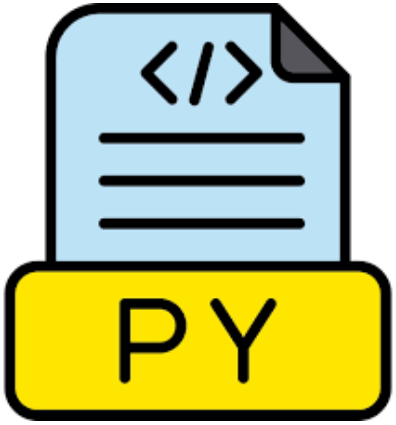
Apprentissage Automatique

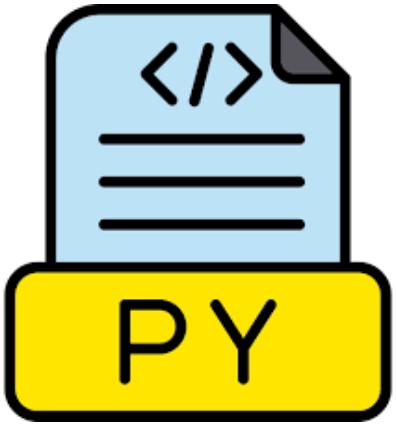
Machine Learning

Python – Découverte et Installation

- **Série TP 1 – Découverte Python**



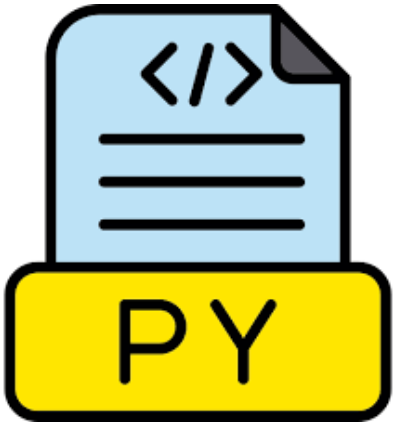
Partie 1 - Découverte



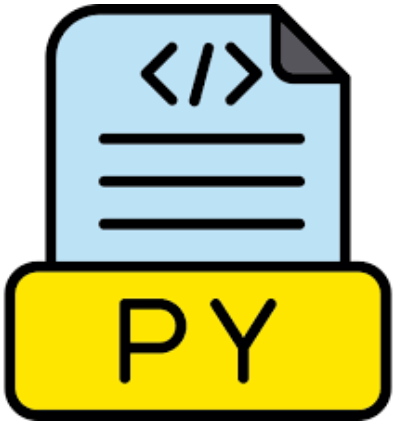
Partie 2 - Exercices

Motifs Fréquents et Règles d’association - Apriori

- **Série TP 2 - Apriori**

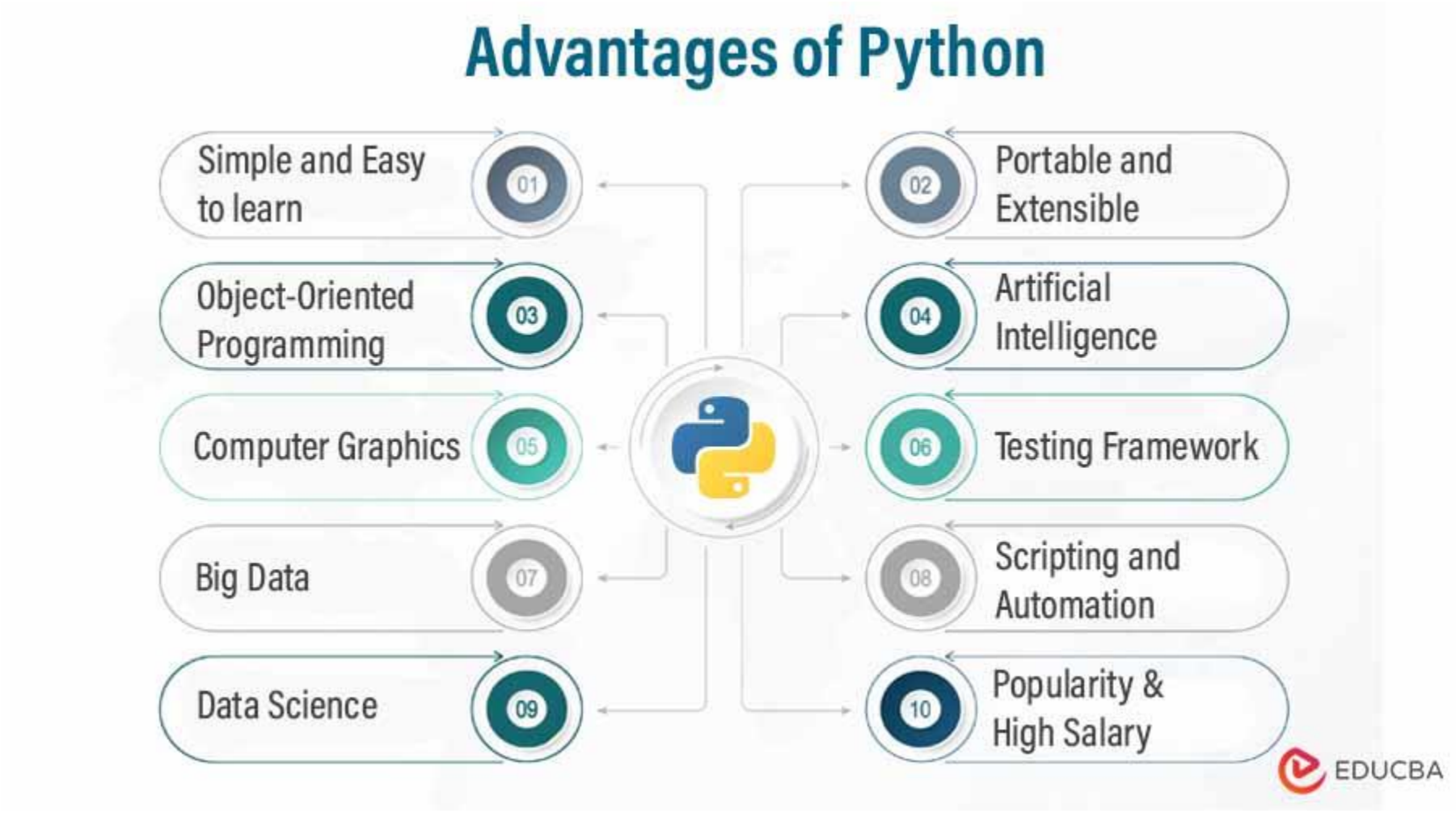


Partie 1 - Découverte

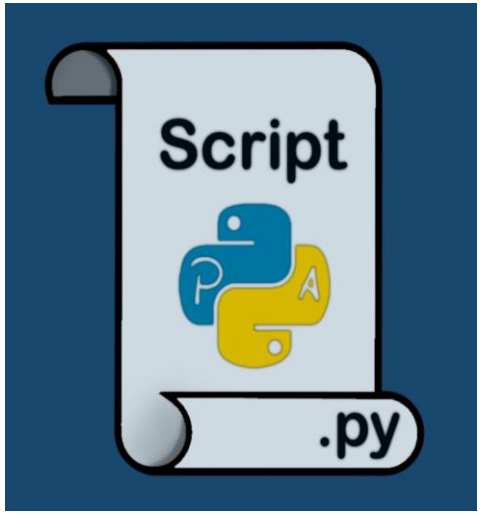


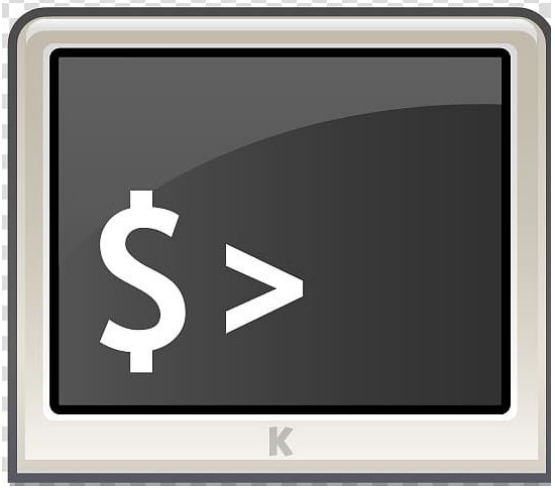
Partie 2 - Exercices

Python – Découverte et Installation



Python – Découverte et Installation





Python – Découverte et Installation

- Lecture / Ecriture & String formatting
- Variables : int, float, str, boolean
- Assignation multiple
- If.. elif .. else
- For loops & while loops

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

- Functions
- Python Datatypes – Lists (decl, init vide/constrct, 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

Python – Découverte et Installation

FEATURE	LIST	TUPLE	SET	DICTIONARY
Constructor	`[ ]` or `list()`	`( )` or `tuple()`	`{}`* or `set()`	`{ }` or `dict()`
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:

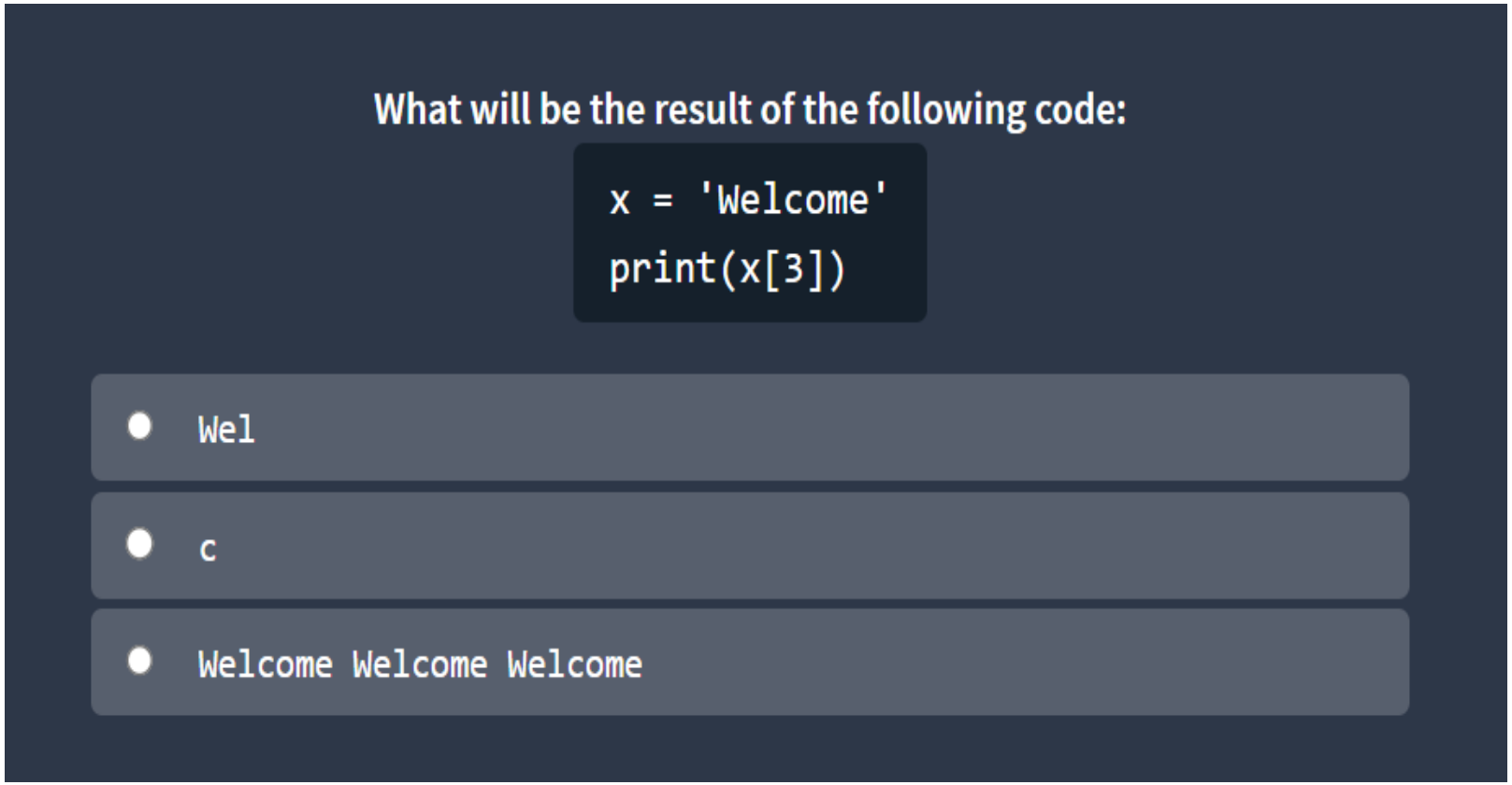
- **List** is a collection which is ordered and changeable. Allows duplicate members.
- **Tuple** is a collection which is ordered and unchangeable. Allows duplicate members.
- **Set** is a collection which is unordered, unchangeable*, and unindexed. No duplicate members.
- **Dictionary** is a collection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

