Web Scraping with Python

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Objective: Scraping the data available here on senscritique website for movies between Page 1 and Page10 and perform the EDA.

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Required libraries

In [151]:

```
from selenium import webdriver
import time
import numpy as np
import pandas as pd
import time
import matplotlib.pyplot as plt
import seaborn as sns

# from selenium.webdriver.support.ui import Select
# from bs4 import BeautifulSoup
# from requests import get
# from time import sleep
# from random import randint
# from IPython.core.display import clear_output
# from bs4 import BeautifulSoup
```

Preparing the dataset

On the senscritique website, it is possible to filter the searches, and thus to display all the movies for one variable, such as the year or rating, etc.

There are many data available on this page. The data I want to keep for my Data Science study are:

- **The name of the movie**
- **the director**
- **the main actors**
- **type of movie**
- **duration**
- **release date**
- **rating**

So I developed a Python script using the BeautifulSoup library, which allows to parse HTML code, I limited the parsing to 10 pages, on each page there are 30 movies with all the data I want.

In [114]:

```
# déclaration des listes dans lesquelles stocker les données
Nom_du_film1 = []
Realisateur1 = []
```

```
Acteurs_principaux1 = []
Type_de_film1 = []
Duree1 = []
Date_de_sortie1 = []
rating1 = []

pages=[]
for i in range(1, 11):
    url = 'https://www.senscritique.com/liste/Bon_Films/66436#page-'+str(i)
    pages.append(url)
for page in pages:
    browser = webdriver.Chrome(executable_path="C:/chromedriver.exe")
    response=browser.get(page)
    #import time
    time.sleep(10)
    html=browser.page_source

    #Name_of_movie
    nom= browser.find_elements_by_class_name('elco-anchor')
    nom_titles = [x.text for x in nom]
    Nom_du_film1.append(nom_titles)

    #director
    Realisateur = browser.find_elements_by_class_name("elco-baseline")
    Realisateur_nom = [x.text for x in Realisateur][1::2]
    Realisateur_nom1= [i.split("avec")[0:1] for i in Realisateur_nom]
    Realisateur1.append(Realisateur_nom1)


    # main_actors
    Acteurs_principaux = browser.find_elements_by_class_name("elco-baseline")
    nom_acteurs= [x.text for x in Acteurs_principaux][1::2]
    nom_acteurs1= [i.split("avec")[1:] for i in nom_acteurs]
    Acteurs_principaux1.append(nom_acteurs1)

    #type_of_movie
    Type_de_film = browser.find_elements_by_class_name("elco-baseline")
    Type_de_fil = [x.text for x in Type_de_film][0:60:2]
    Type_de_films= [i.split('.')[2] for i in Type_de_fil]
    Type_de_film1.append(Type_de_films)


    #duration
    Duree = browser.find_elements_by_class_name("elco-baseline")
    Dureet=[x.text for x in Duree][0:60:2]
    duree1= [i.split('.')[0] for i in Dureet]
    Duree1.append(duree1)


    #release_date
    Date_de_sortie = browser.find_elements_by_class_name("elco-baseline")
    ddate_de_sortie=[x.text for x in Date_de_sortie][0:60:2]
    ddate_de_sortie1= [i.split('.')[1] for i in ddate_de_sortie]
    Date_de_sortie1.append(ddate_de_sortie1)

    #rating
    note = browser.find_elements_by_class_name("erra-global")
    rating = [x.text for x in note]
    rating1.append(rating)
```

In [115]:

```
from functools import reduce
Nom_du_film2= reduce(lambda x,y: x+y,Nom_du_film1)
Realisateurs= reduce(lambda x,y: x+y,Realisateur1)
Realisateurs2= reduce(lambda x,y: x+y,Realisateur1)
Acteurs_principauxx= reduce(lambda x,y: x+y,Acteurs_principaux1)
Acteurs_principauxo=reduce(lambda x,y: x+y,Acteurs_principauxx)
Type_de_film2= reduce(lambda x,y: x+y,Type_de_film1)
Duree2= reduce(lambda x,y: x+y,Duree1)
Date_de_sortie2= reduce(lambda x,y: x+y,Date_de_sortie1)
```

```
Acteurs_principauxo.insert(40, 'NA')
Rating2= reduce(lambda x,y: x+y,rating1)
```

Piecing everything together

We create then the following dataframe film_df we can now save our dataframe in csv sheet. for later usage.

