# Movie\_First\_View

June 21, 2024

# 0.0.1 Import Librairies

```
[2]: import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

## Installer les packages

```
[]: #utilisatiom de !pip install package_name pour installer si celui ci n'est pasuencore installed
!pip install matplotlib

!pip install pandas
!pip install numpy
#etc
```

## 0.0.2 Connect to Dataset

```
[4]: df = pd.read_csv("C:/Users/JEHDAI/Desktop/Python Practice/Project/Movies First

→View/Dataset/movie.csv")
```

# 1 Nettoyage Complet des datas (Data Preprocessing and Manipulation)

```
Structure des datas
```

```
[5]: #strucure type datas
df.info()

#coloumns
df.columns

#rows, columns
df.shape
```

<class 'pandas.core.frame.DataFrame'> RangeIndex: 4916 entries, 0 to 4915 Data columns (total 28 columns):

#	Column	Non-Null Count	Dtype			
0	color	4897 non-null	object			
1	director_name	4814 non-null	object			
2	num_critic_for_reviews	4867 non-null	float64			
3	duration	4901 non-null	float64			
4	director_facebook_likes	4814 non-null	float64			
5	actor_3_facebook_likes	4893 non-null	float64			
6	actor_2_name	4903 non-null	object			
7	actor_1_facebook_likes	4909 non-null	float64			
8	gross	4054 non-null	float64			
9	genres	4916 non-null	object			
10	actor_1_name	4909 non-null	object			
11	movie_title	4916 non-null	object			
12	num_voted_users	4916 non-null	int64			
13	cast_total_facebook_likes	4916 non-null	int64			
14	actor_3_name	4893 non-null	object			
15	facenumber_in_poster	4903 non-null	float64			
16	plot_keywords	4764 non-null	object			
17	movie_imdb_link	4916 non-null	object			
18	num_user_for_reviews	4895 non-null	float64			
19	language	4904 non-null	object			
20	country	4911 non-null	object			
21	content_rating	4616 non-null	object			
22	budget	4432 non-null	float64			
23	title_year	4810 non-null	float64			
24	actor_2_facebook_likes	4903 non-null	float64			
25	imdb_score	4916 non-null	float64			
26	aspect_ratio	4590 non-null	float64			
27	movie_facebook_likes	4916 non-null	int64			
dtypes: float64(13), int64(3), object(12)						
memo	ry usage: 1.1+ MB					

**[5]**: (4916, 28)

# Valeurs manquantes

[6]: # check missing values df.isnull().sum()

```
[6]: color
                                   19
    director_name
                                  102
    num_critic_for_reviews
                                   49
    duration
                                   15
    director_facebook_likes
                                  102
```

```
actor_3_facebook_likes
                               23
actor_2_name
                               13
actor_1_facebook_likes
                                7
                              862
gross
                                0
genres
                                7
actor_1_name
movie_title
                                0
                                0
num_voted_users
                                0
cast_total_facebook_likes
actor_3_name
                               23
facenumber_in_poster
                               13
plot_keywords
                              152
movie_imdb_link
                                0
num_user_for_reviews
                               21
                               12
language
                                5
country
                              300
content_rating
budget
                              484
                              106
title_year
actor_2_facebook_likes
                               13
                                0
imdb_score
                              326
aspect_ratio
movie_facebook_likes
                                0
dtype: int64
```

```
[5]: #Supprimer les valeurs (rows des valeurs nulles)

df.dropna(inplace = True)

#check
df.isnull().sum()
```

```
[5]: color
                                   0
                                   0
     director_name
     num_critic_for_reviews
                                   0
                                   0
     duration
     director_facebook_likes
                                   0
     actor_3_facebook_likes
                                   0
     actor_2_name
                                   0
                                   0
     actor_1_facebook_likes
     gross
                                   0
     genres
                                   0
                                   0
     actor_1_name
                                   0
    movie_title
    num_voted_users
                                   0
     cast_total_facebook_likes
                                   0
     actor_3_name
```

```
0
facenumber_in_poster
plot_keywords
                               0
{\tt movie\_imdb\_link}
                               0
num_user_for_reviews
                               0
language
                               0
                               0
country
                               0
content_rating
budget
                               0
title_year
                               0
actor_2_facebook_likes
                               0
                               0
imdb_score
aspect_ratio
                               0
movie_facebook_likes
                               0
dtype: int64
```

Remplacement des valeurs manquantes par la moyenne des valeurs de la colonne movies['score'].fillna(movies['score'].mean(), inplace = True)

```
[9]: #look at datas
df.head(10)

df.tail(10)
```

	df.ta	il(10)							
[9]:			color	dire	ector_name	num_critic_f	or_reviews	duration	\
	4872		Color	Ke	vin Jordan		21.0	90.0	
	4882	Black and	White	Ke	evin Smith		136.0	102.0	
	4885		Color	Ne	eil LaBute		80.0	97.0	
	4888	Black and	White	Richard	Linklater		61.0	100.0	
	4898		Color	Jo	ohn Waters		73.0	108.0	
	4899		Color	Olivie	er Assayas		81.0	110.0	
	4900		Color	Jai	far Panahi		64.0	90.0	
	4906		Color	Shar	ne Carruth		143.0	77.0	
	4908		Color	Robert	Rodriguez		56.0	81.0	
	4915		Color		Jon Gunn		43.0	90.0	
		director_	faceboo	k_likes	actor_3_fa	.cebook_likes	actor	_2_name \	<b>\</b>
	4872			4.0		113.0	Christa	Miller	
	4882			0.0		216.0	Brian O'H	alloran	
	4885			119.0		7.0	Matt	Malloy	
	4888			0.0		0.0	Richard Li	nklater	
	4898			0.0		105.0	Min	k Stole	
	4899			107.0		45.0	Béatric	e Dalle	
	4900			397.0		0.0	Nargess Ma	mizadeh	
	4906			291.0		8.0	David S	ullivan	
	4908			0.0		6.0	Peter Ma	rquardt	
	4915			16.0		16.0	Brian Her	zlinger	

```
actor_1_facebook_likes
                                     gross
                                                                              genres
4872
                       20000.0
                                  277233.0
                                                                     Comedy | Romance
4882
                         898.0
                                 3151130.0
                                                                              Comedy
4885
                         136.0
                                                                       Comedy | Drama
                                 2856622.0
4888
                            5.0
                                 1227508.0
                                                                       Comedy | Drama
4898
                                                               Comedy | Crime | Horror
                         462.0
                                  180483.0
4899
                         576.0
                                  136007.0
                                                               Drama | Music | Romance
4900
                                                                               Drama
                            5.0
                                  673780.0
4906
                         291.0
                                  424760.0
                                                             Drama|Sci-Fi|Thriller
4908
                         121.0
                                 2040920.0
                                             Action | Crime | Drama | Romance | Thriller
4915
                          86.0
                                   85222.0
                                                                        Documentary
      ... num_user_for_reviews language
                                           country
                                                     content rating
                                                                         budget
4872
                                                                        40000.0
                          26.0
                                 English
                                                USA
                                                                    R
4882
                         615.0
                                 English
                                                USA
                                                                    R
                                                                       230000.0
4885
                                                                    R
                         197.0
                                 English
                                            Canada
                                                                        25000.0
4888
                                                USA
                                                                    R
                          80.0
                                 English
                                                                        23000.0
4898
                         183.0
                                 English
                                                USA
                                                               NC-17
                                                                        10000.0
4899
                          39.0
                                  French
                                                                    R
                                            France
                                                                         4500.0
4900
                                Persian
                          26.0
                                               Iran
                                                           Not Rated
                                                                        10000.0
4906
                         371.0
                                 English
                                                USA
                                                               PG-13
                                                                         7000.0
4908
                         130.0
                                 Spanish
                                                USA
                                                                    R
                                                                         7000.0
4915
                          84.0
                                English
                                                USA
                                                                   PG
                                                                         1100.0
      title_year actor_2_facebook_likes imdb_score
                                                          aspect_ratio
4872
           1999.0
                                      467.0
                                                    7.6
                                                                   1.85
4882
           1994.0
                                      657.0
                                                    7.8
                                                                   1.37
4885
           1997.0
                                      108.0
                                                    7.3
                                                                   1.85
4888
           1991.0
                                        0.0
                                                    7.1
                                                                   1.37
4898
           1972.0
                                      143.0
                                                    6.1
                                                                   1.37
4899
           2004.0
                                      133.0
                                                    6.9
                                                                   2.35
4900
           2000.0
                                                    7.5
                                                                   1.85
                                        0.0
                                                                   1.85
4906
           2004.0
                                       45.0
                                                    7.0
4908
                                                    6.9
                                                                   1.37
           1992.0
                                       20.0
4915
           2004.0
                                       23.0
                                                    6.6
                                                                   1.85
     movie_facebook_likes
4872
                          0
4882
                          0
4885
                        489
4888
                       2000
4898
                          0
4899
                        171
4900
                        697
4906
                      19000
4908
                          0
4915
                        456
```

#### Etat des colonnes et variables

