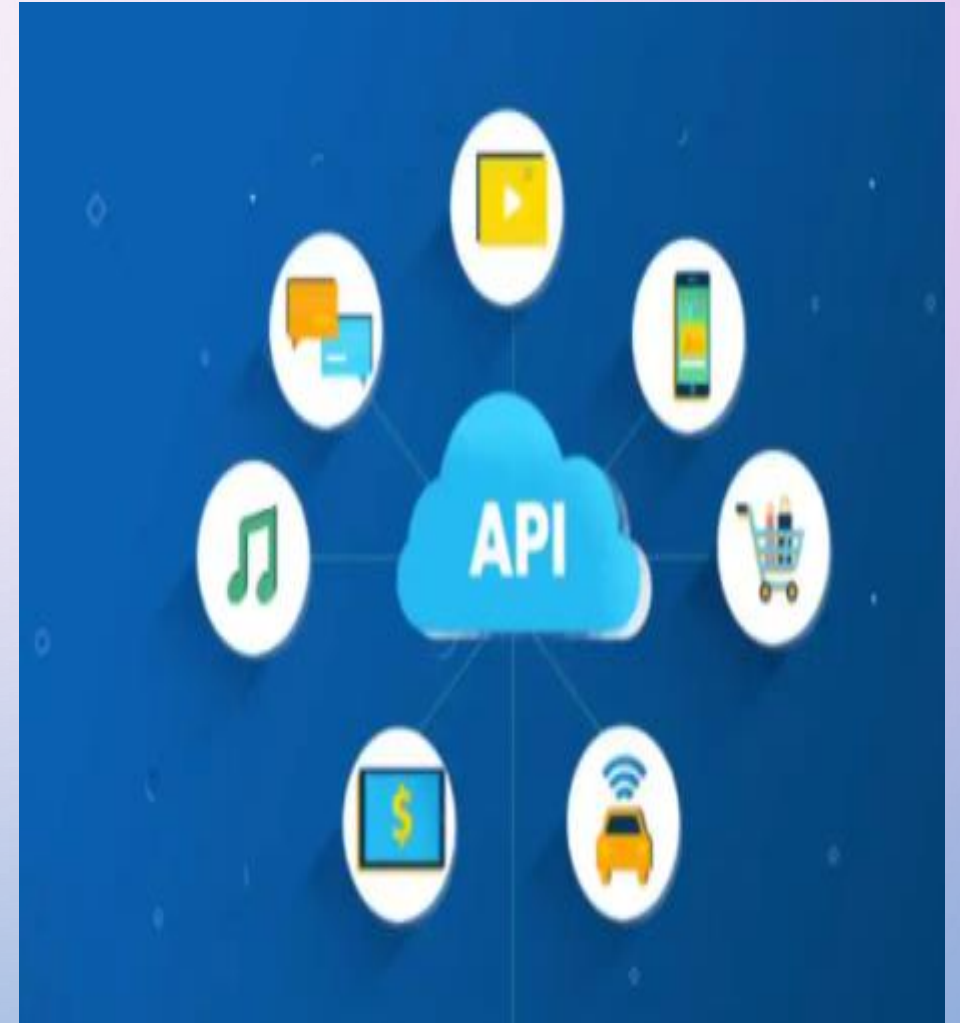


LISTE DES UNIVERSITES DANS LE MONDE

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Importation des Bibliothèques

```
Entrée [1]: import pyodbc # Elle donne accès aux bases de données ODBC  
import sys  
import requests # Elle permet d'utiliser le protocole http  
import json # un format très simple d'échange de données  
import pandas # Elle permet de manipuler facilement des données à analyser
```

Récupération de la page 'universities.hipolabs.com' et l'afficher dans le terminal

```
Entrée [2]: r1=requests.get("http://universities.hipolabs.com/search?name=Unive
```

```
Entrée [4]: print(r1)
```

```
<Response [200]>
```

Nous avons construit un objet requests qui va être envoyé au serveur pour récupérer les données

Ce code ne fait donc qu'envoyer une requête GET à universities.hipolabs.com

Process d'accès au contenu des réponses

Entrée [5]: `dat=r1.json()` *#Returne le contenu sous forme json*

Entrée [6]: `dat`

```
Out[6]: [{ 'alpha_two_code': 'US',  
  'web_pages': ['http://www.ipfw.edu/'],  
  'country': 'United States',  
  'state-province': None,  
  'name': 'Indiana University/Purdue University at Fort Wayne',  
  'domains': ['ipfw.edu']},  
  { 'alpha_two_code': 'US',  
    'web_pages': ['http://www.iupui.edu/'],  
    'country': 'United States',  
    'state-province': None,  
    'name': 'Indiana University/Purdue University at Indianapolis',  
    'domains': ['iupui.edu']},  
  { 'alpha_two_code': 'US',  
    'web_pages': ['http://www.iupuc.edu/'],  
    'country': 'United States',  
    'state-province': None,  
    'name': 'Indiana University/Purdue University at Columbus',  
    'domains': ['iupuc.edu']},  
  { 'alpha_two_code': 'PL',  
    'web_pages': ['http://www.wsb-nlu.edu.pl/']}]
```

Dictionnaire de données de l'API

```
Entrée [7]: len(dat) #la fonction len retourne la longueur de la liste (Données)
```

```
Out[7]: 5004
```

```
Entrée [8]: dat[0].keys()
```

```
Out[8]: dict_keys(['alpha_two_code', 'web_pages', 'country', 'state-province', 'name', 'domains'])
```

```
Entrée [9]: import pandas as pd  
dataf= pd.DataFrame(data=dat,columns=['alpha_two_code', 'web_pages', 'country', 'state-province', 'name', 'domains'])
```

La liste des attributs trouvés sont: Alpha_two_code – Web_page – Country- State_province
Name - domains

Liste des attributs de l'API « Universités dans le monde »

```
In[10]: dataf
```

```
Out[10]:
```

	alpha_two_code	web_pages	country	state-province	name	dom
0	US	[http://www.ipfw.edu/]	United States	None	Indiana University/Purdue University at Fort W...	[ipfw.
1	US	[http://www.iupui.edu/]	United States	None	Indiana University/Purdue University at Indian...	[iupui.
2	US	[http://www.iupuc.edu/]	United States	None	Indiana University/Purdue University at Columbus	[iupuc.
3	PL	[http://www.wsb-nlu.edu.pl/]	Poland	None	Higher School o Business/National Louis Univer...	[wsb-nlu.ed
4	SK	[http://www.ukf.sk/]	Slovakia	None	University Konstantina Filozov in Nitra	[uk
...
4999	KR	[http://www.howon.ac.kr/]	Korea, Republic of	None	Chonbuk Sanup University of Technology (Howon ...	[howon.a
5000	RU	[http://www.gti.spb.ru/]	Russian Federation	None	St. Petersburg State Institute of Technology (...	[gti.sp
5001	RU	[http://www.mirea.ru/]	Russian Federation	None	Moscow State Institute of Radiotechnics, Elect...	[mire
5002	RU	[http://www.mpei.ac.ru/]	Russian Federation	None	Moscow Power Engineering Institute (Technical ...	[mpei.a
5003	MY	[http://www.utar.edu.my/]	Malaysia	None	Tunku Abdul Rahman University (Chinese Univers...	[utar.edu

5004 rows x 6 columns

Construction de schéma de données pour stocker les données de l'API

```
def inser():
    conn = pyodbc.connect('Driver={SQL Server};'
                          'Server=LAPTOP-LAFG171K;'
                          'Database=UNIV;'
                          'Trusted_Connection=yes;')

    cursor = conn.cursor()
    #ref=(alpha_two_code,web_pages,country,name,domains)
    for index,row in dataf.iterrows():
        a=dataf['alpha_two_code'][index]
        w=dataf['web_pages'][index]
        c=dataf['country'][index]
        s=dataf['state-province'][index]
        n=dataf['name'][index]
        d=dataf['domains'][index]
        cursor.execute("INSERT INTO dbo.tab4 VALUES (?, ?, ?, ?, ?, ?, ?)",str(a),str(w),str(c),str(s),str(n),str(d))

    cursor.commit()
    cursor.close()
```

Création de la base de donnée « UNIVERSITESAPI »

```
---Création de la base de données UNIVERSITESAPI  
CREATE DATABASE UNIV;  
---Création de la table université  
CREATE table tab4(  
id INT PRIMARY KEY NOT NULL,  
initiales varchar(200),  
page_web varchar(200),  
pays varchar(200),  
state_province varchar(200),  
nom_universite varchar(200),  
domaine varchar(200));
```

```
select * from tab4;
```

