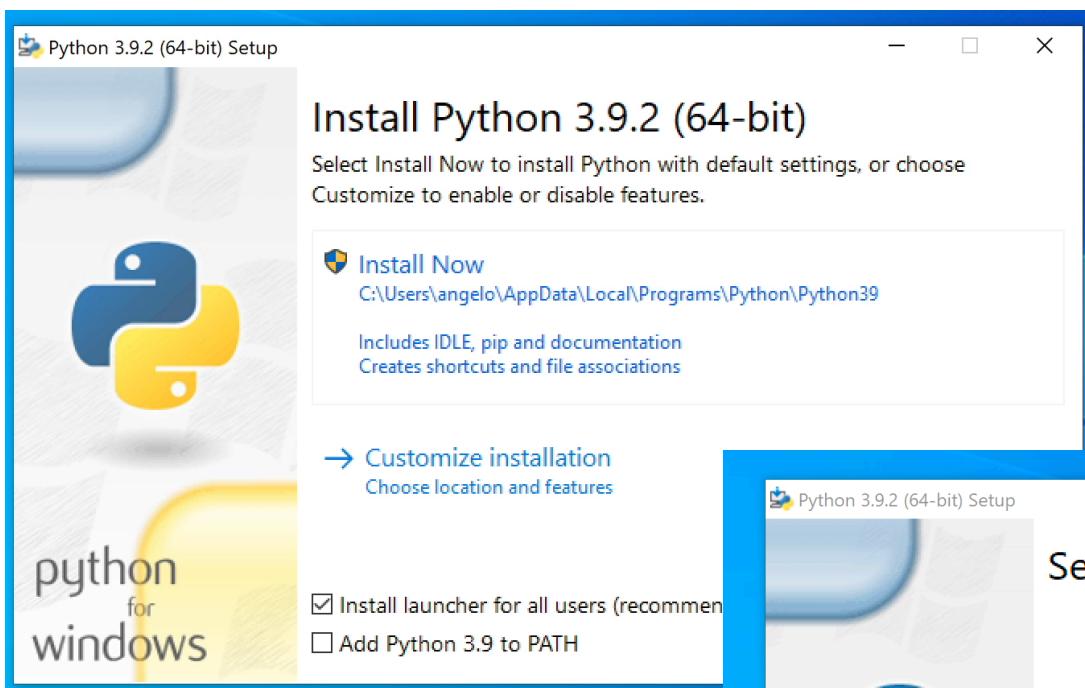


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Installation sur Windows





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Mode itératif

IDLE Shell 3.9.1

```
Python 3.9.1 (v3.9.1:1e5d33e9b9, Dec  7 2020, 12:10:52)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
WARNING: The system preference "Prefer tabs when opening documents" is set to
"Always". This will cause various problems with IDLE. For the best experience,
change this setting when running IDLE (via System Preferences -> Dock).
>>>
```

IDLE



Mode « batch »

IDLE Shell 3.9.1

hello.py - /Users/kirsch/Documents/hello.py (3.9.1)

```
print('hello')
print(2+2)
```

IDLE Shell 3.9.1

hello.py - /Users/kirsch/Documents/hello.p...

```
Python 3.9.1 (v3.9.1:1e5d33e9b9, Dec  7 2020, 12:10:52)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
WARNING: The system preference "Prefer tabs when opening documents" is set to
"Always". This will cause various problems with IDLE. For the best experience,
change this setting when running IDLE (via System Preferences -> Dock).
>>>
=====
RESTART: /Users/kirsch/Documents/hello.py =====
hello
4
>>> |
```



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Visual Studio Code



The screenshot shows the Visual Studio Code interface with a dark theme. On the left is the Explorer sidebar, which lists files in the current workspace. In the center is the main code editor showing a Python file named `Hello.py`. The code contains two lines of Python code:

```
1 print('Hello !!!')
2 print([2+2])
```

Below the code editor is the Terminal panel, which displays the output of running the script:

```
kirsch@lilith codes % /Library/Developer/CommandLineTools/usr/bin/python3 /Users/kirsch/Documents/Dropbox/Aulas/M1-UML/2020-2021/python/codes/Hello.py
Hello !!
4
kirsch@lilith codes %
```

The status bar at the bottom shows the Python version (3.8.2), memory usage (0), and other system information.