https://www.w3schools.com/python

Python – Découverte et Installation



https://www.w3schools.com/python/python_exercises.asp

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)
```

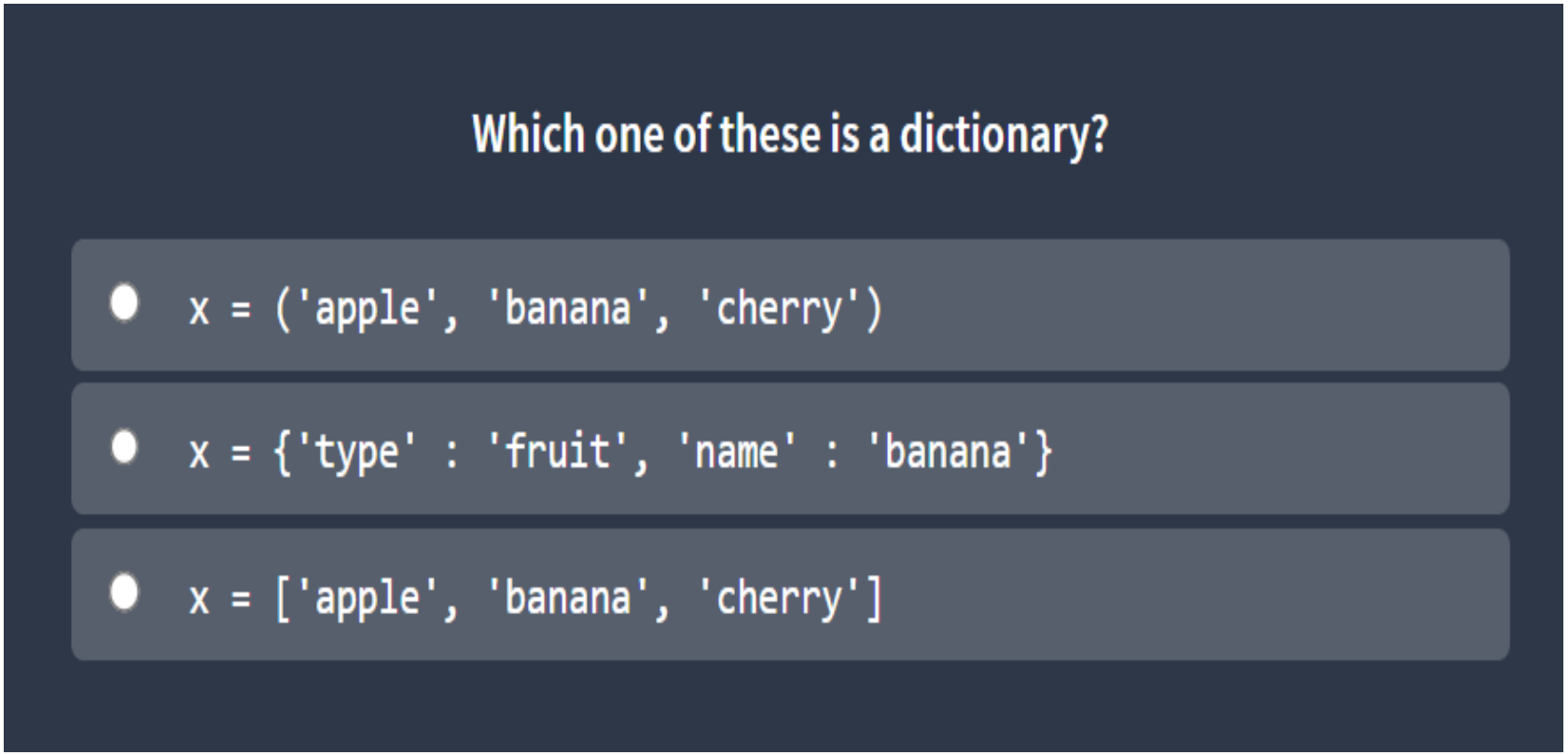
Python – Découverte et Installation

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