```
[6]: df.columns
```

# 1.0.1 Changer le type des colonnes

- 1. Changer le type de la variable en int df['score'] = df['score'].astype('int')
- 2. Changer le type de la variable en date  $df['date\_production'] = pd.to\_datetime(df['date\_production'])$
- 3. Changer le type de la variable en string df['org\_id'] = df['org\_id'].astype('str')

```
[]:
```

```
[11]: #Vvoir la repartition des films selonm la variable "language"

df.language.value_counts(normalize = True) * 100

#ou df['language'].value_counts(normalize = True) *100
```

```
[11]: English
                     95.731874
      French
                      0.930233
      Spanish
                      0.629275
      Mandarin
                      0.383037
      German
                      0.273598
      Japanese
                      0.273598
      Cantonese
                      0.191518
      Italian
                      0.191518
      Portuguese
                      0.136799
      Hindi
                      0.136799
      Norwegian
                      0.109439
      Korean
                      0.109439
      Danish
                      0.082079
      Thai
                      0.082079
      Persian
                      0.082079
```

```
Dutch
                     0.082079
     Indonesian
                     0.054720
     Aboriginal
                     0.054720
     Dari
                     0.054720
     Mongolian
                     0.027360
     None
                     0.027360
     Romanian
                     0.027360
     Vietnamese
                     0.027360
     Arabic
                     0.027360
     Hebrew
                     0.027360
     Zulu
                     0.027360
     Czech
                     0.027360
     Russian
                     0.027360
    Filipino
                     0.027360
    Maya
                     0.027360
     Kazakh
                     0.027360
     Hungarian
                     0.027360
     Aramaic
                     0.027360
     Bosnian
                     0.027360
     Name: language, dtype: float64
[7]: #choisir les variables importantes pour notre analyse (colonnes importantes)
     movies = df[['director_name','duration','gross', 'genres', 'movie_title',

¬'plot_keywords', 'budget','title_year', 'language', 'imdb_score']]

     #look on our new dataset
     movies.head()
[7]:
            director_name
                            duration
                                             gross
                                                                              genres
     0
            James Cameron
                               178.0
                                      760505847.0
                                                    Action|Adventure|Fantasy|Sci-Fi
     1
           Gore Verbinski
                               169.0
                                      309404152.0
                                                            Action | Adventure | Fantasy
               Sam Mendes
     2
                               148.0
                                      200074175.0
                                                          Action | Adventure | Thriller
                                                                     Action|Thriller
     3
        Christopher Nolan
                               164.0
                                      448130642.0
     5
           Andrew Stanton
                               132.0
                                       73058679.0
                                                            Action | Adventure | Sci-Fi
                                      movie title
     0
                                            Avatar
     1
       Pirates of the Caribbean: At World's End
     2
                                           Spectre
     3
                            The Dark Knight Rises
     5
                                       John Carter
                                              plot_keywords
                                                                           title_year
                                                                   budget
     0
                   avatar|future|marine|native|paraplegic
                                                              237000000.0
                                                                               2009.0
        goddess|marriage ceremony|marriage proposal|pi... 300000000.0
                                                                             2007.0
     1
     2
                       bomb|espionage|sequel|spy|terrorist
                                                                               2015.0
        deception|imprisonment|lawlessness|police offi... 250000000.0
                                                                             2012.0
```

```
5 alien|american civil war|male nipple|mars|prin... 263700000.0
                                                                         2012.0
      language
                imdb_score
    0 English
                       7.9
    1 English
                       7.1
    2 English
                       6.8
    3 English
                       8.5
    5 English
                       6.6
[8]: #Arrangement des variables ou colonnes, renommer certaines colonnes
    movies.rename(columns = {'title_year':'year', 'imdb_score':'score',_
      #check
    movies.head()
[8]:
           director_name
                          duration
                                                                          genres
                                          gross
    0
           James Cameron
                             178.0 760505847.0 Action|Adventure|Fantasy|Sci-Fi
    1
          Gore Verbinski
                             169.0 309404152.0
                                                        Action | Adventure | Fantasy
    2
              Sam Mendes
                             148.0 200074175.0
                                                       Action | Adventure | Thriller
                             164.0 448130642.0
                                                                 Action|Thriller
    3
       Christopher Nolan
    5
          Andrew Stanton
                                     73058679.0
                                                         Action | Adventure | Sci-Fi
                             132.0
                                          title \
    0
                                         Avatar
      Pirates of the Caribbean: At World's End
    2
                                        Spectre
    3
                          The Dark Knight Rises
    5
                                    John Carter
                                           plot_keywords
                                                               budget
                                                                         year
                  avatar|future|marine|native|paraplegic
    0
                                                          237000000.0
                                                                       2009.0
       goddess|marriage ceremony|marriage proposal|pi... 300000000.0
    1
                                                                     2007.0
    2
                     bomb|espionage|sequel|spy|terrorist 245000000.0
                                                                       2015.0
    3 deception|imprisonment|lawlessness|police offi... 250000000.0
                                                                     2012.0
       alien|american civil war|male nipple|mars|prin...
                                                        263700000.0
                                                                     2012.0
      language score
    0 English
                  7.9
    1 English
                  7.1
    2 English
                  6.8
    3 English
                  8.5
    5 English
                  6.6
[9]: #Supprimer une autre colonne pas trop importante
    movies.drop(['plot_keywords'], axis = 1, inplace = True)
```

```
[9]:
             director_name duration
                                              gross
                                                                               genres
             James Cameron
                                178.0
                                                     Action | Adventure | Fantasy | Sci-Fi
      0
                                       760505847.0
      1
            Gore Verbinski
                                169.0
                                       309404152.0
                                                            Action | Adventure | Fantasy
      2
                Sam Mendes
                                148.0
                                       200074175.0
                                                           Action | Adventure | Thriller
      3
         Christopher Nolan
                                164.0
                                       448130642.0
                                                                     Action|Thriller
      5
            Andrew Stanton
                                132.0
                                                             Action | Adventure | Sci-Fi
                                        73058679.0
                                                          budget
                                                                    year language \
                                             title
      0
                                                     237000000.0
                                                                  2009.0
                                                                           English
                                            Avatar
                                                     30000000.0
                                                                  2007.0
      1
        Pirates of the Caribbean: At World's End
                                                                           English
      2
                                                                  2015.0
                                                                           English
                                           Spectre
                                                     245000000.0
      3
                             The Dark Knight Rises
                                                     250000000.0
                                                                  2012.0
                                                                           English
      5
                                       John Carter
                                                     263700000.0
                                                                  2012.0 English
         score
      0
           7.9
           7.1
      1
      2
           6.8
      3
           8.5
      5
           6.6
[18]: #Segmentation des données
      #decouper les filsms du producteur Steven Spiel
      is_Steven = movies[movies['director_name'] == 'Steven Spielberg']
      is_Steven
[18]:
               director_name duration
                                               gross
            Steven Spielberg
                                  122.0
                                         317011114.0
      54
            Steven Spielberg
      177
                                  117.0
                                          52792307.0
      187
            Steven Spielberg
                                  116.0
                                         234277056.0
      192
            Steven Spielberg
                                  107.0
                                          77564037.0
            Steven Spielberg
      281
                                  145.0 132014112.0
      369
            Steven Spielberg
                                  146.0
                                          78616689.0
      517
            Steven Spielberg
                                  129.0 229074524.0
      530
            Steven Spielberg
                                  128.0
                                          77032279.0
            Steven Spielberg
                                  163.0
      539
                                          47379090.0
      583
            Steven Spielberg
                                  142.0 119654900.0
      597
            Steven Spielberg
                                  146.0
                                          79883359.0
      641
            Steven Spielberg
                                  169.0
                                         216119491.0
      646
            Steven Spielberg
                                  150.0 182204440.0
      689
            Steven Spielberg
                                  127.0
                                         356784000.0
      902
            Steven Spielberg
                                  141.0 164435221.0
```

#check

movies.head()

```
1030
      Steven Spielberg
                             127.0
                                     197171806.0
      Steven Spielberg
                             142.0
1213
                                      72306065.0
1237
      Steven Spielberg
                             155.0
                                      44175394.0
      Steven Spielberg
1733
                             118.0
                                     179870271.0
1857
      Steven Spielberg
                             185.0
                                      96067179.0
      Steven Spielberg
2128
                             115.0
                                     242374454.0
2130
      Steven Spielberg
                             135.0
                                     128300000.0
      Steven Spielberg
2575
                             154.0
                                      94175854.0
      Steven Spielberg
2870
                             130.0
                                     260000000.0
3028
      Steven Spielberg
                             120.0
                                     434949459.0
                                  genres
54
              Action | Adventure | Fantasy
177
              Adventure | Family | Fantasy
187
             Adventure|Sci-Fi|Thriller
192
      Action | Adventure | Family | Mystery
281
       Action|Mystery|Sci-Fi|Thriller
369
                Adventure | Drama | Sci-Fi
               Action | Adventure | Sci-Fi
517
530
                           Comedy | Drama
539
                Drama | History | Thriller
583
      Adventure | Comedy | Family | Fantasy
597
                              Drama|War
641
                       Action|Drama|War
           Biography | Drama | History | War
646
689
             Adventure|Sci-Fi|Thriller
902
                 Biography | Crime | Drama
1030
              Action | Adventure | Fantasy
1213
                Drama | History | Thriller
1237
                          Drama | History
1733
                       Action | Adventure
1857
               Biography | Drama | History
2128
                       Action | Adventure
                           Drama | Sci-Fi
2130
2575
2870
              Adventure | Drama | Thriller
3028
                          Family|Sci-Fi
                                                       title
                                                                    budget
                                                                               year \
                                                                          2008.0
54
      Indiana Jones and the Kingdom of the Crystal S...
                                                            185000000.0
177
                                                    The BFG
                                                              140000000.0
                                                                            2016.0
187
                                         War of the Worlds
                                                              132000000.0
                                                                             2005.0
192
                                  The Adventures of Tintin
                                                              135000000.0
                                                                             2011.0
281
                                           Minority Report
                                                              102000000.0
                                                                             2002.0
369
                             A.I. Artificial Intelligence
                                                              10000000.0
                                                                             2001.0
                            The Lost World: Jurassic Park
517
                                                               73000000.0
                                                                             1997.0
530
                                               The Terminal
                                                               60000000.0
                                                                             2004.0
```