In [116]:

```
film_df = pd.DataFrame({'Name_of_movie': Nom_du_film2,
'director': Realisateurs2,
'main_actors': Acteurs_principauxo,
'type_of_movie': Type_de_film2,
'duration': Duree2,
'release_date': Date_de_sortie2,
'rating': Rating2
})
```

In [117]:

```
film_df.to_csv('E:/A_Projects/scraped.csv', encoding='utf-8-sig', index=False, sep=';')
```

We can now save our dataframe in csv sheet.

Cleaning the scraped data

We'll clean the scraped data with those goals in mind: plotting the distribution of rating. Identifiying the rating by type of movie, Identifiying the type of movie by year, Identiying the rating mean by type of movie Consequently, our data cleaning will consist of:

```
Creating the release_year column from release_date column.
Creating type movie column from type_of_movie column (to keep only the type of movi
e went there are two or more.
Reordering the columns.
```

In [118]:

```
df = pd.read_csv('E:/A_Projects/scraped.csv', sep=';')
```

We can check the info of the df to see there are any missing values that we can fill.

In [119]:

```
print(df.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 299 entries, 0 to 298
Data columns (total 7 columns):
Name_of_movie    299 non-null object
director         299 non-null object
main_actors      298 non-null object
type_of_movie    294 non-null object
duration         299 non-null object
release_date     299 non-null object
rating           299 non-null object
dtypes: object(7)
memory usage: 16.5+ KB
None
```

With the code below we identifie precisely where the missing values are to deal with them.

In [120]:

```
null_columns=df.columns[df.isnull().any()]
```

```
df[null_columns].isnull().sum()
```

Out[120]:

```
main_actors      1
type_of_movie    5
dtype: int64
```

In [121]:

```
print(df[df.isnull().any(axis=1)].head())
```

```
          Name_of_movie                              director  \
40             Fireball       ['Film de Thanakorn Pongsuwan']
56   Ma fille, mon ange     ['Film de Alexis Durand-Brault ']
103  La Beauté du geste        ['Film de Nicole Holofcener ']
108         Soul Surfer            ['Film de Sean McNamara ']
147              Switch  ['Film de Frédéric Schoendoerffer ']

                                          main_actors type_of_movie  \
40                                                NaN           NaN
56        Michel Côté, Karine Vanasse, Dominique Leduc           NaN
103   Oliver Platt, Catherine Keener, Elizabeth Keener           NaN
108          AnnaSophia Robb, Helen Hunt, Dennis Quaid           NaN
147        Eric Cantona, Aurélien Recoing, Karina Testa           NaN

                    duration               release_date rating
40                1 h 28 min                     Action    4.7
56                1 h 25 min   Sortie : 16 février 2007    6.1
103  Sortie : 8 juillet 2010        Comédie dramatique    6.5
108   Sortie : 15 avril 2011    Drame, action et biopic    6.3
147  Sortie : 6 juillet 2011                   Thriller    5.2
```

Now we what are the missing values (the value that are not on the web page we scrapped) we decide to fill them with informations find on the internet.

