

```
In [13]: # https://www.machinelearningplus.com/python/101-pandas-exercises-python/
```

```
In [7]: %pip install pandas
        %pip install jupyter_contrib_nbextensions

import pandas as pd

url = 'https://raw.githubusercontent.com/edlich/eternalrepo/master/DS-WAHL'
df = pd.read_csv(url)
df
```

```
Requirement already satisfied: pandas in /home/guido/anaconda3/lib/python3.8/site-packages (1.1.3)
Requirement already satisfied: numpy>=1.15.4 in /home/guido/anaconda3/lib/python3.8/site-packages (from pandas) (1.19.2)
Requirement already satisfied: python-dateutil>=2.7.3 in /home/guido/anaconda3/lib/python3.8/site-packages (from pandas) (2.8.1)
Requirement already satisfied: pytz>=2017.2 in /home/guido/anaconda3/lib/python3.8/site-packages (from pandas) (2020.1)
Requirement already satisfied: six>=1.5 in /home/guido/anaconda3/lib/python3.8/site-packages (from python-dateutil>=2.7.3->pandas) (1.15.0)
Note: you may need to restart the kernel to use updated packages.
Requirement already satisfied: jupyter_contrib_nbextensions in /home/guido/anaconda3/lib/python3.8/site-packages (0.5.1)
Requirement already satisfied: notebook>=4.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (6.1.4)
Requirement already satisfied: tornado in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (6.0.4)
Requirement already satisfied: jupyter-core>=0.3.3 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (0.3.3)
Requirement already satisfied: lxml in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (4.6.1)
Requirement already satisfied: ipython-genutils in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (0.2.0)
Requirement already satisfied: jupyter-core in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (4.6.3)
Requirement already satisfied: traitlets>=4.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (5.0.5)
Requirement already satisfied: pyyaml in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (5.3.1)
Requirement already satisfied: jupyter-nbextensions-configurator>=0.4.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (0.4.1)
Requirement already satisfied: nbconvert>=4.2 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (6.0.7)
Requirement already satisfied: jupyter-highlight-selected-word>=0.1.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (0.2.0)
Requirement already satisfied: jupyter-latex-envs>=1.3.8 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter_contrib_nbextensions) (1.4.6)
Requirement already satisfied: setuptools in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter-contrib-core>=0.3.3->jupyter_contrib_nbextensions) (50.3.1.post20201107)
Requirement already satisfied: ipython in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter-latex-envs>=1.3.8->jupyter_contrib_nbextensions) (7.19.0)
Requirement already satisfied: bleach in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter_contrib_nbextensions) (3.2.1)
Requirement already satisfied: Jinja2>=2.4 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter_contrib_nbextensions)
```

(2.11.2)

Requirement already satisfied: testpath in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.4.4)

Requirement already satisfied: defusedxml in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.6.0)

Requirement already satisfied: pandocfilters>=1.4.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (1.4.3)

Requirement already satisfied: pygments>=2.4.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (2.7.2)

Requirement already satisfied: jupyterlab-pygments in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.1.2)

Requirement already satisfied: nbformat>=4.4 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (5.0.8)

Requirement already satisfied: mistune<2,>=0.8.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.8.4)

Requirement already satisfied: nbclient<0.6.0,>=0.5.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.5.1)

Requirement already satisfied: entrypoints>=0.2.2 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.3)

Requirement already satisfied: MarkupSafe>=0.23 in /home/guido/anaconda3/lib/python3.8/site-packages (from jinja2>=2.4->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (1.1.1)

Requirement already satisfied: jupyter-client>=6.1.5 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbclient<0.6.0,>=0.5.0->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (6.1.7)

Requirement already satisfied: async-generator in /home/guido/anaconda3/lib/python3.8/site-packages (from nbclient<0.6.0,>=0.5.0->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (1.10)

Requirement already satisfied: nest-asyncio in /home/guido/anaconda3/lib/python3.8/site-packages (from nbclient<0.6.0,>=0.5.0->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (1.4.2)

Requirement already satisfied: pyzmq>=13 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter-client>=6.1.5->nbclient<0.6.0,>=0.5.0->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (19.0.2)

