Le but de ce petit code est de pourvoir calculer La prportion de population urbaine dans chaque pays et par an.

In [1]:
```python
#Importation de la librairie pandas
import pandas as pd
#Importation de la librairie numpy
import numpy as np
```

In [2]:
```python
#Importation du fichier Population Granularité.csv
population = pd.read_csv('Population.csv')
```

In [3]:
```python
population
```

Out[3]:

	Country	Granularity	Year	Population
0	Afghanistan	Total	2000	20779.953
1	Afghanistan	Male	2000	10689.508
2	Afghanistan	Female	2000	10090.449
3	Afghanistan	Rural	2000	15657.474
4	Afghanistan	Urban	2000	4436.282
...	...	...	...	...
20909	Zimbabwe	Total	2018	14438.802
20910	Zimbabwe	Male	2018	6879.119
20911	Zimbabwe	Female	2018	7559.693
20912	Zimbabwe	Rural	2018	11465.748
20913	Zimbabwe	Urban	2018	5447.513

20914 rows × 4 columns

In [4]:
```python
#Isolation des cellules total
population_total=population.loc[population['Granularity']=='Total']
population_total
```

Out[4]:

	Country	Granularity	Year	Population
0	Afghanistan	Total	2000	20779.953
5	Afghanistan	Total	2001	21606.988
10	Afghanistan	Total	2002	22600.770
15	Afghanistan	Total	2003	23680.871
20	Afghanistan	Total	2004	24726.684
...	...	...	...	...
20889	Zimbabwe	Total	2014	13586.707
20894	Zimbabwe	Total	2015	13814.629
20899	Zimbabwe	Total	2016	14030.331
20904	Zimbabwe	Total	2017	14236.595
20909	Zimbabwe	Total	2018	14438.802

4430 rows × 4 columns

In [5]:
```python
#Jointure des tables
population_joint=pd.merge(population,population_total,on=['Country','Year'],how='left')
population_joint
```

Out[5]:

	Country	Granularity_x	Year	Population_x	Granularity_y	Population_y
0	Afghanistan	Total	2000	20779.953	Total	20779.953
1	Afghanistan	Male	2000	10689.508	Total	20779.953
2	Afghanistan	Female	2000	10090.449	Total	20779.953
3	Afghanistan	Rural	2000	15657.474	Total	20779.953
4	Afghanistan	Urban	2000	4436.282	Total	20779.953
...	...	...	...	...	...	...
20909	Zimbabwe	Total	2018	14438.802	Total	14438.802
20910	Zimbabwe	Male	2018	6879.119	Total	14438.802
20911	Zimbabwe	Female	2018	7559.693	Total	14438.802
20912	Zimbabwe	Rural	2018	11465.748	Total	14438.802
20913	Zimbabwe	Urban	2018	5447.513	Total	14438.802

20914 rows × 6 columns

In [6]:
```python
#Calcul de la proportion de population
population_joint['Proportion']=100*population_joint['Population_x']/population_joint['Po
population_joint
```

Out[6]:

	Country	Granularity_x	Year	Population_x	Granularity_y	Population_y	Proportion
0	Afghanistan	Total	2000	20779.953	Total	20779.953	100.000000
1	Afghanistan	Male	2000	10689.508	Total	20779.953	51.441445
2	Afghanistan	Female	2000	10090.449	Total	20779.953	48.558575
3	Afghanistan	Rural	2000	15657.474	Total	20779.953	75.348938
4	Afghanistan	Urban	2000	4436.282	Total	20779.953	21.348855
...	...	...	...	...	...	...	...
20909	Zimbabwe	Total	2018	14438.802	Total	14438.802	100.000000
20910	Zimbabwe	Male	2018	6879.119	Total	14438.802	47.643281
20911	Zimbabwe	Female	2018	7559.693	Total	14438.802	52.356788
20912	Zimbabwe	Rural	2018	11465.748	Total	14438.802	79.409275
20913	Zimbabwe	Urban	2018	5447.513	Total	14438.802	37.728289

20914 rows × 7 columns

In [7]:
```python
#renommage de certaines colonnes
population_joint=population_joint.rename(columns={'Population_y':'Population totale'})
population_joint=population_joint.rename(columns={'Granularity_x':'Granularity'})
```

```
population_joint=population_joint.rename(columns={'Population_x':'Population'})
population_joint
```

Out[7]:

	Country	Granularity	Year	Population	Granularity_y	Population totale	Proportion
0	Afghanistan	Total	2000	20779.953	Total	20779.953	100.000000
1	Afghanistan	Male	2000	10689.508	Total	20779.953	51.441445
2	Afghanistan	Female	2000	10090.449	Total	20779.953	48.558575
3	Afghanistan	Rural	2000	15657.474	Total	20779.953	75.348938
4	Afghanistan	Urban	2000	4436.282	Total	20779.953	21.348855
...	...	...	...	...	...	...	...
20909	Zimbabwe	Total	2018	14438.802	Total	14438.802	100.000000
20910	Zimbabwe	Male	2018	6879.119	Total	14438.802	47.643281
20911	Zimbabwe	Female	2018	7559.693	Total	14438.802	52.356788
20912	Zimbabwe	Rural	2018	11465.748	Total	14438.802	79.409275
20913	Zimbabwe	Urban	2018	5447.513	Total	14438.802	37.728289

20914 rows × 7 columns

In [8]:
```
#Suppression des colonnes en trop
population_joint=population_joint.drop(columns='Granularity_y')
population_joint
```

Out[8]:

	Country	Granularity	Year	Population	Population totale	Proportion
0	Afghanistan	Total	2000	20779.953	20779.953	100.000000
1	Afghanistan	Male	2000	10689.508	20779.953	51.441445
2	Afghanistan	Female	2000	10090.449	20779.953	48.558575
3	Afghanistan	Rural	2000	15657.474	20779.953	75.348938
4	Afghanistan	Urban	2000	4436.282	20779.953	21.348855
...	...	...	...	...	...	...
20909	Zimbabwe	Total	2018	14438.802	14438.802	100.000000
20910	Zimbabwe	Male	2018	6879.119	14438.802	47.643281
20911	Zimbabwe	Female	2018	7559.693	14438.802	52.356788
20912	Zimbabwe	Rural	2018	11465.748	14438.802	79.409275
20913	Zimbabwe	Urban	2018	5447.513	14438.802	37.728289

20914 rows × 6 columns

In [9]:
```
#écriture du dataframe dans un fichier CSV
population_joint.to_csv('Proportion_population',sep=',', index=False)
```

In [ ]: