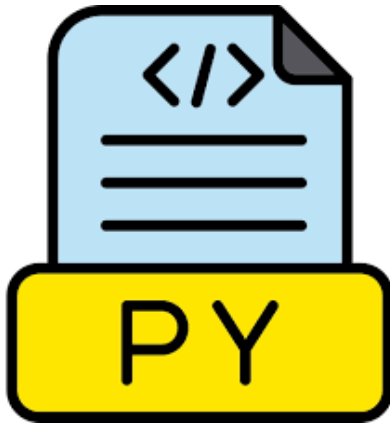


Apprentissage Automatique

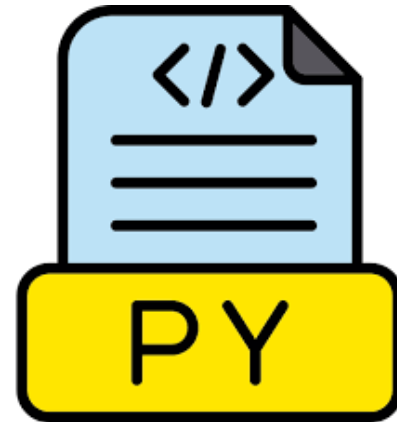
Machine Learning

Python – Découverte et Installation

▪ Série TP 1 – Découverte Python



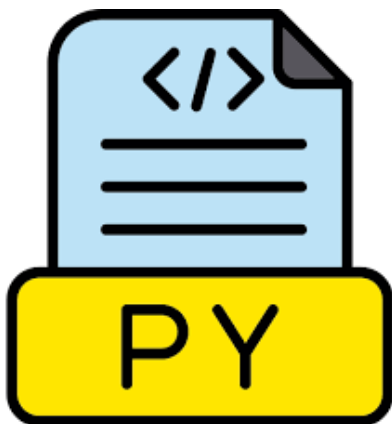
Partie 1 - Découverte



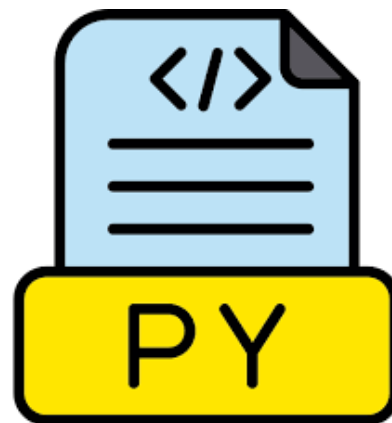
Partie 2 - Exercices

Motifs Fréquents et Règles d'association - Apriori

▪ Série TP 2 - Apriori



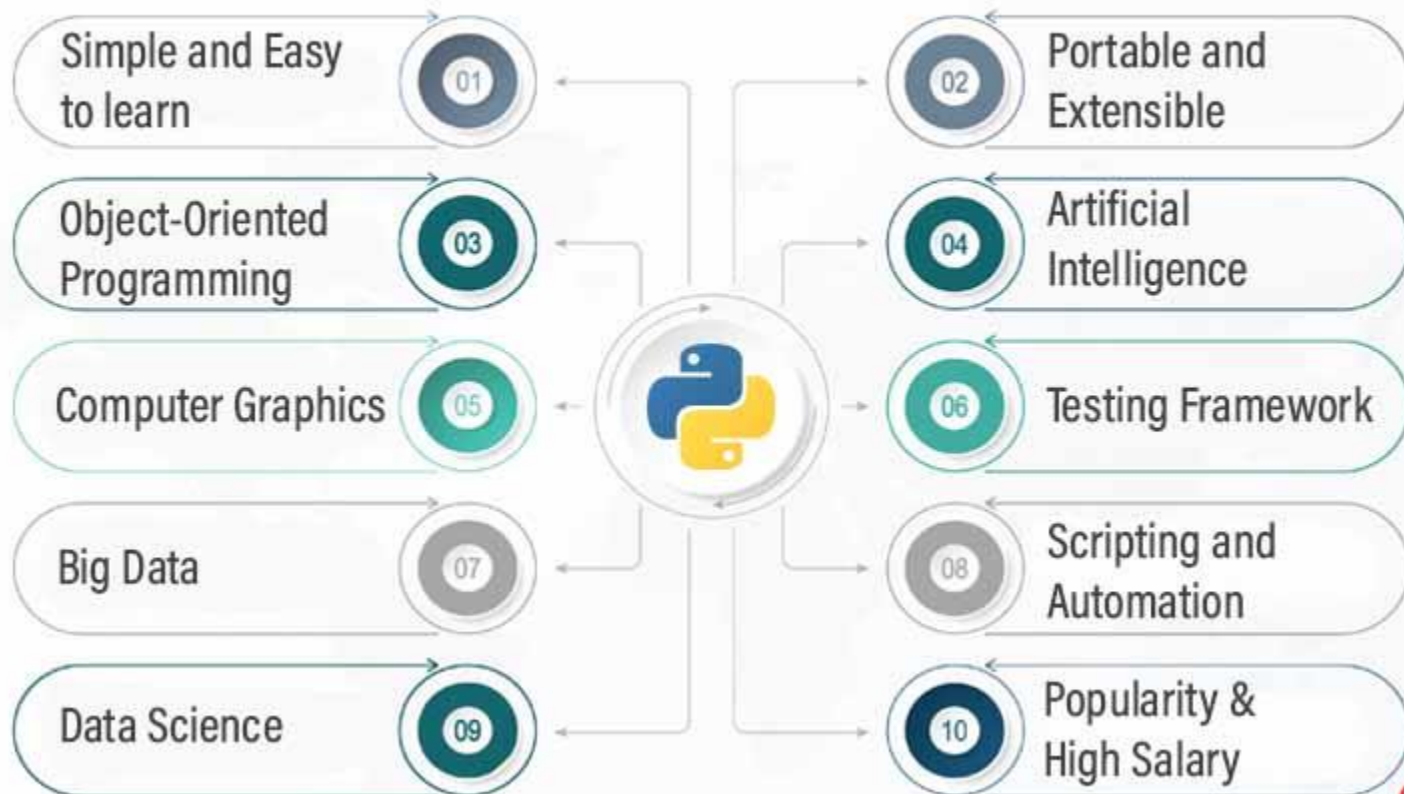
Partie 1 - Découverte



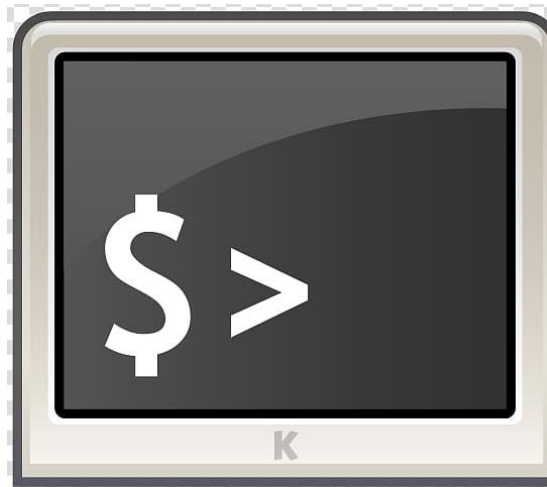
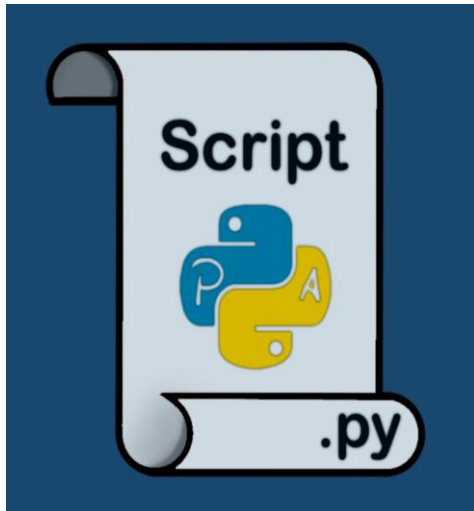
Partie 2 - Exercices

Python - Découverte et Installation

Advantages of Python



Python - Découverte et Installation



Python - Découverte et Installation

- Lecture / Ecriture & String formatting
- Variables : int, float, str, boolean
- Assignment multiple
- If.. elif .. else
- For loops & while loops
- Functions
- Python Datatypes – Lists (decl, init vide/construct, indexing/neg, len, append, insert, pop, remove, sort, slicing, loop items, unpacking)
- Python datatypes – Dicts (decl, init vide/construct, access/modif, add items, keys, values, items, loop items)
- Python datatypes : Sets & Tuples