```
539
                                                  Munich
                                                            70000000.0
                                                                        2005.0
583
                                                     Hook
                                                            70000000.0
                                                                        1991.0
597
                                               War Horse
                                                            66000000.0
                                                                        2011.0
641
                                     Saving Private Ryan
                                                            70000000.0
                                                                        1998.0
646
                                                 Lincoln
                                                            65000000.0
                                                                        2012.0
689
                                           Jurassic Park
                                                            63000000.0
                                                                        1993.0
902
                                     Catch Me If You Can
                                                                        2002.0
                                                            52000000.0
                     Indiana Jones and the Last Crusade
1030
                                                            48000000.0
                                                                        1989.0
1213
                                         Bridge of Spies
                                                            40000000.0
                                                                        2015.0
1237
                                                 Amistad
                                                                        1997.0
                                                            36000000.0
1733
                   Indiana Jones and the Temple of Doom
                                                            28000000.0
                                                                        1984.0
1857
                                        Schindler's List
                                                            22000000.0
                                                                        1993.0
2128
                                 Raiders of the Lost Ark
                                                            18000000.0
                                                                        1981.0
2130
                     Close Encounters of the Third Kind
                                                            19400870.0
                                                                        1977.0
2575
                                        The Color Purple
                                                            15000000.0
                                                                        1985.0
2870
                                                     Jaws
                                                             0.000008
                                                                        1975.0
3028
                              E.T. the Extra-Terrestrial
                                                            10500000.0
                                                                        1982.0
     language score
54
      English
                 6.2
177
      English
                 6.8
187
      English
                 6.5
192
      English
                 7.4
281
      English
                 7.7
369
      English
                 7.1
517
      English
                 6.5
530
      English
                 7.3
539
      English
                 7.6
583
      English
                 6.7
597
                 7.2
      English
641
      English
                 8.6
646
                 7.4
      English
689
      English
                 8.1
902
      English
                 8.0
1030 English
                 8.3
1213 English
                 7.6
1237 English
                 7.2
1733 English
                 7.6
1857 English
                 8.9
2128 English
                 8.5
2130 English
                 7.7
2575 English
                 7.8
2870 English
                 8.0
3028 English
                 7.9
```

[21]: #Prendre juste les films french et plus de 60 minutes...

```
⇔60)]
      #check
      french_movie
[21]:
                     director_name
                                                      gross \
                                     duration
      498
                    Jacques Perrin
                                                19406406.0
                                         104.0
      880
                Jean-Pierre Jeunet
                                                 6167817.0
                                         133.0
      1166
                Jean-Pierre Jeunet
                                         105.0
                                                 1260917.0
                Jean-Pierre Jeunet
      1287
                                         122.0
                                                33201661.0
      1989
                   Guillaume Canet
                                         134.0
                                                  183662.0
      2050
                     Anne Fontaine
                                         111.0
                                                 6109075.0
      2095
                  Christian Carion
                                         116.0
                                                 1050445.0
      2101
                    Laurent Tirard
                                         120.0
                                                  634277.0
      2295
               Jean-Paul Rappeneau
                                         114.0
                                                 2353728.0
      2562
                   Gérard Krawczyk
                                          94.0
                                                    81525.0
      2695
                      Pierre Morel
                                          84.0
                                                 1197786.0
      2718
            Gilles Paquet-Brenner
                                         111.0
                                                 7691700.0
      2830
                   Olivier Assayas
                                         120.0
                                                 4857376.0
      2833
                   Patrice Leconte
                                         112.0
                                                 3058380.0
      2872
                   Stéphane Aubier
                                          80.0
                                                    71442.0
      3122
                   François Girard
                                         130.0
                                                 9473382.0
      3207
                    Michael Haneke
                                         127.0
                                                  225377.0
      3338
                     François Ozon
                                         111.0
                                                 3076425.0
      3393
                 Vincent Paronnaud
                                          89.0
                                                 4443403.0
      3455
                  Jean-Marie Poiré
                                         107.0
                                                  700000.0
      3483
                  Denis Villeneuve
                                         139.0
                                                 6857096.0
      3584
                   Cédric Klapisch
                                         111.0
                                                 3895664.0
      3608
              Christophe Barratier
                                          97.0
                                                 3629758.0
      3613
                    Aki Kaurismäki
                                          93.0
                                                  611709.0
      3688
                                         112.0
                      Denys Arcand
                                                 3432342.0
      3701
                   Xavier Beauvois
                                         122.0
                                                 3950029.0
      3766
                    Michel Leclerc
                                         100.0
                                                  513836.0
      3942
                       Luc Jacquet
                                          80.0
                                                77413017.0
      4065
                     Alexandre Aja
                                          89.0
                                                 3645438.0
      4172
                    Sylvain Chomet
                                          80.0
                                                 7002255.0
      4256
                     Pascal Arnold
                                          95.0
                                                    18435.0
      4303
                 François Truffaut
                                         123.0
                                                    26893.0
      4713
                   Cédric Klapisch
                                          91.0
                                                 1652472.0
      4899
                   Olivier Assayas
                                         110.0
                                                  136007.0
                                                                                  title
                                                  genres
      498
                                       Documentary | Drama
                                                                                 Oceans
                                                               A Very Long Engagement
      880
                              Drama | Mystery | Romance | War
                                                                                Micmacs
      1166
                                    Action | Comedy | Crime
```

french\_movie = movies[(movies['language'] == 'French') & (movies['duration'] >\_\_

Comedy | Romance

Amélie

1287

1000				Comedy Drama	
1989			Little White Lies		
2050	D			graphy Drama  Romance War	Coco Before Chanel
2095	DI	ama Hist	Joyeux Noel		
2101		I W+		medy History	Molière
2295	•			Thriller War	Bon voyage
2562	Actio	n Comedy		ama Thriller	Wasabi
2695			Action Cr	ime Thriller	District B13
2718			a	Drama War	Sarah's Key
2830				rama Romance	Paris, je t'aime
2833				rama Romance	The Widow of Saint-Pierre
2872	Animat		•	Drama Family	Ernest & Celestine
3122		Drama	•	tery Romance	The Red Violin
3207				rama Romance	Amour
3338		•		ical Romance	8 Women
3393		Animatio		hy Drama War	Persepolis
3455			•	ntasy Sci-Fi	Les visiteurs
3483				Mystery War	Incendies
3584				Comedy Drama	L'auberge espagnole
3608				Drama Music	The Chorus
3613				Comedy Drama	Le Havre
3688	Comed	y Crime	Drama Mys	tery Romance	The Barbarian Invasions
3701				Drama	Of Gods and Men
3766			Comedy D	rama Romance	The Names of Love
3942				Documentary	March of the Penguins
4065				Horror	High Tension
4172		I	Animation	Comedy Drama	The Triplets of Belleville
4256				Drama	One to Another
4303			Crime D	rama Romance	Mississippi Mermaid
4713			Со	medy Romance	When the Cat's Away
4899			Drama M	usic Romance	Clean
	budget	-	language	score	
498	40000000.0	2009.0	French	7.8	
880	47000000.0	2004.0	French	7.7	
1166	27000000.0	2009.0	French	7.2	
1287	77000000.0	2001.0	French	8.4	
1989	25000000.0	2010.0	French	7.1	
2050	19430000.0	2009.0	French	6.7	
2095	22000000.0	2005.0	French	7.8	
2101	16000000.0	2007.0	French	7.3	
2295	20000000.0	2003.0	French	6.9	
2562	15300000.0	2001.0	French	6.6	
2695	12000000.0	2004.0	French	7.2	
2718	10000000.0	2010.0	French	7.5	
2830	13000000.0	2006.0	French	7.3	
2833	100000000.0	2000.0	French	7.3	
2872	9600000.0	2012.0	French	7.9	

```
10000000.0 1998.0
      3122
                                  French
                                            7.7
      3207
                         2012.0
                                  French
                                            7.9
              8900000.0
      3338
              0.000008
                         2002.0
                                  French
                                            7.1
      3393
                         2007.0
                                  French
              7300000.0
                                            8.0
      3455
             50000000.0
                        1993.0
                                  French
                                            7.0
      3483
              6800000.0 2010.0
                                  French
                                            8.2
      3584
              5300000.0 2002.0
                                  French
                                            7.3
      3608
              5500000.0 2004.0
                                  French
                                            7.9
      3613
              3850000.0 2011.0
                                  French
                                            7.2
      3688
              6000000.0 2003.0
                                  French
                                            7.7
      3701
              4000000.0 2010.0
                                  French
                                            7.2
      3766
              4600000.0 2010.0
                                  French
                                            7.2
      3942
              8000000.0 2005.0
                                  French
                                            7.6
      4065
              2200000.0
                         2003.0
                                  French
                                            6.8
      4172
              9500000.0 2003.0
                                  French
                                            7.8
      4256
              1400000.0 2006.0
                                  French
                                            5.8
      4303
                                            7.2
              1600000.0 1969.0
                                  French
      4713
                        1996.0
                                  French
                                            6.9
               300000.0
      4899
                                  French
                 4500.0 2004.0
                                            6.9
     Gestion des doublons
[22]: #Gestion des doublons
      #identifier les doublons en value TRUE
      movies.duplicated()
[22]: 0
              False
              False
      1
      2
              False
      3
              False
      5
              False
      4899
              False
      4900
              False
      4906
              False
      4908
              False
      4915
              False
      Length: 3655, dtype: bool
[10]: #suppression des doublons tout en readaptant les index
      movies.drop_duplicates().reset_index(drop = True)
                director_name duration
                                                gross \
      0
                James Cameron
                                  178.0
                                         760505847.0
      1
               Gore Verbinski
                                  169.0
                                         309404152.0
      2
                   Sam Mendes
                                  148.0
                                         200074175.0
      3
            Christopher Nolan
                                  164.0
                                         448130642.0
```

[10]:

```
4
         Andrew Stanton
                              132.0
                                       73058679.0
3650
        Olivier Assayas
                              110.0
                                         136007.0
3651
            Jafar Panahi
                               90.0
                                         673780.0
3652
          Shane Carruth
                               77.0
                                         424760.0
3653
       Robert Rodriguez
                               81.0
                                        2040920.0
3654
                Jon Gunn
                               90.0
                                          85222.0
                                     genres
0
          Action|Adventure|Fantasy|Sci-Fi
                  Action|Adventure|Fantasy
1
2
                 Action | Adventure | Thriller
                            Action|Thriller
3
4
                   Action | Adventure | Sci-Fi
3650
                       Drama | Music | Romance
3651
                                      Drama
3652
                     Drama|Sci-Fi|Thriller
3653
      Action|Crime|Drama|Romance|Thriller
3654
                                Documentary
                                            title
                                                         budget
                                                                    year language
0
                                           Avatar
                                                    237000000.0
                                                                 2009.0
                                                                          English
                                                                  2007.0
1
                                                                          English
      Pirates of the Caribbean: At World's End
                                                    30000000.0
2
                                          Spectre
                                                    245000000.0
                                                                  2015.0
                                                                          English
3
                           The Dark Knight Rises
                                                    250000000.0
                                                                  2012.0
                                                                          English
                                                    263700000.0
                                      John Carter
                                                                          English
4
                                                                  2012.0
                                                                      •••
•••
3650
                                                         4500.0
                                                                  2004.0
                                            Clean
                                                                           French
3651
                                       The Circle
                                                        10000.0
                                                                  2000.0
                                                                          Persian
3652
                                           Primer
                                                         7000.0
                                                                  2004.0
                                                                          English
3653
                                      El Mariachi
                                                                  1992.0
                                                                          Spanish
                                                         7000.0
3654
                               My Date with Drew
                                                                  2004.0
                                                                           English
                                                         1100.0
      score
0
        7.9
1
        7.1
2
        6.8
3
        8.5
4
        6.6
3650
        6.9
3651
        7.5
3652
        7.0
3653
        6.9
3654
        6.6
```

```
[3655 rows x 9 columns]
```

```
[24]: #recheck
                  movies.duplicated()
[24]: 0
                                           False
                                           False
                  1
                  2
                                           False
                  3
                                           False
                                           False
                  4899
                                          False
                  4900
                                          False
                  4906
                                          False
                  4908
                                          False
                  4915
                                           False
                 Length: 3655, dtype: bool
                Remplacement des valeurs dans les colonnes
[11]: #Remplacer une valeur dans une colonne
                  movies['language'].replace(to_replace = 'French', value = 'Paris', inplace = __
                       →True)
[40]: #check
                  movies.head(100)
                  movies['language'].unique()
[40]: array(['English', 'Mandarin', 'Aboriginal', 'Spanish', 'Paris',
                                         'Filipino', 'Maya', 'Kazakh', 'Cantonese', 'Japanese', 'Aramaic',
                                         'Italian', 'Dutch', 'Dari', 'German', 'Mongolian', 'Thai',
                                         'Bosnian', 'Korean', 'Hungarian', 'Hindi', 'Danish', 'Portuguese',
                                         'Norwegian', 'Czech', 'Russian', 'None', 'Zulu', 'Hebrew',
                                         'Arabic', 'Vietnamese', 'Indonesian', 'Romanian', 'Persian'],
                                     dtype=object)
[12]: #Remplacer les valeurs English par Eng
                  movies['language'].replace(to_replace = 'English', value = 'Eng', inplace = 'Log', inplace 
                       →True)
[42]: #check my new datas
                  movies.head(50)
```

[42]:		director_name	duration	gross
	0	James Cameron	178.0	760505847.0
	1	Gore Verbinski	169.0	309404152.0
	2	Sam Mendes	148.0	200074175.0
	3	Christopher Nolan	164.0	448130642.0
	5	Andrew Stanton	132.0	73058679.0
	6	Sam Raimi	156.0	336530303.0
	7	Nathan Greno	100.0	200807262.0
	8	Joss Whedon	141.0	458991599.0
	9	David Yates	153.0	301956980.0
	10	Zack Snyder	183.0	330249062.0
	11	Bryan Singer	169.0	200069408.0
	12	Marc Forster	106.0	168368427.0
	13	Gore Verbinski	151.0	423032628.0
	14	Gore Verbinski	150.0	89289910.0
	15	Zack Snyder	143.0	291021565.0
	16	Andrew Adamson	150.0	141614023.0
	17	Joss Whedon	173.0	623279547.0
	18	Rob Marshall	136.0	241063875.0
	19	Barry Sonnenfeld	106.0	179020854.0
	20	Peter Jackson	164.0	255108370.0
	21	Marc Webb	153.0	262030663.0
	22	Ridley Scott	156.0	105219735.0
	23	Peter Jackson	186.0	258355354.0
	24	Chris Weitz	113.0	70083519.0
	25	Peter Jackson	201.0	218051260.0
	26	James Cameron	194.0	658672302.0
	27	Anthony Russo	147.0	407197282.0
	28	Peter Berg	131.0	65173160.0
	29	Colin Trevorrow	124.0	652177271.0
	30	Sam Mendes	143.0	304360277.0
	31	Sam Raimi	135.0	373377893.0
	32	Shane Black	195.0	408992272.0
	33	Tim Burton	108.0	334185206.0
	34	Brett Ratner	104.0	234360014.0
	35	Dan Scanlon	104.0	268488329.0
	36	Michael Bay	150.0	402076689.0
	37	Michael Bay	165.0	245428137.0
	38	Sam Raimi	130.0	234903076.0
	39	Marc Webb	142.0	202853933.0
	40	Joseph Kosinski	125.0	172051787.0
	41	John Lasseter	106.0	191450875.0
	42	Martin Campbell	123.0	116593191.0
	43	Lee Unkrich	103.0	414984497.0
	44	McG	118.0	125320003.0
	45	James Wan	140.0	350034110.0
	46	Marc Forster	123.0	202351611.0

47 48 49 50	Bryan Singer 149.0 233914986.0 J.J. Abrams 132.0 228756232.0 Bryan Singer 114.0 65171860.0 Baz Luhrmann 143.0 144812796.0	
0	genres Action Adventure Fantasy Sci-Fi Action Adventure Fantasy	\
2	Action Adventure Thriller Action Thriller	
5 6 7	Action Adventure Sci-Fi Action Adventure Romance	
7 8 9	Adventure   Animation   Comedy   Family   Fantasy   Musi  Action   Adventure   Sci-Fi  Adventure   Family   Fantasy   Mystery	
10 11	Action Adventure Sci-Fi Action Adventure Sci-Fi	
12 13	Action Adventure Action Adventure Fantasy	
14 15	Action Adventure Western Action Adventure Fantasy Sci-Fi	
16 17	Action Adventure Family Fantasy Action Adventure Sci-Fi	
18 19	Action Adventure Fantasy Action Adventure Comedy Family Fantasy Sci-Fi	
20 21 22	Adventure Fantasy Action Adventure Fantasy Action Adventure Drama History	
23 24	Adventure Fantasy Adventure Fantasy	
25 26	Action Adventure Drama Romance Drama Romance	
27 28	Action Adventure Sci-Fi Action Adventure Sci-Fi Thriller	
29 30 31	Action Adventure Sci-Fi Thriller Action Adventure Thriller	
32 33	Action Adventure Fantasy Romance Action Adventure Sci-Fi Adventure Family Fantasy	
34 35	Action   Adventure   Fantasy   Sci-Fi   Thriller Adventure   Animation   Comedy   Family   Fantasy	
36 37	Action Adventure Sci-Fi Action Adventure Sci-Fi	
38 39	Adventure Family Fantasy Action Adventure Fantasy Sci-Fi	
40 41	Action Adventure Sci-Fi Adventure Animation Comedy Family Sport	

42	Action Adventure Sci-Fi							
43	Adventure   Animation   Comedy   Family   Fantasy							
44	Action Adventure Sci-Fi							
45	Action Crime Thriller							
46	Action Adventure Horror Sci-Fi Thr							
47	Action Adventure Fantasy Sci-Fi Thr							
48 49	Action Adventure S							
<del>4</del> 9	Adventure Fa Drama Ro	•						
50	DI aliia   1100	marice						
	title	budget	year	language	\			
0	Avatar	237000000.0	2009.0	Eng				
1	Pirates of the Caribbean: At World's End	300000000.0	2007.0	Eng				
2	Spectre	245000000.0	2015.0	Eng				
3	The Dark Knight Rises	250000000.0	2012.0	Eng				
5	John Carter	263700000.0	2012.0	Eng				
6	Spider-Man 3	258000000.0	2007.0	Eng				
7	Tangled	260000000.0	2010.0	Eng				
8	Avengers: Age of Ultron	250000000.0	2015.0 2009.0	Eng				
9 10	Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice	250000000.0 250000000.0	2009.0	Eng				
11	9							
12	1							
13	Pirates of the Caribbean: Dead Man's Chest	2006.0	Eng					
14	The Lone Ranger	215000000.0	2013.0	Eng				
15	Man of Steel	225000000.0	2013.0	Eng				
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008.0	Eng				
17	The Avengers	220000000.0	2012.0	Eng				
18	Pirates of the Caribbean: On Stranger Tides	250000000.0	2011.0	Eng				
19	Men in Black 3	225000000.0	2012.0	Eng -				
20	The Hobbit: The Battle of the Five Armies	250000000.0	2014.0	Eng				
21 22	The Amazing Spider-Man Robin Hood	230000000.0	2012.0 2010.0	Eng				
23	The Hobbit: The Desolation of Smaug	225000000.0	2010.0	Eng Eng				
24	The Golden Compass	180000000.0	2007.0	Eng				
25	King Kong	207000000.0	2005.0	Eng				
26	Titanic	200000000.0	1997.0	Eng				
27	Captain America: Civil War	250000000.0	2016.0	Eng				
28	Battleship	209000000.0	2012.0	Eng				
29	Jurassic World	150000000.0	2015.0	Eng				
30	Skyfall	200000000.0	2012.0	Eng				
31	Spider-Man 2	200000000.0	2004.0	Eng				
32	Iron Man 3	200000000.0	2013.0	Eng				
33	Alice in Wonderland	200000000.0	2010.0	Eng				
34 35	X-Men: The Last Stand	210000000.0 200000000.0	2006.0 2013.0	Eng				
35 36	Monsters University Transformers: Revenue of the Fallen	200000000.0	2013.0	Eng				
50	Transformers: Revenge of the Fallen	200000000000000000000000000000000000000	2009.0	Eng				

37	Transformers: Age of Extinction	210000000.0	2014.0	Eng
38	Oz the Great and Powerful	215000000.0	2013.0	Eng
39	The Amazing Spider-Man 2	200000000.0	2014.0	Eng
40	TRON: Legacy	170000000.0	2010.0	Eng
41	Cars 2	200000000.0	2011.0	Eng
42	Green Lantern	200000000.0	2011.0	Eng
43	Toy Story 3	200000000.0	2010.0	Eng
44	Terminator Salvation	200000000.0	2009.0	Eng
45	Furious 7	190000000.0	2015.0	Eng
46	World War Z	190000000.0	2013.0	Eng
47	X-Men: Days of Future Past	200000000.0	2014.0	Eng
48	Star Trek Into Darkness	190000000.0	2013.0	Eng
49	Jack the Giant Slayer	195000000.0	2013.0	Eng
50	The Great Gatsby	105000000.0	2013.0	Eng

#### score 0 7.9 7.1 1 2 6.8 3 8.5 5 6.6 6 6.2 7 7.8 8 7.5 9 7.5 10 6.9 11 6.1 12 6.7 13 7.3 14 6.5 15 7.2 16 6.6 17 8.1 6.7 18 19 6.8 20 7.5 21 7.0 22 6.7 23 7.9 24 6.1 25 7.2 26 7.7 27 8.2 5.9 28 29 7.0 30 7.8

7.3

31