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`?

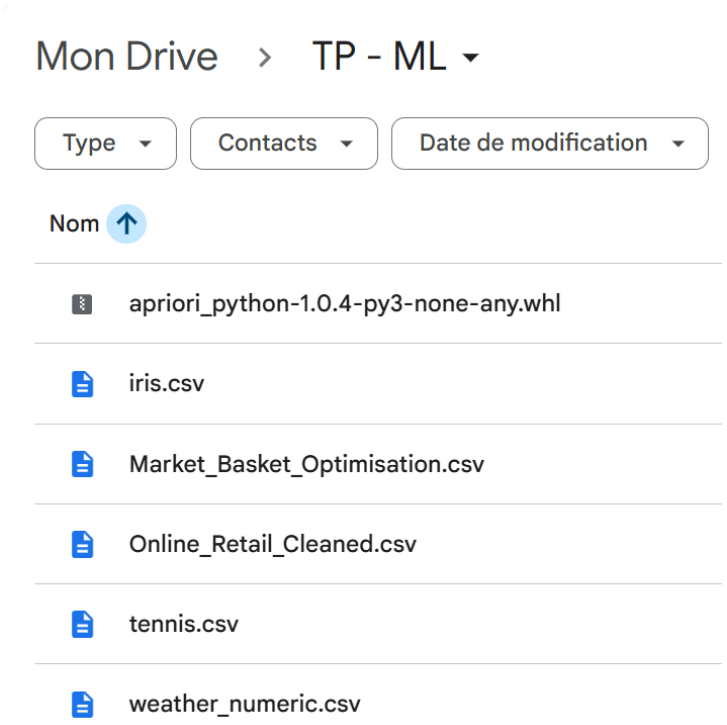
- `x{'type'} = 'berry'`
- `x['type'] = 'berry'`
- `x.get('type') = 'berry'`

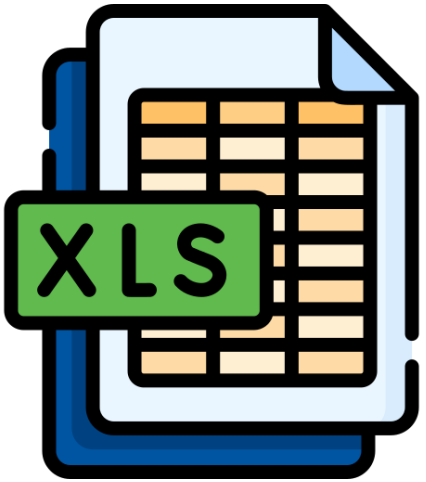
Python – Découverte et Installation

- Install Anaconda : Download from : https://repo.anaconda.com/archive/
  - Anaconda3-2022.05-Windows-x86_64.exe