175 %

Résultats

Messages

id	initiales	page_web	pays	state_province	nom_universite	domaine
----	-----------	----------	------	----------------	----------------	---------

Affichage des listes des universités dans le monde avec tous les attributs

Résultats Messages						
	initiales	page_web	pays	state_province	nom_universite	domaine
1	US	['http://www.ipfw.edu/']	United States	None	Indiana University/Purdue University at Fort Wayne	['ipfw.edu']
2	US	['http://www.iupui.edu/']	United States	None	Indiana University/Purdue University at Indianapolis	['iupui.edu']
3	US	['http://www.iupuc.edu/']	United States	None	Indiana University/Purdue University at Columbus	['iupuc.edu']
4	PL	['http://www.wsb-nlu.edu.pl/']	Poland	None	Higher School o Business/National Louis Universi...	['wsb-nlu.edu.pl']
5	SK	['http://www.ukf.sk/']	Slovakia	None	University Konstantina Filozov in Nitra	['ukf.sk']
6	AL	['http://www.unipavaresia.edu.al/']	Albania	None	University "Pavaresia" Vlore	['unipavaresia.edu.al']
7	CH	['http://www.uccr.edu/']	Switzerland	None	University Center "César Ritz"	['uccr.edu']
8	IS	['http://www.hsvest.is/']	Iceland	None	University Centre of the Westfjords	['hsvest.is']
9	GB	['http://www.ucs.ac.uk/']	United Kingdom	None	University Campus Suffolk	['ucs.ac.uk']
10	CA	['http://www.universitycanadawest.ca/']	Canada	None	University Canada West	['universitycanadawest.ca']
11	IE	['http://www.ucc.ie/']	Ireland	None	University College Cork	['ucc.ie']
12	IE	['http://www.ucd.ie/']	Ireland	None	University College Dublin	['ucd.ie']
13	BH	['http://www.ucb.edu.bh/']	Bahrain	None	University College Bahrain	['ucb.edu.bh']
14	GB	['http://www.ucl.ac.uk/']	United Kingdom	None	University College London, University of London	['ucl.ac.uk']
15	SE	['http://www.hkr.se/']	Sweden	None	University College of Kristianstad	['hkr.se']
16	SE	['http://www.hb.se/']	Sweden	None	University College of Borås	['hb.se']
17	SE	['http://www.hig.se/']	Sweden	None	University College of Gävle	['hig.se']
18	CA	['http://www.uccb.ns.ca/']	Canada	None	University College of Cape Breton	['uccb.ns.ca']
19	SE	['http://www.his.se/']	Sweden	None	University College of Skövde	['his.se']
20	CA	['http://www.ustboniface.mb.ca/']	Canada	None	University College of Saint-Boniface	['ustboniface.mb.ca']
21	PS	['http://www.ucas.edu.ps/']	Palestine, Stat...	None	University College of Applied Sciences	['ucas.edu.ps']
22	SE	['http://www.konstfack.se/']	Sweden	None	University College of Arts, Crafts and Design	['konstfack.se']
23	IR	['http://www.ucna.info/']	Iran	East Azerbaij...	University College of Nabi Akram	['ucna.info']

Exemple 1: Afficher la liste des universités en US

```
select * from tab4 where initiales='US';  
select * from tab4 where initiales='FR';
```

161 %

Résultats

Messages

	initiales	page_web	pays	state_province	nom_universite	domaine
1	US	['http://www.ipfw.edu/']	United States	None	Indiana University/Purdue University at Fort Wayne	['ipfw.edu']
2	US	['http://www.iupui.edu/']	United States	None	Indiana University/Purdue University at Indianapolis	['iupui.edu']
3	US	['http://www.iupuc.edu/']	United States	None	Indiana University/Purdue University at Columbus	['iupuc.edu']
4	US	['http://www.uakron.edu/']	United States	None	University of Akron	['uakron.edu']
5	US	['http://www.wayne.uakron.edu']	United States	None	University of Akron Wayne College	['wayne.uakron.edu']
6	US	['http://www.uaccm.edu/']	United States	None	University of Arkansas Community College-?Morril...	['uaccm.edu']
7	US	['http://www.uaccb.edu/']	United States	None	University of Arkansas Community College-?Bates...	['uaccb.edu']
8	US	['http://www.uacch.edu/']	United States	None	University of Arkansas Community College-?Hope	['uacch.edu']
9	US	['http://www.uamont.edu/']	United States	None	University of Arkansas - Monticello	['uamont.edu']
10	US	['http://www.uark.edu/']	United States	None	University of Arkansas - Fayetteville	['uark.edu']
11	US	['http://www.uafs.edu/']	United States	None	University of Arkansas - Fort Smith	['uafs.edu']
12	US	['http://www.ualr.edu/']	United States	None	University of Arkansas - Little Rock	['ualr.edu']
13	US	['https://www.uasys.edu/']	United States	None	University of Arkansas System eVersity	['uasys.edu']
14	US	['http://www.uams.edu/']	United States	None	University of Arkansas for Medical Sciences	['uams.edu']
15	US	['http://www.arizona.edu/']	United States	None	University of Arizona	['arizona.edu']
16	US	['http://www.uat.edu/']	United States	None	University of Advancing Technology	['uat.edu']
17	US	['http://www.alaska.edu/']	United States	None	University of Alaska	['alaska.edu']
18	US	['http://www.uas.alaska.edu/']	United States	None	University of Alaska - Southeast	['uas.alaska.edu']
19	US	['http://www.uaa.alaska.edu/']	United States	None	University of Alaska - Anchorage	['uaa.alaska.edu']
20	US	['http://www.uaf.edu/']	United States	None	University of Alaska - Fairbanks	['uaf.edu']
21	US	['http://www.uah.edu/']	United States	None	University of Alabama at Huntsville	['uah.edu']

Exemple 2: Afficher la liste des universités en France

```
select * from tab4 where initiales='FR';
```

161 %

Résultats Messages

	initiales	page_web	pays	state_province	nom_universite	domaine
1	FR	['http://www.aup.fr/']	France	None	American University of Paris	['aup.fr']
2	FR	['http://www.bip.lon.ac.uk/']	France	None	British Institute in Paris, University of London	['bip.lon.ac.uk']
3	FR	['http://www.schillerstrasbourg.com/']	France	None	Schiller International University, Strasbourg	['schillerstrasbourg.com']
4	FR	['http://www.schillerparis.com/']	France	None	Schiller International University, Paris	['schillerparis.com']
5	FR	['http://www.aup.fr/']	France	None	American University of Paris	['aup.fr']
6	FR	['http://www.bip.lon.ac.uk/']	France	None	British Institute in Paris, University of London	['bip.lon.ac.uk']
7	FR	['http://www.schillerstrasbourg.com/']	France	None	Schiller International University, Strasbourg	['schillerstrasbourg.com']
8	FR	['http://www.schillerparis.com/']	France	None	Schiller International University, Paris	['schillerparis.com']
9	FR	['http://www.aup.fr/']	France	None	American University of Paris	['aup.fr']
10	FR	['http://www.bip.lon.ac.uk/']	France	None	British Institute in Paris, University of London	['bip.lon.ac.uk']
11	FR	['http://www.schillerstrasbourg.com/']	France	None	Schiller International University, Strasbourg	['schillerstrasbourg.com']
12	FR	['http://www.schillerparis.com/']	France	None	Schiller International University, Paris	['schillerparis.com']
13	FR	['http://www.aup.fr/']	France	None	American University of Paris	['aup.fr']
14	FR	['http://www.bip.lon.ac.uk/']	France	None	British Institute in Paris, University of London	['bip.lon.ac.uk']
15	FR	['http://www.schillerstrasbourg.com/']	France	None	Schiller International University, Strasbourg	['schillerstrasbourg.com']
16	FR	['http://www.schillerparis.com/']	France	None	Schiller International University, Paris	['schillerparis.com']
17	FR	['http://www.aup.fr/']	France	None	American University of Paris	['aup.fr']
18	FR	['http://www.bip.lon.ac.uk/']	France	None	British Institute in Paris, University of London	['bip.lon.ac.uk']
19	FR	['http://www.schillerstrasbourg.com/']	France	None	Schiller International University, Strasbourg	['schillerstrasbourg.com']