```
7.2
32
33
      6.5
      6.8
34
      7.3
35
36
      6.0
37
      5.7
      6.4
38
39
      6.7
      6.8
40
41
      6.3
      5.6
42
43
      8.3
44
      6.6
45
      7.2
46
      7.0
47
      8.0
      7.8
48
      6.3
49
50
      7.3
```

## Traitement des textes de colonnes

```
[13]: #mettre en majuscule les valeurs d'une colonmne
movies['director_name'] = movies['director_name'].str.upper()

#check
movies.head(50)
```

```
[13]:
              director_name
                              duration
                                              gross \
              JAMES CAMERON
      0
                                        760505847.0
                                 178.0
      1
             GORE VERBINSKI
                                 169.0
                                        309404152.0
      2
                 SAM MENDES
                                 148.0
                                        200074175.0
      3
          CHRISTOPHER NOLAN
                                 164.0
                                        448130642.0
      5
             ANDREW STANTON
                                 132.0
                                         73058679.0
                  SAM RAIMI
      6
                                 156.0
                                        336530303.0
      7
               NATHAN GRENO
                                 100.0
                                        200807262.0
      8
                JOSS WHEDON
                                 141.0
                                        458991599.0
                DAVID YATES
      9
                                 153.0
                                        301956980.0
      10
                ZACK SNYDER
                                 183.0
                                        330249062.0
      11
               BRYAN SINGER
                                 169.0
                                        200069408.0
      12
               MARC FORSTER
                                 106.0
                                        168368427.0
      13
             GORE VERBINSKI
                                 151.0
                                        423032628.0
      14
             GORE VERBINSKI
                                 150.0
                                         89289910.0
      15
                ZACK SNYDER
                                 143.0
                                        291021565.0
      16
             ANDREW ADAMSON
                                 150.0 141614023.0
      17
                JOSS WHEDON
                                 173.0
                                        623279547.0
      18
               ROB MARSHALL
                                 136.0
                                        241063875.0
      19
           BARRY SONNENFELD
                                 106.0 179020854.0
```