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PyCharm



Welcome to PyCharm

PyCharm 2020.3.3

Search projects New Project Open Get from VCS

Projects

Customize

Plugins

Learn PyCharm

codes
~/Documents/Dropbox/Aulas/M1-UML/2020-2021/python/codes

codes - Hello.py

Project Hello.py

External Libraries

Scratches and Consoles

Run: Hello

/usr/local/bin/python3.9 ~/Users/kirsch/Documents/Dropbox/Aulas/M1-UML/2020-2021/python/codes>Hello.py

Hello !!
4

Process finished with exit code 0

Run TODO Problems Terminal Python Console Event Log

1:18 LF UTF-8 4 spaces Python 3.9

The screenshot shows the PyCharm IDE interface. The main window title is "Welcome to PyCharm". On the left, there's a sidebar with the PyCharm logo, version 2020.3.3, and links for Projects, Customize, Plugins, and Learn PyCharm. The main area shows a project named "codes" located at "~/Documents/Dropbox/Aulas/M1-UML/2020-2021/python/codes". A sub-project "first.py" is also listed. The central part of the screen displays the code editor for "Hello.py" with the following content:

```
print('Hello !!')
print(2+2)
```

The code is run in the "Run" tab, which shows the output:

```
/usr/local/bin/python3.9 ~/Users/kirsch/Documents/Dropbox/Aulas/M1-UML/2020-2021/python/codes>Hello.py
Hello !!
4

Process finished with exit code 0
```

The bottom status bar indicates the time as 1:18, file encoding as LF, and Python version as 3.9.



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Repl.it



The screenshot shows the Repl.it web interface. On the left, a sidebar menu includes Home, My repls, Talk, Notifications, Languages, Templates, Tutorials, and Help. The main area has a 'Create' section with tabs for '+ New repl', Python, HTML, CSS, JS, and Node.js. A 'Recent' section shows a Java environment named 'JavaEnv'. The central workspace displays a Python file 'main.py' with the following code:

```
1 print('hello !!')
2 print(2+2)
3
```

A green 'Run' button is visible above the code editor. To the right, a 'Console' tab shows the output: 'hello !!', '4', and a red error message '▶'. An orange callout box on the right side of the slide contains the text 'Environnement gratuit' and 'Plusieurs langages disponibles' followed by the URL <http://replit.com>.

Google Collab



Accessible avec un simple compte
Google

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

The screenshot shows the Google Colab interface. At the top, there's a navigation bar with tabs for 'Exemples', 'Récents', 'Google Drive', 'GitHub', and 'Importer'. Below the navigation bar is a search bar labeled 'Filtrer les notebooks' and a table listing recent notebooks. The table has columns for 'Titre', 'Dernière ouverture', and 'Première ouverture'. Two entries are listed: 'Bienvenue dans Colaboratory' (opened at 11:38 on 26 février) and 'Untitled0.ipynb' (opened at 26 septembre on 26 février). A modal dialog box is open in the center, prompting the user to 'Nouveau notebook' or 'Annuler'. The main workspace shows a notebook titled 'Untitled0.ipynb'. The code cell contains the following Python code:

```
print('hello')
print(2+2)
```

The output cell shows the results of the execution:

```
hello
4
```



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Binder



<https://mybinder.org>

Dépôt de départ :
<http://github.com/mkirschpin/CoursPython>

New to Binder? Get started with a Zero-to-Binder tutorial in [Julia](#), [Python](#) or [R](#).

Build and launch a repository

GitHub repository name or URL: <https://github.com/mkirschpin/CoursPython/>

Git ref (branch, tag, or commit):

Path to a notebook file (optional):

Copy the URL below and share your Binder with others:

<https://hub.gke2.mybinder.org/binder/https://github.com/mkirschpin/CoursPython/>

User guide — Anaconda documentation | Project Jupyter | Installing the Jupyter Software | Installing Anaconda on Windows & Add Anac... | Untitled.ipynb - JupyterLab