  - Anaconda3-2022.05-Windows-x86.exe

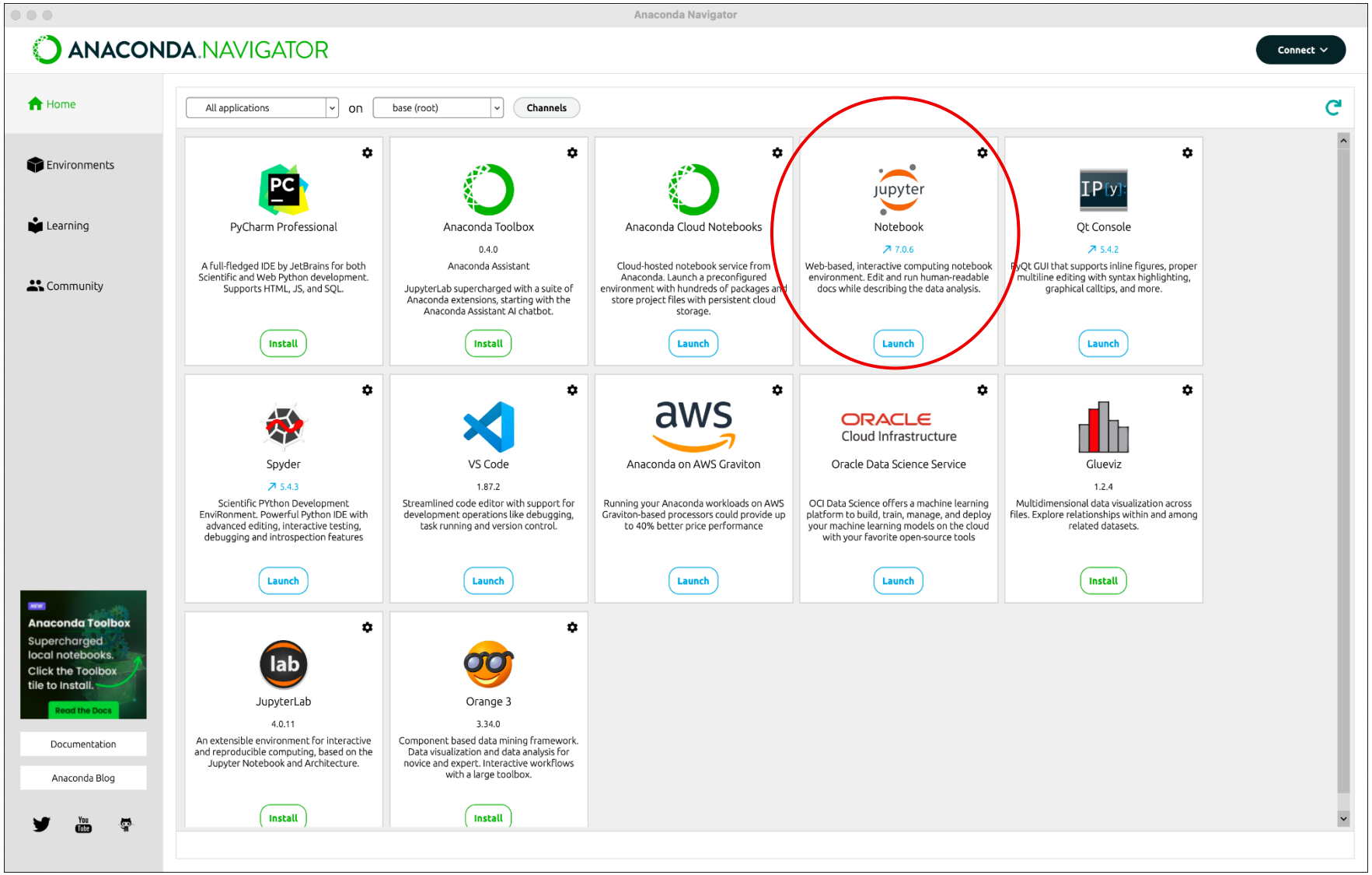
Python – Découverte et Installation

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

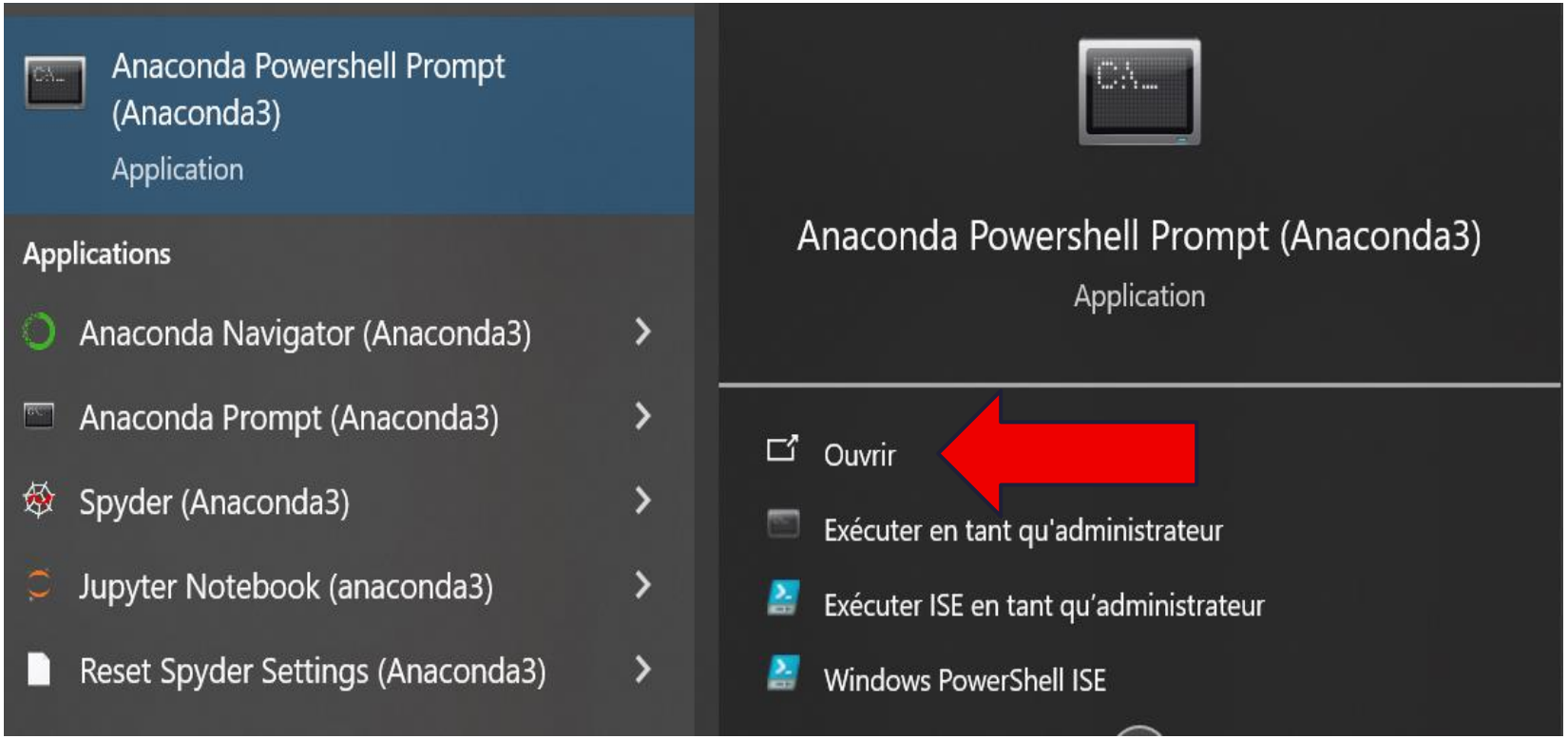




Python – Découverte et Installation



Python – Découverte et Installation



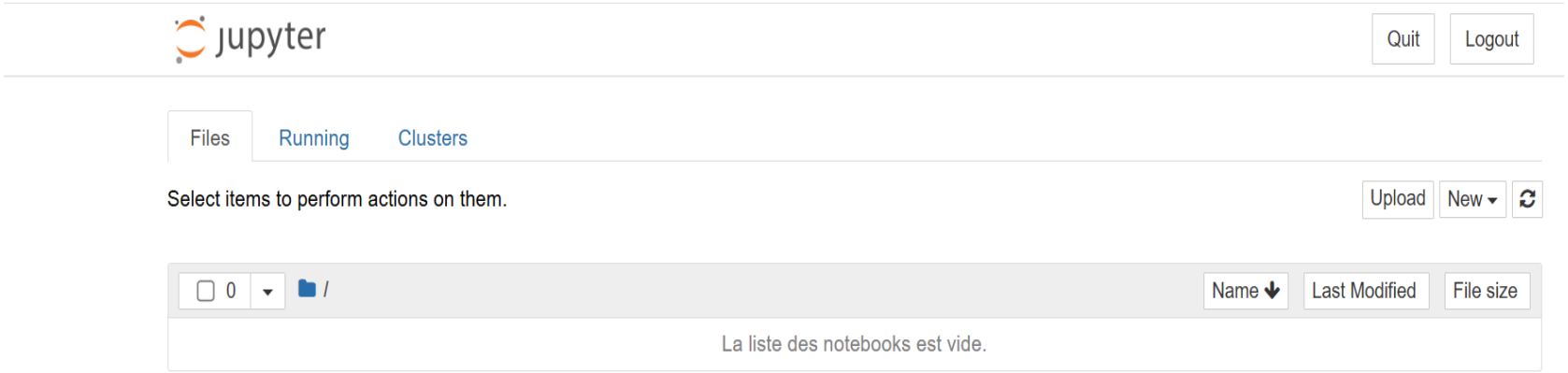
Python – Découverte et Installation