```
255108370.0
20
        PETER JACKSON
                            164.0
21
             MARC WEBB
                            153.0
                                    262030663.0
22
         RIDLEY SCOTT
                            156.0
                                    105219735.0
        PETER JACKSON
23
                            186.0
                                    258355354.0
24
           CHRIS WEITZ
                            113.0
                                     70083519.0
25
        PETER JACKSON
                            201.0
                                    218051260.0
26
        JAMES CAMERON
                            194.0
                                    658672302.0
        ANTHONY RUSSO
27
                            147.0
                                    407197282.0
28
            PETER BERG
                                     65173160.0
                            131.0
29
      COLIN TREVORROW
                            124.0
                                    652177271.0
30
            SAM MENDES
                            143.0
                                    304360277.0
31
             SAM RAIMI
                            135.0
                                    373377893.0
32
           SHANE BLACK
                            195.0
                                    408992272.0
33
            TIM BURTON
                            108.0
                                    334185206.0
34
          BRETT RATNER
                            104.0
                                    234360014.0
35
           DAN SCANLON
                            104.0
                                    268488329.0
           MICHAEL BAY
36
                            150.0
                                    402076689.0
37
           MICHAEL BAY
                            165.0
                                    245428137.0
38
             SAM RAIMI
                            130.0
                                    234903076.0
39
             MARC WEBB
                            142.0
                                    202853933.0
40
      JOSEPH KOSINSKI
                            125.0
                                    172051787.0
41
         JOHN LASSETER
                            106.0
                                    191450875.0
42
      MARTIN CAMPBELL
                            123.0
                                    116593191.0
43
           LEE UNKRICH
                            103.0
                                    414984497.0
44
                   MCG
                            118.0
                                    125320003.0
45
             JAMES WAN
                            140.0
                                    350034110.0
         MARC FORSTER
                            123.0
46
                                    202351611.0
47
         BRYAN SINGER
                            149.0
                                    233914986.0
48
           J.J. ABRAMS
                            132.0
                                    228756232.0
          BRYAN SINGER
                                     65171860.0
49
                            114.0
50
          BAZ LUHRMANN
                            143.0
                                    144812796.0
                                                   genres
0
                        Action|Adventure|Fantasy|Sci-Fi
1
                                Action | Adventure | Fantasy
2
                              Action|Adventure|Thriller
3
                                         Action|Thriller
5
                                 Action | Adventure | Sci-Fi
6
                                Action | Adventure | Romance
7
    Adventure | Animation | Comedy | Family | Fantasy | Musi...
8
                                 Action | Adventure | Sci-Fi
9
                       Adventure | Family | Fantasy | Mystery
10
                                 Action | Adventure | Sci-Fi
11
                                 Action | Adventure | Sci-Fi
12
                                        Action | Adventure
13
                                Action | Adventure | Fantasy
14
                                Action | Adventure | Western
```

15	Action Adventure Fantasy S	ci-Fi						
16	Action Adventure Family Fa	ntasy						
17	Action Adventure S	ci-Fi						
18	Action Adventure Fantasy							
19	Action   Adventure   Comedy   Family   Fantasy   S	ci-Fi						
20	Adventure Fa	ntasy						
21	Action Adventure Fa	ntasy						
22	Action Adventure Drama Hi	story						
23	Adventure Fa	ntasy						
24	Adventure Family Fa	ntasy						
25	Action Adventure Drama Ro	mance						
26	Drama Ro	mance						
27	Action Adventure S	ci-Fi						
28	Action Adventure Sci-Fi Thr	iller						
29	Action Adventure Sci-Fi Thr	iller						
30	Action Adventure Thr	iller						
31	Action Adventure Fantasy Ro	mance						
32	Action Adventure S	ci-Fi						
33	Adventure Family Fa	ntasy						
34	Action Adventure Fantasy Sci-Fi Thr							
35	Adventure   Animation   Comedy   Family   Fa	•						
36	Action Adventure S							
37	Action Adventure S							
38	Adventure Family Fa	•						
39	Action Adventure Fantasy S							
40	Action Adventure S							
41	Adventure   Animation   Comedy   Family	-						
42	Action Adventure S							
43	Adventure   Animation   Comedy   Family   Fa	•						
44	Action Adventure S							
45	Action Crime Thr							
46	Action Adventure Horror Sci-Fi Thr							
47	Action Adventure Fantasy Sci-Fi Thr							
48	Action Adventure S							
49	Adventure Fa	•						
50	Drama Ro	mance						
	+:+10	budmo+	*****	1 an mu a ma	\			
0	title	budget 237000000.0	year 2009.0	language	\			
0 1	Avatar Pirates of the Caribbean: At World's End	300000000.0	2009.0	Eng				
		2450000000.0		Eng				
2 3	Spectre The Dark Knight Rises	250000000.0	2015.0 2012.0	Eng				
3 5	The Dark Knight Rises John Carter	263700000.0	2012.0	Eng				
6	Spider-Man 3	258000000.0	2012.0	Eng				
7	Spider-man S Tangled	260000000.0	2010.0	Eng				
8	Avengers: Age of Ultron	2500000000.0	2010.0	Eng				
9	Harry Potter and the Half-Blood Prince	250000000.0	2015.0	Eng				
J	harry router and the harr-brood Prince	200000000000	2009.0	Eng				

```
10
             Batman v Superman: Dawn of Justice
                                                   250000000.0
                                                                 2016.0
                                                                              Eng
11
                                Superman Returns
                                                   209000000.0
                                                                 2006.0
                                                                              Eng
                               Quantum of Solace
12
                                                   200000000.0
                                                                 2008.0
                                                                              Eng
13
     Pirates of the Caribbean: Dead Man's Chest
                                                   225000000.0
                                                                 2006.0
                                                                              Eng
14
                                 The Lone Ranger
                                                                 2013.0
                                                   215000000.0
                                                                              Eng
15
                                    Man of Steel
                                                   225000000.0
                                                                 2013.0
                                                                              Eng
16
       The Chronicles of Narnia: Prince Caspian
                                                                 2008.0
                                                   225000000.0
                                                                              Eng
17
                                    The Avengers
                                                   220000000.0
                                                                 2012.0
                                                                              Eng
    Pirates of the Caribbean: On Stranger Tides
18
                                                   250000000.0
                                                                 2011.0
                                                                              Eng
19
                                  Men in Black 3
                                                   225000000.0
                                                                 2012.0
                                                                              Eng
20
      The Hobbit: The Battle of the Five Armies
                                                   250000000.0
                                                                 2014.0
                                                                              Eng
21
                          The Amazing Spider-Man
                                                   230000000.0
                                                                 2012.0
                                                                              Eng
22
                                       Robin Hood
                                                   200000000.0
                                                                 2010.0
                                                                              Eng
                                                                 2013.0
                                                                              Eng
23
            The Hobbit: The Desolation of Smaug
                                                   225000000.0
24
                              The Golden Compass
                                                   180000000.0
                                                                 2007.0
                                                                              Eng
25
                                        King Kong
                                                   207000000.0
                                                                 2005.0
                                                                              Eng
26
                                          Titanic
                                                   20000000.0
                                                                 1997.0
                                                                              Eng
27
                      Captain America: Civil War
                                                   250000000.0
                                                                 2016.0
                                                                              Eng
28
                                       Battleship
                                                   209000000.0
                                                                 2012.0
                                                                              Eng
29
                                   Jurassic World
                                                   150000000.0
                                                                 2015.0
                                                                              Eng
30
                                          Skyfall
                                                   20000000.0
                                                                 2012.0
                                                                              Eng
31
                                    Spider-Man 2
                                                   200000000.0
                                                                 2004.0
                                                                              Eng
32
                                       Iron Man 3
                                                   200000000.0
                                                                 2013.0
                                                                              Eng
33
                             Alice in Wonderland
                                                   200000000.0
                                                                 2010.0
                                                                              Eng
34
                           X-Men: The Last Stand
                                                   210000000.0
                                                                 2006.0
                                                                              Eng
35
                             Monsters University
                                                   20000000.0
                                                                 2013.0
                                                                              Eng
            Transformers: Revenge of the Fallen
36
                                                   200000000.0
                                                                 2009.0
                                                                              Eng
37
                Transformers: Age of Extinction
                                                   210000000.0
                                                                 2014.0
                                                                              Eng
38
                       Oz the Great and Powerful
                                                   215000000.0
                                                                 2013.0
                                                                              Eng
39
                        The Amazing Spider-Man 2
                                                   20000000.0
                                                                 2014.0
                                                                              Eng
40
                                    TRON: Legacy
                                                   17000000.0
                                                                 2010.0
                                                                              Eng
41
                                           Cars 2
                                                   20000000.0
                                                                 2011.0
                                                                              Eng
42
                                   Green Lantern
                                                   200000000.0
                                                                 2011.0
                                                                              Eng
43
                                      Toy Story 3
                                                   20000000.0
                                                                 2010.0
                                                                              Eng
44
                            Terminator Salvation
                                                   20000000.0
                                                                 2009.0
                                                                              Eng
45
                                        Furious 7
                                                   19000000.0
                                                                 2015.0
                                                                              Eng
46
                                      World War Z
                                                   19000000.0
                                                                 2013.0
                                                                              Eng
47
                      X-Men: Days of Future Past
                                                   200000000.0
                                                                 2014.0
                                                                              Eng
48
                         Star Trek Into Darkness
                                                   190000000.0
                                                                 2013.0
                                                                              Eng
49
                           Jack the Giant Slayer
                                                   195000000.0
                                                                 2013.0
                                                                              Eng
                                The Great Gatsby
50
                                                   105000000.0
                                                                 2013.0
                                                                              Eng
    score
0
      7.9
1
      7.1
2
      6.8
3
      8.5
```

- 5 6.6
- 6 6.2
- 7 7.8
- 8 7.5
- 9 7.5
- 10 6.9
- 11 6.1
- 12 6.7
- 13 7.3
- 14 6.5
- 15 7.2
- 16 6.6
- 17 8.1
- 18 6.7
- 19 6.8
- 20 7.5
- 21 7.0
- 22 6.7
- 23 7.9
- 24 6.1
- 25 7.2
- 26 7.7
- 27 8.2
- 28 5.9
- 29 7.0
- 30 7.8
- 31 7.3
- 32 7.2
- 33 6.5
- 34 6.8
- 35 7.3
- 36 6.0
- 37 5.7
- 38 6.4
- 39 6.7
- 40 6.8
- 41 6.3
- 42 5.6
- 43 8.3
- 44 6.6
- 45 7.2
- 46 7.0
- 47 8.0
- 48 7.8
- 49 6.3
- 50 7.3

```
[14]: #mettre en miniscules les valeurs d'une colonne
movies['director_name'] = movies['director_name'].str.lower()