In [122]:

```
df.loc[df.Name_of_movie == "Fireball", 'release_date'] = "2009"
df.loc[df.Name_of_movie == "Fireball", 'type_of_movie'] = "Action"
df.loc[df.Name_of_movie == "Fireball", 'main_actors'] = "Preeti Barameeanat, Khanutra Chu
chuaysuwan"
df.loc[df.Name_of_movie == "Manuale d'amore 2 (Capitoli successivi)", 'rating'] = "8"


df.loc[df.Name_of_movie == "La Beauté du geste", 'type_of_movie'] = "Comédie dramatique"
df.loc[df.Name_of_movie == "Soul Surfer", 'type_of_movie'] = "Drame, action et biopic"
df.loc[df.Name_of_movie == "Switch", 'type_of_movie'] = "Thriller"
df.loc[df.Name_of_movie == "Ma fille, mon ange", 'type_of_movie'] = "Thriller"

df.loc[df.Name_of_movie == "La Beauté du geste", 'release_date'] = "Sortie : 8 juillet 2
010"
df.loc[df.Name_of_movie == "Soul Surfer", 'release_date'] = "Sortie : 15 avril 2011"
df.loc[df.Name_of_movie == "Switch", 'release_date'] = "Sortie : 6 juillet 2011"

df.loc[df.Name_of_movie == "La Beauté du geste", 'duration'] = "1 h 30 min"
df.loc[df.Name_of_movie == "Soul Surfer", 'duration'] = "1 h 46 min"
df.loc[df.Name_of_movie == "Switch", 'duration'] = "1 h 28 min"
```

In [123]:

```
df.loc[df.Name_of_movie == "Manuale d'amore 2 (Capitoli successivi)", 'rating'] = "8"
df['release_year'] = df['release_date'].str[-4:] #creating the release_year columns
df['type_movie'] = df['type_of_movie'].str.split().str[0] #creating the type_movie (only
one type)
df.rating = df["rating"].astype(float) #we convert string rating into float
df.type_movie = df_cleaned["type_movie"].str.replace(',', '')
```

After all that process of cleaning the scraped data, we now have a well build data frame name df_cleaned ready to be explore.

In [133]:

```python
df_cleaned = df[['Name_of_movie', 'type_movie', 'release_year', 'rating', 'duration']]
```

In [134]:

```python
df_cleaned.head(5)
```

Out[134]:

	Name_of_movie	type_movie	release_year	rating	duration
0	Les Émotifs anonymes	Comédie	2010	6.1	1 h 20 min
1	Killing Bono	Comédie	2011	6.4	1 h 54 min
2	Robin des bois, prince des voleurs	Aventure	1991	6.6	2 h 23 min
3	Un duplex pour 3	Comédie	2004	5.4	1 h 37 min
4	8 Mile	Drame	2002	6.8	1 h 50 min

In [145]:

```python
df_cleaned.describe().loc[['min', 'max'], ['rating']]
```

Out[145]:

	rating
min	2.7
max	8.5

In [143]:

```python
df_cleaned.loc[df_cleaned['rating'] == 8.5, 'Name_of_movie']
```

Out[143]:

```
131    Le Bon, la Brute et le Truand
Name: Name_of_movie, dtype: object
```

In [142]:

```python
df_cleaned.loc[df_cleaned['rating'] == 2.7, 'Name_of_movie']
```

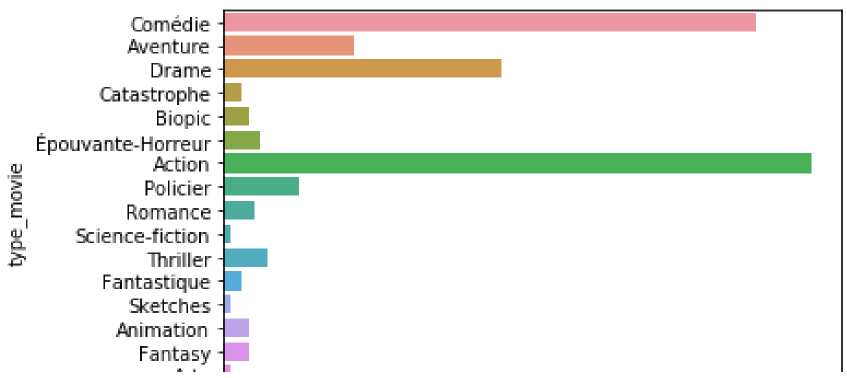
Out[142]:

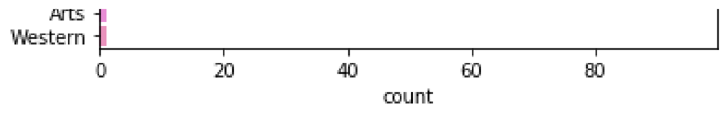
```
188    Humains
Name: Name_of_movie, dtype: object
```

The movie Humains is the one with the lowest rate and the movie Le Bon, la Bryte et le Truand have the highest rate.

In [170]:

```python
sns.countplot(y="type_movie", data=df_cleaned)
plt.show()
```





In [169]:

```
my_tab=pd.crosstab(df_cleaned["type_movie"], "freq", normalize=True)
my_tab
```

Out[169]:

col_0	freq
type_movie	
Action	0.317726
Animation	0.013378
Arts	0.003344
Aventure	0.070234
Biopic	0.013378
Catastrophe	0.010033
Comédie	0.287625
Drame	0.150502
Fantastique	0.010033
Fantasy	0.013378
Policier	0.040134
Romance	0.016722
Science-fiction	0.003344
Sketches	0.003344
Thriller	0.023411
Western	0.003344
Épouvante-Horreur	0.020067

The plot above show the share of the different movie type in the dataset. The type Comédie,Drame and Action are the most frequent. There are 31.77% of action movie, 28.76% of Comedie Movie and 15.05% of Drame movie.

Below we can se the average rating by movie type

In [135]:

```
df_cleaned.groupby('type_movie')[['rating']].mean()
```

Out[135]:

	rating
type_movie	
Action	5.653684
Animation	6.550000
Arts	6.200000
Aventure	5.833333
Biopic	6.150000
Catastrophe	4.800000
Comédie	5.701163
Drame	6.328889

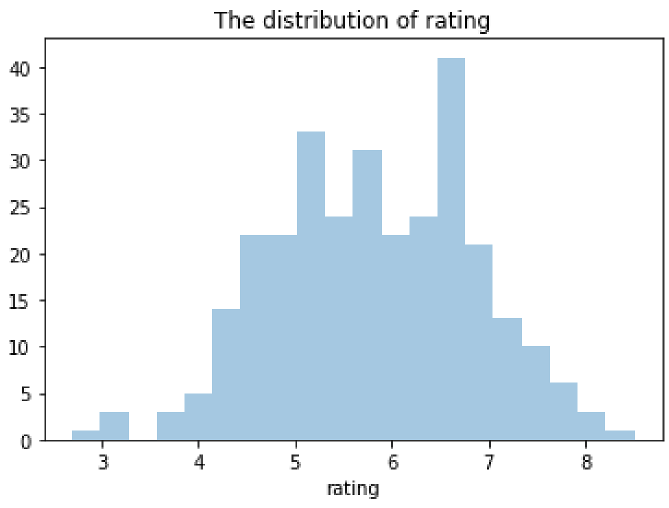
type_movie	rating
Fantastique	4.4[illegible]
Fantasie	4.650000
Policier	6.850000
Romance	5.040000
Science-fiction	6.400000
Sketches	4.700000
Thriller	5.471429
Western	7.800000
Épouvante-Horreur	6.000000

In [173]:

```
g = sns.distplot(df_cleaned.rating, bins=20, kde=False)
g.set_title('The distribution of rating')
```

Out[173]:

```
Text(0.5, 1.0, 'The distribution of rating')
```



With the distribution of rating, we can see that most ratings are between 4 and 7. There are few movies with a rating greater than 7, and even fewer with a rating smaller than 4. This indicates that both very good movies and very bad movies are rarer.

In [ ]:

```

```