Anaconda Powershell Prompt (Anaconda3)

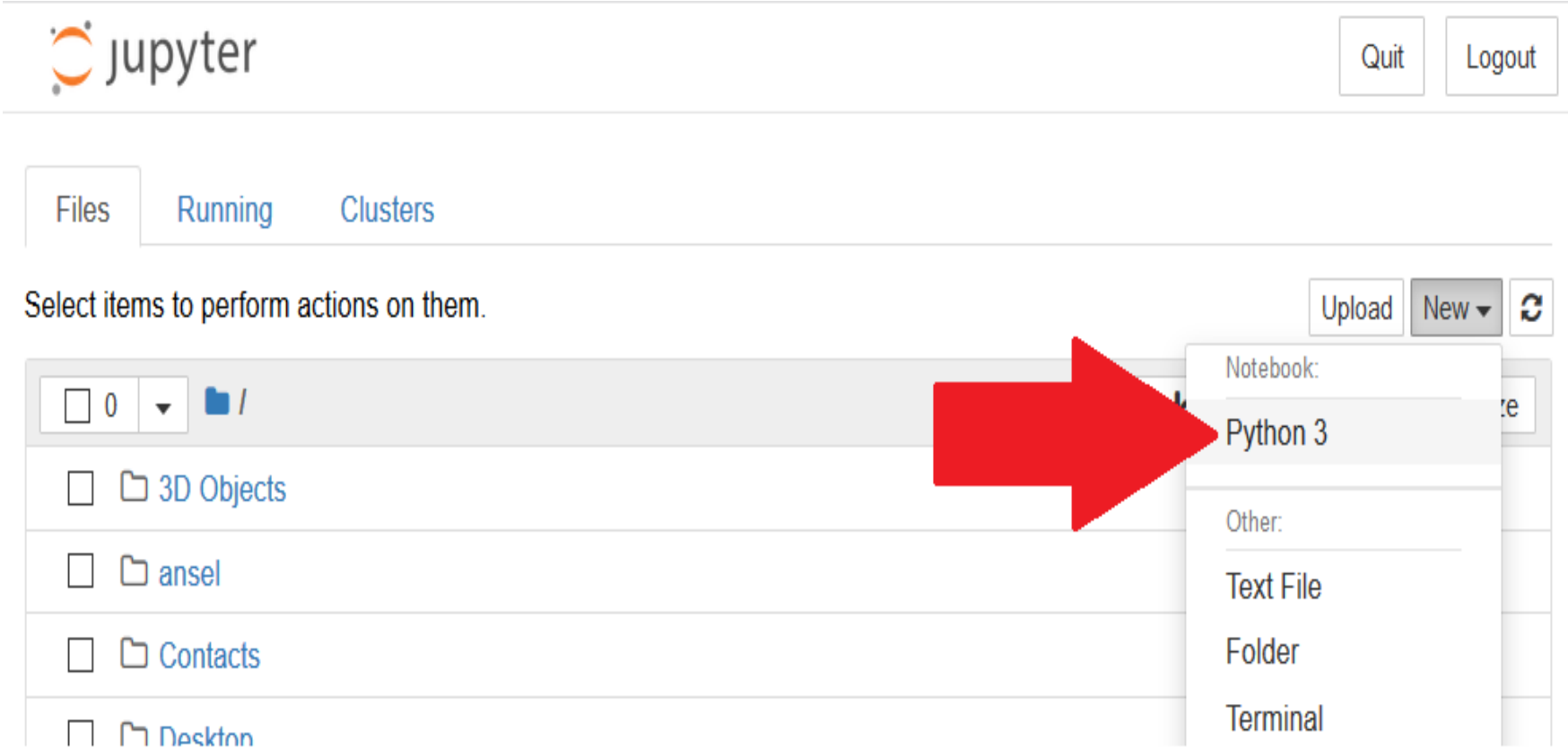
```
(base) PS C:\Users\LeE> cd "C:\Users\LeE\Documents\TP ML"
(base) PS C:\Users\LeE\Documents\TP ML> jupyter notebook
```

Python – Découverte et Installation

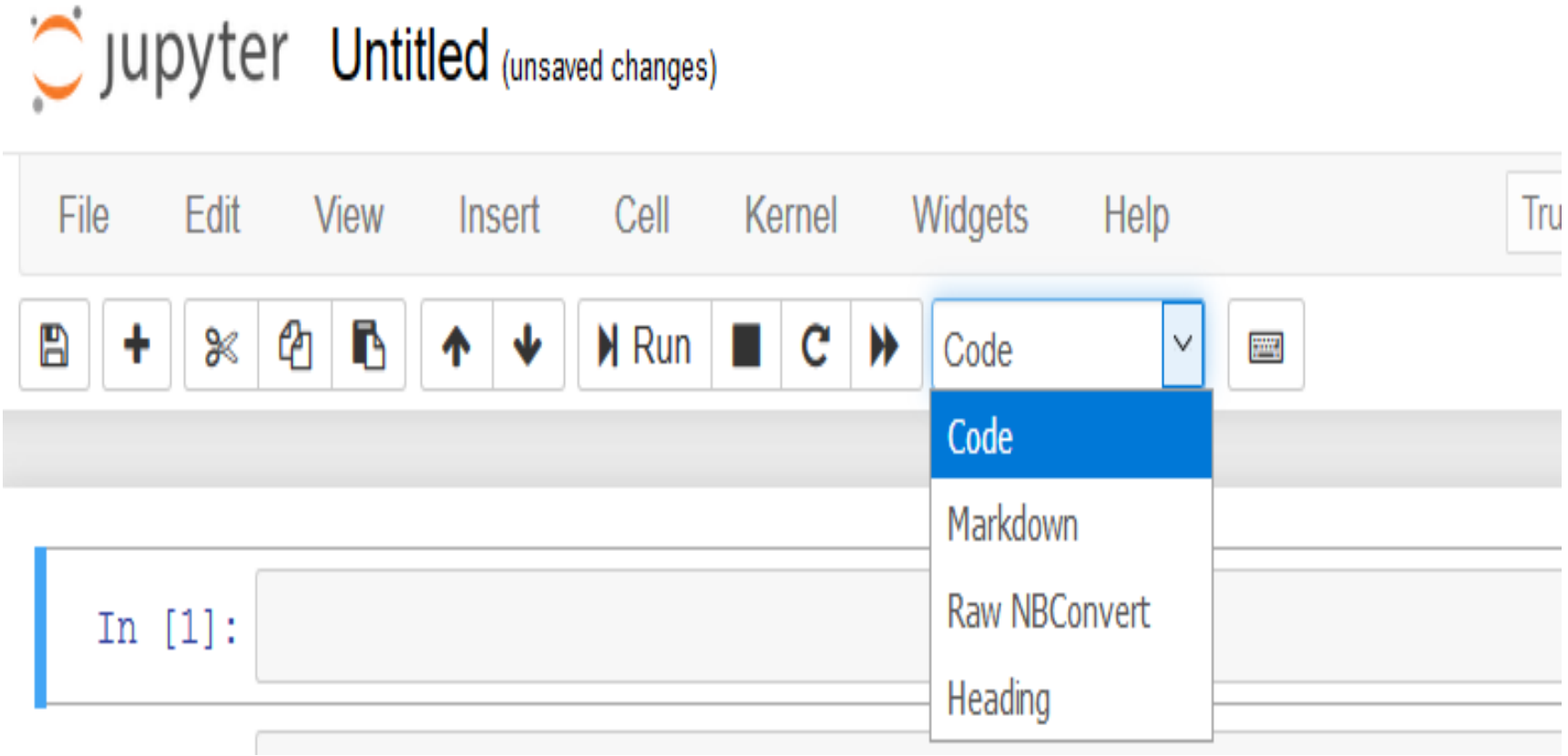
http://localhost:8888/tree



Python – Découverte et Installation

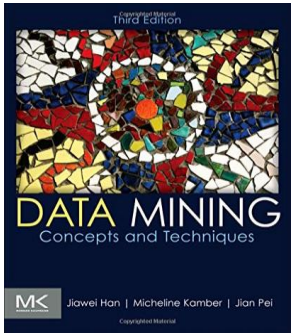


Python – Découverte et Installation



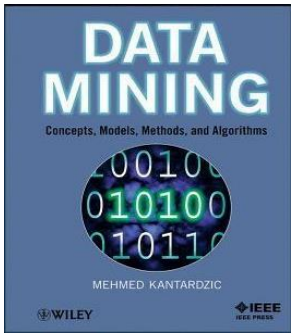
https://www.youtube.com/watch?v=jaw5FhWx2Bk

Ressources



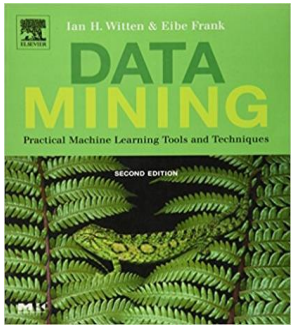
Data Mining : concepts and techniques, 3rd Edition

- ✓ 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