#check
movies.head(50)
```

```
[14]:
              director_name
                              duration
                                               gross \
      0
              james cameron
                                  178.0
                                         760505847.0
      1
             gore verbinski
                                  169.0
                                         309404152.0
      2
                  sam mendes
                                  148.0
                                         200074175.0
      3
          christopher nolan
                                  164.0
                                         448130642.0
      5
             andrew stanton
                                  132.0
                                          73058679.0
      6
                                  156.0
                                         336530303.0
                   sam raimi
      7
               nathan greno
                                  100.0
                                         200807262.0
      8
                 joss whedon
                                  141.0
                                         458991599.0
      9
                 david yates
                                  153.0
                                         301956980.0
      10
                 zack snyder
                                  183.0
                                         330249062.0
      11
               bryan singer
                                  169.0
                                         200069408.0
      12
               marc forster
                                  106.0
                                         168368427.0
      13
             gore verbinski
                                  151.0 423032628.0
      14
             gore verbinski
                                  150.0
                                          89289910.0
      15
                 zack snyder
                                  143.0
                                         291021565.0
      16
             andrew adamson
                                  150.0
                                         141614023.0
      17
                 joss whedon
                                  173.0
                                         623279547.0
      18
               rob marshall
                                  136.0
                                         241063875.0
      19
                                  106.0
           barry sonnenfeld
                                         179020854.0
      20
                                  164.0
                                         255108370.0
              peter jackson
      21
                                  153.0
                                         262030663.0
                  marc webb
      22
               ridley scott
                                  156.0
                                         105219735.0
      23
              peter jackson
                                  186.0
                                         258355354.0
      24
                 chris weitz
                                  113.0
                                          70083519.0
              peter jackson
      25
                                  201.0
                                         218051260.0
      26
              james cameron
                                  194.0
                                         658672302.0
      27
              anthony russo
                                  147.0
                                         407197282.0
                  peter berg
      28
                                  131.0
                                          65173160.0
      29
            colin trevorrow
                                  124.0
                                         652177271.0
      30
                  sam mendes
                                  143.0
                                         304360277.0
      31
                   sam raimi
                                  135.0
                                         373377893.0
      32
                 shane black
                                  195.0
                                         408992272.0
      33
                  tim burton
                                  108.0
                                         334185206.0
      34
                                  104.0
                                         234360014.0
               brett ratner
      35
                 dan scanlon
                                  104.0
                                         268488329.0
                                  150.0
      36
                michael bay
                                         402076689.0
      37
                michael bay
                                  165.0
                                         245428137.0
      38
                   sam raimi
                                  130.0
                                         234903076.0
      39
                  marc webb
                                  142.0
                                         202853933.0
      40
            joseph kosinski
                                  125.0
                                         172051787.0
```

41	john lasseter	106.0	191450875.0
42	martin campbell	123.0	116593191.0
43	lee unkrich	103.0	414984497.0
44	mcg	118.0	125320003.0
45	james wan	140.0	350034110.0
46	marc forster	123.0	202351611.0
47	bryan singer	149.0	233914986.0
48	j.j. abrams	132.0	228756232.0
49	bryan singer	114.0	65171860.0
50	baz luhrmann	143.0	144812796.0
	_		genres
0	A		enture Fantasy Sci-Fi
1			ion Adventure Fantasy
2		Acti	on Adventure Thriller
3			Action Thriller
5			tion Adventure Sci-Fi
6	A.1		ion Adventure Romance
7	Adventure   Animation	-	· · · · · · · · · · · · · · · · · · ·
8	A .3.		tion Adventure Sci-Fi
9 10	DA		amily Fantasy Mystery tion Adventure Sci-Fi
10			tion Adventure Sci-Fi tion Adventure Sci-Fi
12		AC	Action   Adventure
13		\( c \tau \)	ion Adventure Fantasy
14			ion Adventure Western
15	Δ		enture Fantasy Sci-Fi
16			enture Family Fantasy
17	11		tion Adventure Sci-Fi
18			ion Adventure Fantasy
19	Action Adventur		Family Fantasy Sci-Fi
20		-	Adventure Fantasy
21		Act	ion Adventure Fantasy
22			venture Drama History
23			Adventure Fantasy
24		Adv	enture Family Fantasy
25		Action Ad	venture Drama Romance
26			Drama Romance
27		Ac-	tion Adventure Sci-Fi
28	Ac	tion Adve	nture Sci-Fi Thriller
29	Ac	tion Adve	nture Sci-Fi Thriller
30		Acti	on Adventure Thriller
31	Ac		nture Fantasy Romance
32			tion Adventure Sci-Fi
33			enture Family Fantasy
34			ntasy Sci-Fi Thriller
35	Adventure   A	nimation   0	Comedy Family Fantasy

```
36
                                 Action | Adventure | Sci-Fi
37
                                 Action|Adventure|Sci-Fi
38
                                Adventure | Family | Fantasy
39
                        Action | Adventure | Fantasy | Sci-Fi
40
                                 Action | Adventure | Sci-Fi
41
               Adventure | Animation | Comedy | Family | Sport
42
                                 Action | Adventure | Sci-Fi
43
             Adventure | Animation | Comedy | Family | Fantasy
44
                                 Action | Adventure | Sci-Fi
45
                                   Action | Crime | Thriller
               Action | Adventure | Horror | Sci-Fi | Thriller
46
47
              Action | Adventure | Fantasy | Sci-Fi | Thriller
48
                                 Action | Adventure | Sci-Fi
49
                                        Adventure | Fantasy
50
                                            Drama | Romance
                                                                      year language
                                              title
                                                           budget
0
                                                      237000000.0
                                             Avatar
                                                                    2009.0
                                                                                  Eng
1
       Pirates of the Caribbean: At World's End
                                                      30000000.0
                                                                    2007.0
                                                                                  Eng
2
                                                      245000000.0
                                                                    2015.0
                                            Spectre
                                                                                 Eng
                            The Dark Knight Rises
3
                                                      250000000.0
                                                                    2012.0
                                                                                 Eng
5
                                        John Carter
                                                      263700000.0
                                                                    2012.0
                                                                                 Eng
6
                                      Spider-Man 3
                                                      258000000.0
                                                                    2007.0
                                                                                 Eng
7
                                            Tangled
                                                      260000000.0
                                                                    2010.0
                                                                                 Eng
8
                          Avengers: Age of Ultron
                                                                    2015.0
                                                      250000000.0
                                                                                 Eng
9
         Harry Potter and the Half-Blood Prince
                                                      250000000.0
                                                                    2009.0
                                                                                 Eng
10
              Batman v Superman: Dawn of Justice
                                                      250000000.0
                                                                    2016.0
                                                                                 Eng
11
                                  Superman Returns
                                                                    2006.0
                                                      209000000.0
                                                                                 Eng
                                 Quantum of Solace
12
                                                      20000000.0
                                                                    2008.0
                                                                                 Eng
                                                                    2006.0
13
     Pirates of the Caribbean: Dead Man's Chest
                                                      225000000.0
                                                                                 Eng
14
                                   The Lone Ranger
                                                      215000000.0
                                                                    2013.0
                                                                                  Eng
15
                                      Man of Steel
                                                      225000000.0
                                                                    2013.0
                                                                                  Eng
16
       The Chronicles of Narnia: Prince Caspian
                                                      225000000.0
                                                                    2008.0
                                                                                  Eng
17
                                      The Avengers
                                                      220000000.0
                                                                    2012.0
                                                                                 Eng
18
    Pirates of the Caribbean: On Stranger Tides
                                                                    2011.0
                                                      250000000.0
                                                                                  Eng
19
                                    Men in Black 3
                                                      225000000.0
                                                                    2012.0
                                                                                 Eng
20
      The Hobbit: The Battle of the Five Armies
                                                                    2014.0
                                                      250000000.0
                                                                                 Eng
21
                           The Amazing Spider-Man
                                                      230000000.0
                                                                    2012.0
                                                                                 Eng
22
                                         Robin Hood
                                                      200000000.0
                                                                    2010.0
                                                                                 Eng
23
             The Hobbit: The Desolation of Smaug
                                                      225000000.0
                                                                    2013.0
                                                                                 Eng
24
                                The Golden Compass
                                                      180000000.0
                                                                    2007.0
                                                                                 Eng
25
                                          King Kong
                                                      207000000.0
                                                                    2005.0
                                                                                 Eng
                                            Titanic
26
                                                                    1997.0
                                                      200000000.0
                                                                                 Eng
27
                       Captain America: Civil War
                                                      250000000.0
                                                                    2016.0
                                                                                 Eng
28
                                         Battleship
                                                      209000000.0
                                                                    2012.0
                                                                                 Eng
29
                                    Jurassic World
                                                      150000000.0
                                                                    2015.0
                                                                                  Eng
30
                                            Skyfall
                                                      20000000.0
                                                                    2012.0
                                                                                  Eng
```

```
31
                                    Spider-Man 2
                                                   200000000.0
                                                                2004.0
                                                                             Eng
32
                                                   200000000.0
                                                                2013.0
                                      Iron Man 3
                                                                             Eng
33
                             Alice in Wonderland
                                                   200000000.0
                                                                 2010.0
                                                                             Eng
34
                           X-Men: The Last Stand
                                                   210000000.0
                                                                2006.0
                                                                             Eng
35
                             Monsters University
                                                   20000000.0
                                                                2013.0
                                                                             Eng
            Transformers: Revenge of the Fallen
36
                                                   20000000.0
                                                                2009.0
                                                                             Eng
                Transformers: Age of Extinction
37
                                                   210000000.0
                                                                2014.0
                                                                             Eng
                       Oz the Great and Powerful
                                                   215000000.0
38
                                                                2013.0
                                                                             Eng
39
                        The Amazing Spider-Man 2
                                                   200000000.0
                                                                2014.0
                                                                             Eng
40
                                    TRON: Legacy
                                                   170000000.0
                                                                2010.0
                                                                             Eng
41
                                          Cars 2
                                                   200000000.0
                                                                2011.0
                                                                             Eng
42
                                   Green Lantern
                                                   200000000.0
                                                                2011.0
                                                                             Eng
43
                                     Toy Story 3
                                                   200000000.0
                                                                2010.0
                                                                             Eng
44
                            Terminator Salvation
                                                   200000000.0
                                                                2009.0
                                                                             Eng
45
                                       Furious 7
                                                   19000000.0
                                                                2015.0
                                                                             Eng
46
                                     World War Z
                                                   19000000.0
                                                                2013.0
                                                                             Eng
47
                     X-Men: Days of Future Past
                                                   20000000.0
                                                                2014.0
                                                                             Eng
48
                         Star Trek Into Darkness
                                                   19000000.0
                                                                2013.0
                                                                             Eng
49
                                                   195000000.0
                           Jack the Giant Slayer
                                                                2013.0
                                                                             Eng
50
                                The Great Gatsby
                                                   105000000.0
                                                                2013.0
                                                                             Eng
```

score 0 7.9 7.1 1 2 6.8 3 8.5 5 6.6 6 6.2 7 7.8 8 7.5 9 7.5 10 6.9 6.1 11 12 6.7 13 7.3 14 6.5 15 7.2 16 6.6 8.1 17 18 6.7 19 6.8 20 7.5 21 7.0 22 6.7 23 7.9 24 6.1

25

7.2