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

Python - Découverte et Installation

Constructor

[] or `list()`

() or `tuple()`

{ }* or `set()`

{ } or `dict()`

FEATURE	LIST	TUPLE	SET	DICTIONARY
Syntax	[1, 2, 3]	(1, 2, 3)	{1, 2, 3}	{"a": 1, "b": 2}
Ordered?	✓ Yes	✓ Yes	✗ No	✓ Yes
Mutable?	✓ Yes	✗ No	✓ Yes	✓ Yes
Duplicates?	✓ Allowed	✓ Allowed	✗ Not Allowed	✓ Keys unique
Use Case	General collection	Fixed data	Unique items	Key-value mapping

Python - Découverte et Installation

Python Collections (Arrays)

There are four collection data types in the Python programming language:

- **List** is a collection which is ordered and changeable. Allows duplicate members.
- **Tuple** is a collection which is ordered and unchangeable. Allows duplicate members.
- **Set** is a collection which is unordered, unchangeable*, and unindexed. No duplicate members.
- **Dictionary** is a collection which is ordered** and changeable. No duplicate members.

*Set *items* are unchangeable, but you can remove items and add new items.

**As of Python version 3.7, dictionaries are *ordered*. In Python 3.6 and earlier, dictionaries are *unordered*.

Python - Découverte et Installation

What will be the result of the following code:

```
x = 'Welcome'  
print(x[3])
```

- ☐ Wel
- ☐ c
- ☐ Welcome Welcome Welcome

Python - Découverte et Installation

If `x = 9`, what is a correct syntax to print 'The price is 9.00 dollars'?

- `print(f'The price is {x:.2f} dollars')`
- `print(f'The price is {x:2} dollars')`
- `print(f'The price is {x:format(2)} dollars')`

Python - Découverte et Installation

What will be the result of the following syntax:

```
mylist = ['apple', 'banana', 'cherry']  
print(mylist[1])
```

- ☐ apple
- ☐ banana
- ☐ cherry

Python - Découverte et Installation

What will be the result of the following syntax:

```
mylist = ['apple', 'banana', 'cherry']  
print(mylist[-1])
```

- ☐ apple
- ☐ banana
- ☐ cherry

Python - Découverte et Installation

What will be the result of the following syntax:

```
mylist = ['apple', 'banana', 'cherry', 'orange', 'kiwi']  
print(mylist[1:4])
```

- ['banana', 'cherry', 'orange']
- ['banana', 'cherry', 'orange', 'kiwi']
- ['cherry', 'orange', 'kiwi']

Python - Découverte et Installation

What will be the result of the following syntax:

```
mylist = ['apple', 'banana', 'cherry']  
mylist.insert(0, 'orange')  
print(mylist[1])
```

- ☐ apple
- ☐ banana
- ☐ cherry
- ☐ orange

Python - Découverte et Installation

What will be the result of the following syntax:

```
thislist = ["apple", "banana", "cherry"]  
  
thislist.append("orange")  
  
print(thislist)
```

Python - Découverte et Installation

What will be the result of the following syntax:

```
mylist = ['apple', 'banana', 'cherry']  
mylist.pop(1)  
print(mylist)
```

- ☐ ['apple', 'banana']
- ☐ ['apple', 'cherry']
- ☐ ['banana', 'cherry']

Python - Découverte et Installation

Which one of these is a dictionary?

- `x = ('apple', 'banana', 'cherry')`

- `x = {'type' : 'fruit', 'name' : 'banana'}`

- `x = ['apple', 'banana', 'cherry']`

Python - Découverte et Installation

What is a correct syntax for looping through the values of this dictionary:

```
x = {'type' : 'fruit', 'name' : 'apple'}
```

- ```
for y in x.values():
 print(y)
```

- ```
for y in x:  
    print(y)
```

- ```
for y in x:
 print(y.value())
```

# Python - Découverte et Installation

Consider the following code:

```
x = {'type' : 'fruit', 'name' : 'banana'}
```

What is a correct syntax for changing the **type** from **fruit** to **berry**?