File Edit View Run Kernel Tabs Settings Help

Filter files by name

/ binder /

Name	Last Modified
Y: environment....	8 minutes ago

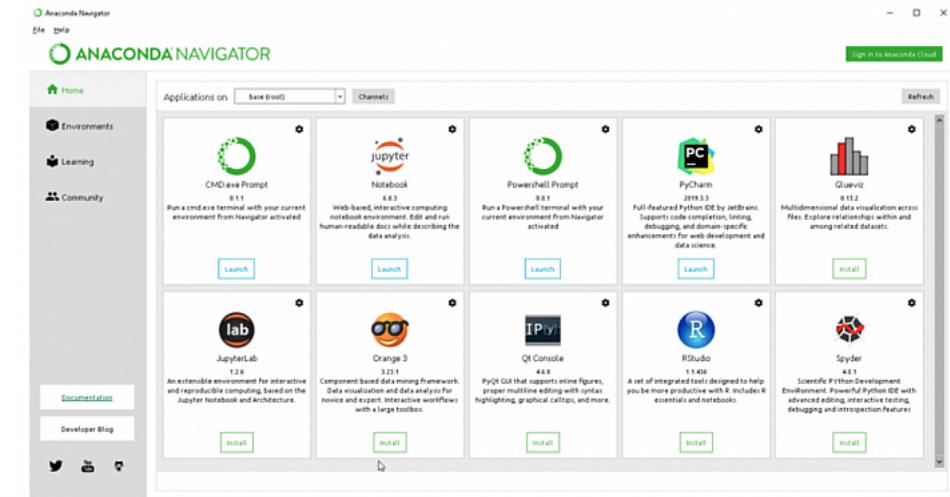
Attention :

- « Machine virtuelle » construite à partir d'un dépôt de base
- **Rien n'est enregistré → dès qu'on ferme le navigateur, on perd les modifications**
- Export possible

Installer Jupyter



- Le plus facile est d'utiliser **Anaconda** pour l'installation
 - Installer Anaconda :
<https://www.anaconda.com/products/individual>
 - Ouvrir **Anaconda Navigator**
 - Choisir **Jupyter Notebook** (ou Jupyter Lab)



The screenshot shows a Jupyter Notebook interface running on localhost. The top navigation bar includes 'Fichier', 'Edition', 'Affichage', 'Insérer', 'Cellule', 'Noyau', 'Aide', and a Python 3 kernel selection. The main area displays a section titled 'Series' with the following text:
La classe Series (sur Pandas) permet la manipulation des séries de valeurs indexées (bref, une séquence de valeurs de type *<key, value>*), particulièrement appréciées pour la manipulation des séries temporelles.
Below this, an input cell labeled 'Entrée [4]' contains the following Python code:

```
from pandas import Series
maserie = Series([8, 70, 320, 1200], index=["Suisse", "France", "USA", "Chine"])
print(maserie)
```

The output cell shows the resulting Series object:

```
Suisse    8
France   70
USA     320
Chine   1200
dtype: int64
```



• Bibliographie

- G. Swinnen, "**Apprendre à programmer avec Python 3**", 3ème édition, Eyrolles.
- J. Hunt, "**A Beginners Guide to Python 3 Programming**", Undergraduate Topics in Computer Science, Springer, ISBN 978-3-030-20289-7. DOI <https://doi.org/10.1007/978-3-030-20290-3>
- C. Horstmann, R.D. Necaise, "**Python for everyone**", Wiley, ISBN 978-1-118-62613-9
- J. Hunt, "**Advanced Guide to Python 3 Programming**", Undergraduate Topics in Computer Science, Springer, ISBN 978-3-030-25942-6, DOI <https://doi.org/10.1007/978-3-030-25943-3>
- J.P. Mueller, "**Beginning Programming with Python® For Dummies®**", Wiley, ISBN 978-1-118-89145-2



- Liens utiles
 - <https://www.datacamp.com/community/tutorials/installing-anaconda-windows>
 - <https://kodcademy.com/lessons/installer-jupyter-pour-utiliser-python/>
 - <https://docs.python.org/fr/3/tutorial/>
 - <https://wiki.python.org/moin/BeginnersGuide>
 - https://inforef.be/swi/download/apprendre_python3_5.pdf
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 - <https://python.developpez.com/tutoriels/apprendre-programmation-python/les-bases/>
 - <https://python.doctor/page-cours-python-debutant-documentation>
 - <https://www.geeksforgeeks.org/python-programming-language/>
 - <https://datatofish.com/python-tutorials/>



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Introduction à Python



Questions ? Enseignant Responsable

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