Requirement already satisfied: python-dateutil>=2.1 in /home/guido/anaconda3/lib/python3.8/site-packages (from jupyter-client>=6.1.5->nbclient<0.6.0,>=0.5.0->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (2.8.1)

Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in /home/guido/anaconda3/lib/python3.8/site-packages (from nbformat>=4.4->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (3.2.0)

Requirement already satisfied: attrs>=17.4.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.4->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (20.3.0)

Requirement already satisfied: pyparsing>=0.14.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.4->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.17.3)

Requirement already satisfied: six>=1.11.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.4->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (1.15.0)

Requirement already satisfied: terminado>=0.8.3 in /home/guido/anaconda3/lib/python3.8/site-packages (from notebook>=4.0->jupyter\_contrib\_nbextensions) (0.9.1)

Requirement already satisfied: ipykernel in /home/guido/anaconda3/lib/python3.8/site-packages (from notebook>=4.0->jupyter\_contrib\_nbextensions) (5.3.4)

Requirement already satisfied: Send2Trash in /home/guido/anaconda3/lib/python3.8/site-packages (from notebook>=4.0->jupyter\_contrib\_nbextensions) (1.5.0)

Requirement already satisfied: prometheus-client in /home/guido/anaconda3/lib/python3.8/site-packages (from notebook>=4.0->jupyter\_contrib\_nbextensions) (0.8.0)

Requirement already satisfied: argon2-cffi in /home/guido/anaconda3/lib/python3.8/site-packages (from notebook>=4.0->jupyter\_contrib\_nbextensions) (20.1.0)

Requirement already satisfied: ptyprocess in /home/guido/anaconda3/lib/python3.8/site-packages (from terminado>=0.8.3->notebook>=4.0->jupyter\_contrib\_nbextensions) (0.6.0)

Requirement already satisfied: cffi>=1.0.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from argon2-cffi->notebook>=4.0->jupyter\_contrib\_nbextensions) (1.14.3)

Requirement already satisfied: pycparser in /home/guido/anaconda3/lib/python3.8/site-packages (from cffi>=1.0.0->argon2-cffi->notebook>=4.0->jupyter\_contrib\_nbextensions) (2.20)

Requirement already satisfied: webencodings in /home/guido/anaconda3/lib/python3.8/site-packages (from bleach->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (0.5.1)

Requirement already satisfied: packaging in /home/guido/anaconda3/lib/python3.8/site-packages (from bleach->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (20.4)

Requirement already satisfied: pickleshare in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (0.7.5)

Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (3.0.8)

Requirement already satisfied: decorator in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (4.4.2)

Requirement already satisfied: jedi>=0.10 in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (0.17.1)

Requirement already satisfied: pexpect>4.3 in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (4.8.0)

Requirement already satisfied: backcall in /home/guido/anaconda3/lib/python3.8/site-packages (from ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (0.2.0)

Requirement already satisfied: parso<0.8.0,>=0.7.0 in /home/guido/anaconda3/lib/python3.8/site-packages (from jedi>=0.10->ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (0.7.0)

Requirement already satisfied: wcwidth in /home/guido/anaconda3/lib/python3.8/site-packages (from prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0->ipython->jupyter-latex-envs>=1.3.8->jupyter\_contrib\_nbextensions) (0.2.5)

Requirement already satisfied: pyparsing>=2.0.2 in /home/guido/anaconda3/lib/python3.8/site-packages (from packaging->bleach->nbconvert>=4.2->jupyter\_contrib\_nbextensions) (2.4.7)

Out[7]:

	Name	People	Area	BIP	Currency
0	Germany	82521653	357385	3466	EUR
1	Japan	126045000	377835	4938	YEN
2	Canada	36503097	9984670	1529	CAD
3	Italy	60501718	301338	1850	EUR
4	Brazilia	208360000	8515770	1798	REAL

```
In [34]: df.info()
df.shape
df.index
df.columns
df.count
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5 entries, 0 to 4
Data columns (total 5 columns):
 #   Column      Non-Null Count  Dtype
---  -
 0   Name        5 non-null      object
 1   People      5 non-null      int64
 2   Area        5 non-null      int64
 3   BIP         5 non-null      int64
 4   Currency    5 non-null      object
dtypes: int64(3), object(2)
memory usage: 328.0+ bytes
```

```
Out[34]: <bound method DataFrame.count of          Name      People      Area      BIP Curr
ency
0   Germany      82521653      357385      3466      EUR
1     Japan      126045000      377835      4938      YEN
2   Canada      36503097      9984670      1529      CAD
3     Italy      60501718      301338      1850      EUR
4  Brazilia      208360000      8515770      1798      REAL>
```

```
In [27]: df.tail(4)
```

```
Out[27]:
```

	Name	People	Area	BIP	Currency
1	Japan	126045000	377835	4938	YEN
2	Canada	36503097	9984670	1529	CAD
3	Italy	60501718	301338	1850	EUR
4	Brazilia	208360000	8515770	1798	REAL

```
In [23]: df.loc[df['Currency'] == 'EUR']
```

```
Out[23]:
```

	Name	People	Area	BIP	Currency
0	Germany	82521653	357385	3466	EUR
3	Italy	60501718	301338	1850	EUR

```
In [19]: df_name_cur = df['Name'] + df['Currency']
df_name_cur
df_name_cru2 = df.drop(['People', 'Area', 'BIP'], axis=1)
df_name_cru2
```

```
Out[19]:
```

	Name	Currency
0	Germany	EUR
1	Japan	YEN
2	Canada	CAD
3	Italy	EUR
4	Brazilia	REAL

```
In [14]: df.loc[df['BIP'] > 2000]
```

```
Out[14]:
```

	Name	People	Area	BIP	Currency
0	Germany	82521653	357385	3466	EUR
1	Japan	126045000	377835	4938	YEN

```
In [13]: df[(df['People'] > 50000000) & (df['People'] < 150000000)]
```

```
Out[13]:
```

	Name	People	Area	BIP	Currency
0	Germany	82521653	357385	3466	EUR
1	Japan	126045000	377835	4938	YEN
3	Italy	60501718	301338	1850	EUR

```
In [14]: df
```

```
Out[14]:
```

	Name	People	Area	BIP	Currency
0	Germany	82521653	357385	3466	EUR
1	Japan	126045000	377835	4938	YEN
2	Canada	36503097	9984670	1529	CAD
3	Italy	60501718	301338	1850	EUR
4	Brazilia	208360000	8515770	1798	REAL

```
In [17]: df = df.rename(columns={'BIP': 'Bip'})  
df
```

```
Out[17]:
```

	Name	People	Area	Bip	Currency
0	Germany	82521653	357385	3466	EUR
1	Japan	126045000	377835	4938	YEN
2	Canada	36503097	9984670	1529	CAD
3	Italy	60501718	301338	1850	EUR
4	Brazilia	208360000	8515770	1798	REAL

```
In [19]: Summe_Bip = df['Bip'].sum()  
Summe_Bip
```

```
Out[19]: 13581
```

```
In [23]: df['People'].mean()
```

```
Out[23]: 102786293.6
```

```
In [25]: df['People'].sum()/5
```

```
Out[25]: 102786293.6
```

```
In [26]: df.sort_values('Name')
```

```
Out[26]:
```

	Name	People	Area	Bip	Currency
4	Brazilia	208360000	8515770	1798	REAL
2	Canada	36503097	9984670	1529	CAD
0	Germany	82521653	357385	3466	EUR
3	Italy	60501718	301338	1850	EUR
1	Japan	126045000	377835	4938	YEN

```
In [34]: import numpy as np
```

```
In [37]: df['BS'] = np.select([df['Area'] > 1000000, df['Area'] <= 1000000], ['BIG',  
df
```

```
Out[37]:
```

	Name	People	Area	Bip	Currency	BS
0	Germany	82521653	357385	3466	EUR	SMALL
1	Japan	126045000	377835	4938	YEN	SMALL
2	Canada	36503097	9984670	1529	CAD	BIG
3	Italy	60501718	301338	1850	EUR	SMALL
4	Brazilia	208360000	8515770	1798	REAL	BIG