- `x{'type'} = 'berry'`
- `x['type'] = 'berry'`
- `x.get('type') = 'berry'`

# Python - Découverte et Installation

- Install Anaconda : Download from : <https://repo.anaconda.com/archive/>
  - [Anaconda3-2022.05-Windows-x86\\_64.exe](#)
  - [Anaconda3-2022.05-Windows-x86.exe](#)



# Python - Découverte et Installation

- Copy **datasets** files needed for the rest of TPs.
- <https://github.com/GitTeaching/My-Courses/tree/main/S2/Data-Mining>

Mon Drive > TP - ML ▾

Type ▾

Contacts ▾

Date de modification ▾

Nom ↑

apriori\_python-1.0.4-py3-none-any.whl

iris.csv

Market\_Basket\_Optimisation.csv

Online\_Retail\_Cleaned.csv

tennis.csv

weather\_numeric.csv



# Python - Découverte et Installation

The screenshot displays the Anaconda Navigator desktop application. The interface includes a sidebar on the left with navigation options: Home, Environments, Learning, and Community. The main panel shows a grid of application tiles under the 'base (root)' environment. The 'Jupyter Notebook' tile is highlighted with a red circle. Below the grid, there are links for 'Documentation' and 'Anaconda Blog', and social media icons for Twitter, YouTube, and GitHub.

**ANACONDA.NAVIGATOR**

Connect

All applications on base (root) Channels

**PyCharm Professional**  
A full-fledged IDE by JetBrains for both Scientific and Web Python development. Supports HTML, JS, and SQL.  
[Install](#)

**Anaconda Toolbox**  
0.4.0  
Anaconda Assistant  
JupyterLab supercharged with a suite of Anaconda extensions, starting with the Anaconda Assistant AI chatbot.  
[Install](#)

**Anaconda Cloud Notebooks**  
Cloud-hosted notebook service from Anaconda. Launch a preconfigured environment with hundreds of packages and store project files with persistent cloud storage.  
[Launch](#)

**Jupyter Notebook**  
7.0.6  
Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.  
[Launch](#)

**Qt Console**  
5.4.2  
PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.  
[Launch](#)

**Spyder**  
5.4.3  
Scientific Python Development Environment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features.  
[Launch](#)

**VS Code**  
1.87.2  
Streamlined code editor with support for development operations like debugging, task running and version control.  
[Launch](#)

**Anaconda on AWS Graviton**  
Running your Anaconda workloads on AWS Graviton-based processors could provide up to 40% better price performance.  
[Launch](#)

**ORACLE Cloud Infrastructure**  
Oracle Data Science Service  
OCI Data Science offers a machine learning platform to build, train, manage, and deploy your machine learning models on the cloud with your favorite open-source tools.  
[Launch](#)

**Glueviz**  
1.2.4  
Multidimensional data visualization across files. Explore relationships within and among related datasets.  
[Install](#)

**JupyterLab**  
4.0.11  
An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.  
[Install](#)

**Orange 3**  
3.34.0  
Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.  
[Install](#)

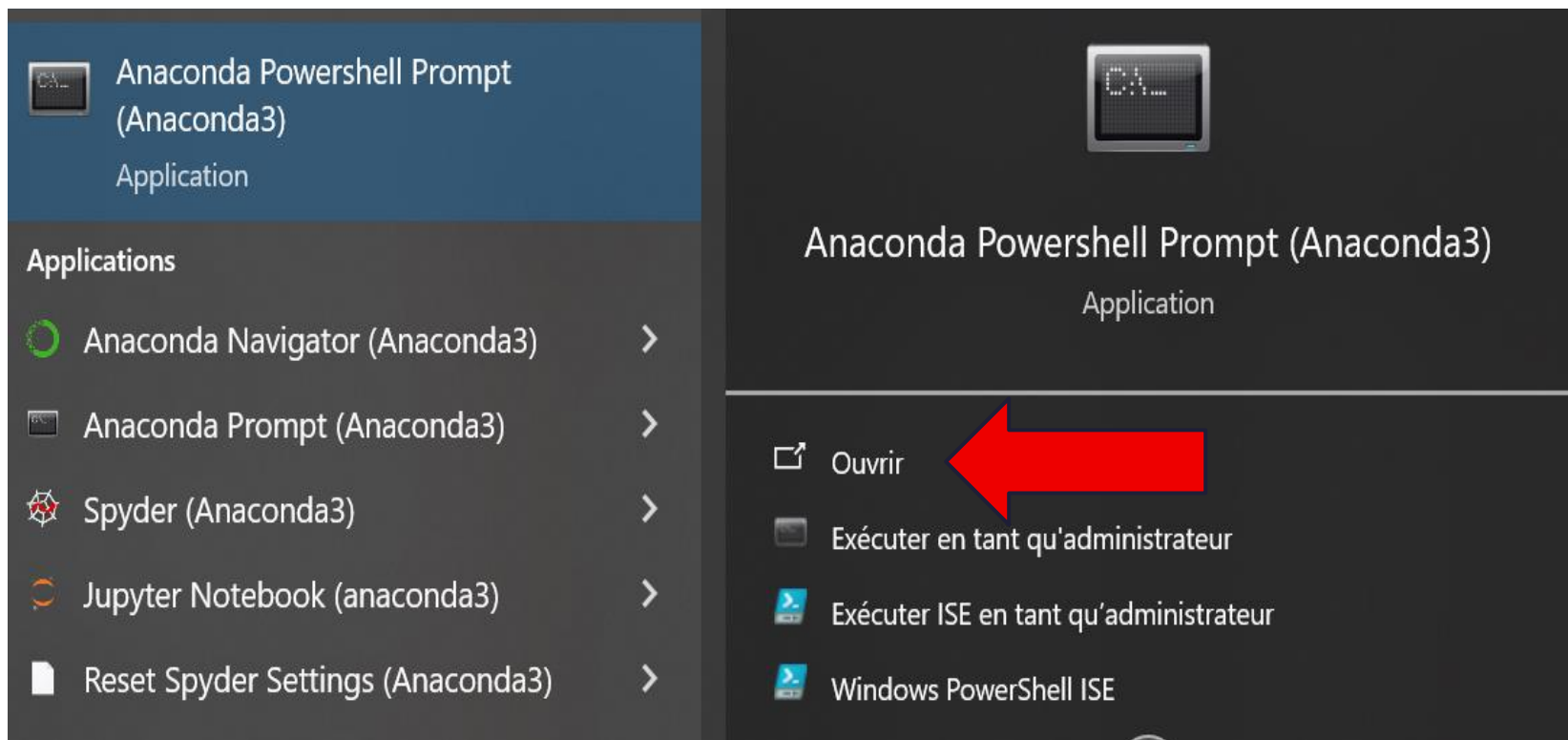
**Anaconda Toolbox**  
Supercharged local notebooks. Click the Toolbox tile to install.  
[Read the Docs](#)

[Documentation](#)

[Anaconda Blog](#)

Twitter YouTube GitHub

# Python - Découverte et Installation



# Python - Découverte et Installation



TP ML

Dispositifs | Réseau | Dispositifs | Réseau | Dispositifs | Réseau | Dispositifs | Réseau

Anaconda Powershell Prompt (Anaconda3)

```
(base) PS C:\Users\LeE> cd "C:\Users\LeE\Documents\TP ML"
(base) PS C:\Users\LeE\Documents\TP ML> jupyter notebook
```



# Python - Découverte et Installation

<http://localhost:8888/tree>



Quit

Logout

Files

Running

Clusters

Select items to perform actions on them.

Upload

New ▾



☐ 0



📁 /

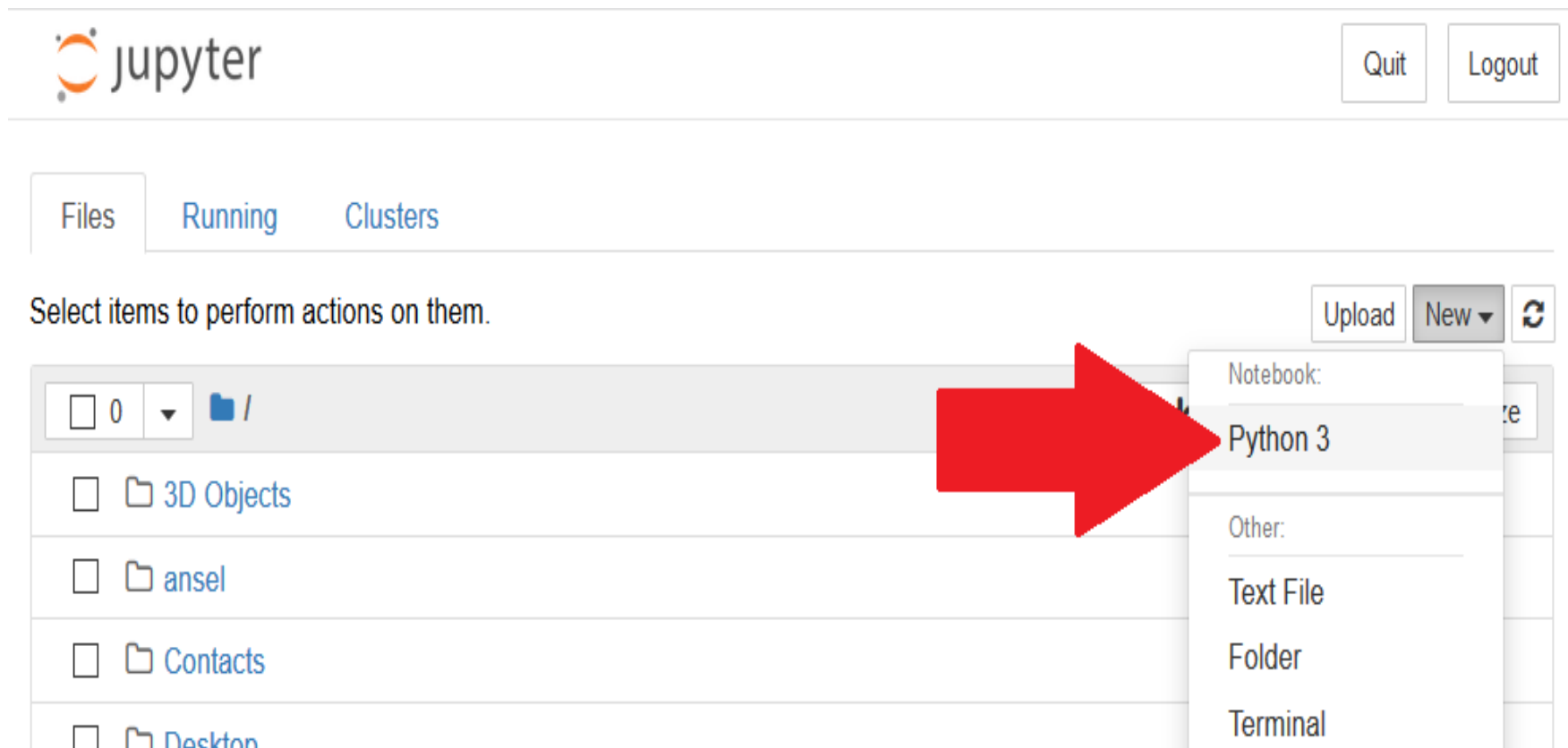
Name ▾

Last Modified

File size

La liste des notebooks est vide.

# Python - Découverte et Installation



The image shows the JupyterLab web interface. At the top left is the Jupyter logo. At the top right are 'Quit' and 'Logout' buttons. Below the logo are tabs for 'Files', 'Running', and 'Clusters'. A message says 'Select items to perform actions on them.' To the right of this message are 'Upload', 'New', and a refresh icon. The 'Files' tab is active, showing a file browser. A red arrow points to the 'New' button, which has opened a dropdown menu. The menu has two sections: 'Notebook:' and 'Other:'. Under 'Notebook:', 'Python 3' is highlighted. Under 'Other:', there are options for 'Text File', 'Folder', and 'Terminal'.

jupyter

Quit Logout

Files Running Clusters

Select items to perform actions on them.

Upload New ↕

Notebook:

Python 3


Other:

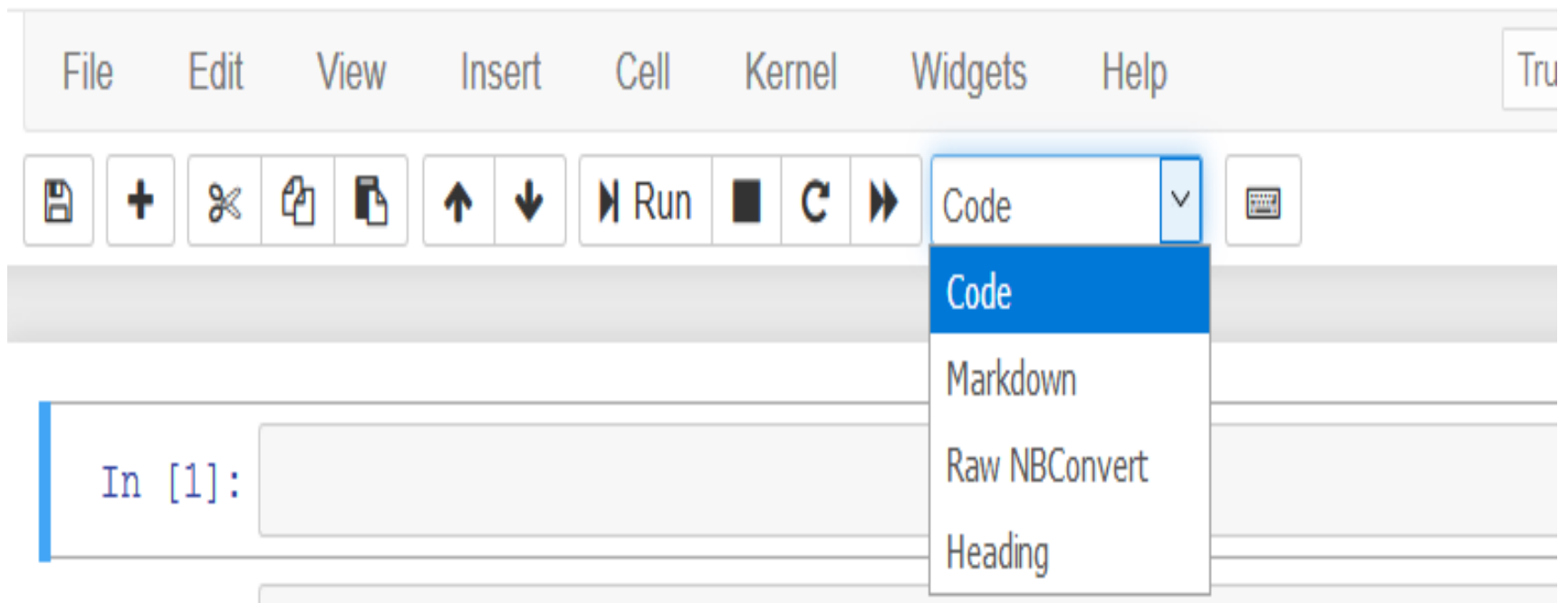
Text File

Folder

Terminal

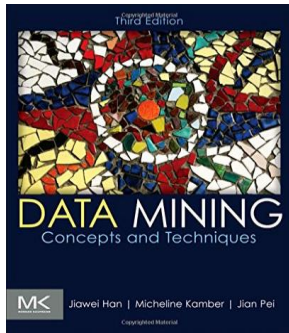
# Python - Découverte et Installation

 jupyter **Untitled** (unsaved changes)



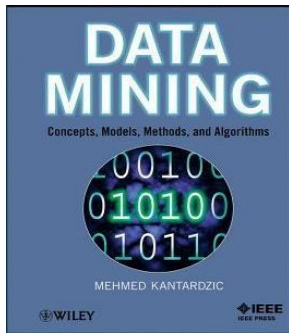
<https://www.youtube.com/watch?v=jaw5FhWx2Bk>

# Ressources



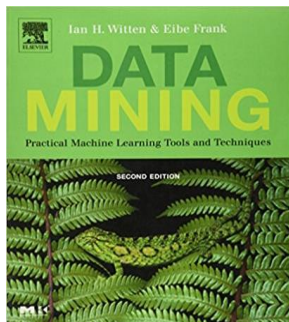
## **Data Mining : concepts and techniques, 3rd Edition**

- ✓ Auteur : Jiawei Han, Micheline Kamber, Jian Pei
- ✓ Éditeur : Morgan Kaufmann Publishers
- ✓ Edition : Juin 2011 - 744 pages - ISBN 9780123814807



## **Data Mining : concepts, models, methods, and algorithms**

- ✓ Auteur : Mehmed Kantardzi
- ✓ Éditeur : John Wiley & Sons
- ✓ Edition : Aout 2011 – 552 pages - ISBN : 9781118029121



## **Data Mining: Practical Machine Learning Tools and Techniques**

- ✓ Auteur : Ian H. Witten & Eibe Frank
- ✓ Éditeur : Morgan Kaufmann Publishers
- ✓ Edition : Juin 2005 - 664 pages - ISBN : 0-12-088407-0