```
7.7
      26
      27
            8.2
            5.9
      28
      29
            7.0
      30
            7.8
            7.3
      31
            7.2
      32
      33
            6.5
            6.8
      34
      35
            7.3
            6.0
      36
      37
            5.7
      38
            6.4
            6.7
      39
      40
            6.8
      41
            6.3
            5.6
      42
            8.3
      43
            6.6
      44
            7.2
      45
      46
            7.0
            8.0
      47
      48
            7.8
      49
            6.3
            7.3
      50
[15]: #decouper des valeurs sur base d'une condition
      #decouper et creer une colonne surname en separant les deux noms grace au
       ⇔l'espace et recuperant la premiere parte (0), 1 est la deuxieme partie du
       \rightarrow decoupage
      movies['surname'] = movies['director_name'].str.split(" ").str.get(0)
      #check
      movies.head(50)
[15]:
              director_name
                              duration
                                               gross \
                                 178.0 760505847.0
      0
              james cameron
```

12	marc forster	106.0	168368427.0	
13	gore verbinski	151.0	423032628.0	
14	gore verbinski	150.0	89289910.0	
15	zack snyder	143.0	291021565.0	
16	andrew adamson	150.0	141614023.0	
17	joss whedon	173.0	623279547.0	
18	rob marshall	136.0		
19	barry sonnenfeld	106.0		
20	peter jackson	164.0		
21	marc webb	153.0	262030663.0	
22	ridley scott	156.0	105219735.0	
23	peter jackson	186.0		
24	chris weitz	113.0		
25	peter jackson	201.0		
26		194.0		
	james cameron			
27	anthony russo	147.0		
28	peter berg	131.0	65173160.0	
29	colin trevorrow	124.0	652177271.0	
30	sam mendes	143.0	304360277.0	
31	sam raimi	135.0	373377893.0	
32	shane black	195.0		
33	tim burton	108.0	334185206.0	
34	brett ratner	104.0	234360014.0	
35	dan scanlon	104.0	268488329.0	
36	michael bay	150.0	402076689.0	
37	michael bay	165.0	245428137.0	
38	sam raimi	130.0	234903076.0	
39	marc webb	142.0	202853933.0	
40	joseph kosinski	125.0	172051787.0	
41	john lasseter	106.0	191450875.0	
42	martin campbell	123.0	116593191.0	
43	lee unkrich	103.0	414984497.0	
44	mcg	118.0	125320003.0	
45	james wan	140.0	350034110.0	
46	marc forster	123.0	202351611.0	
47	bryan singer	149.0	233914986.0	
48	j.j. abrams	132.0	228756232.0	
49	bryan singer	114.0	65171860.0	
50	baz luhrmann	143.0	144812796.0	
			genres	\
0		Action Adv	enture Fantasy Sci-Fi	
1		Act	ion Adventure Fantasy	
2			on Adventure Thriller	
3			Action Thriller	
5		Ac	tion Adventure Sci-Fi	
6		Act	ion Adventure Romance	
			•	

7	Adventure   Animation   Comedy   Family   Fantasy   Mus	i						
8	Action Adventure Sci-Fi							
9	Adventure Family Fantasy Mys	tery						
10	Action Adventure Sci-Fi							
11	Action Adventure Sci-Fi							
12	Action Adven	iture						
13	Action Adventure Fan	ıtasy						
14	Action Adventure Wes	tern						
15	Action Adventure Fantasy Sc	:i-Fi						
16	Action Adventure Family Fan	ıtasy						
17	Action Adventure Sc							
18	Action Adventure Fan	ıtasy						
19	Action Adventure Comedy Family Fantasy Sc	:i-Fi						
20	Adventure Fan	ıtasy						
21	Action Adventure Fan	ıtasy						
22	Action Adventure Drama His	•						
23	Adventure Fan	ıtasy						
24	Adventure Family Fan	ıtasy						
25	Action Adventure Drama Rom	ance						
26	Drama Rom	ance						
27	Action Adventure Sc	:i-Fi						
28	Action Adventure Sci-Fi Thri	.ller						
29	Action Adventure Sci-Fi Thri	.ller						
30	Action Adventure Thri	.ller						
31	Action Adventure Fantasy Rom	ance						
32	Action Adventure Sc	:i-Fi						
33	Adventure Family Fan	ıtasy						
34	Action Adventure Fantasy Sci-Fi Thri	.ller						
35	Adventure   Animation   Comedy   Family   Fan	ıtasy						
36	Action Adventure Sc	:i-Fi						
37	Action Adventure Sc	:i-Fi						
38	Adventure Family Fan	ıtasy						
39	Action Adventure Fantasy Sc	:i-Fi						
40	Action Adventure Sc	:i-Fi						
41	Adventure   Animation   Comedy   Family   S	port						
42	Action Adventure Sc	:i-Fi						
43	Adventure   Animation   Comedy   Family   Fan	ıtasy						
44	Action Adventure Sc	:i-Fi						
45	Action Crime Thri	.ller						
46	Action Adventure Horror Sci-Fi Thri	.ller						
47	Action Adventure Fantasy Sci-Fi Thri	.ller						
48	Action Adventure Sc	:i-Fi						
49	Adventure Fan	ıtasy						
50	Drama Rom	ance						
	title	budget	-	language	\			
0	Avatar	237000000.0	2009.0	Eng				

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1
       Pirates of the Caribbean: At World's End
                                                    30000000.0
                                                                  2007.0
                                                                               Eng
2
                                                    245000000.0
                                                                  2015.0
                                          Spectre
                                                                               Eng
3
                           The Dark Knight Rises
                                                    250000000.0
                                                                  2012.0
                                                                               Eng
5
                                      John Carter
                                                    263700000.0
                                                                  2012.0
                                                                               Eng
6
                                     Spider-Man 3
                                                    258000000.0
                                                                  2007.0
                                                                               Eng
7
                                                                  2010.0
                                          Tangled
                                                    260000000.0
                                                                              Eng
8
                         Avengers: Age of Ultron
                                                    250000000.0
                                                                  2015.0
                                                                              Eng
9
         Harry Potter and the Half-Blood Prince
                                                    250000000.0
                                                                  2009.0
                                                                              Eng
10
             Batman v Superman: Dawn of Justice
                                                    250000000.0
                                                                  2016.0
                                                                               Eng
11
                                 Superman Returns
                                                    209000000.0
                                                                  2006.0
                                                                               Eng
12
                                Quantum of Solace
                                                    20000000.0
                                                                  2008.0
                                                                              Eng
13
     Pirates of the Caribbean: Dead Man's Chest
                                                    225000000.0
                                                                  2006.0
                                                                               Eng
14
                                  The Lone Ranger
                                                    215000000.0
                                                                  2013.0
                                                                              Eng
15
                                     Man of Steel
                                                    225000000.0
                                                                  2013.0
                                                                               Eng
16
       The Chronicles of Narnia: Prince Caspian
                                                                  2008.0
                                                    225000000.0
                                                                               Eng
17
                                     The Avengers
                                                    220000000.0
                                                                  2012.0
                                                                               Eng
18
    Pirates of the Caribbean: On Stranger Tides
                                                    250000000.0
                                                                  2011.0
                                                                               Eng
19
                                   Men in Black 3
                                                    225000000.0
                                                                  2012.0
                                                                               Eng
20
      The Hobbit: The Battle of the Five Armies
                                                    250000000.0
                                                                  2014.0
                                                                               Eng
21
                          The Amazing Spider-Man
                                                    230000000.0
                                                                  2012.0
                                                                               Eng
22
                                       Robin Hood
                                                    20000000.0
                                                                  2010.0
                                                                               Eng
23
            The Hobbit: The Desolation of Smaug
                                                    225000000.0
                                                                  2013.0
                                                                              Eng
24
                                                                  2007.0
                              The Golden Compass
                                                    180000000.0
                                                                               Eng
25
                                        King Kong
                                                    207000000.0
                                                                  2005.0
                                                                               Eng
26
                                          Titanic
                                                    200000000.0
                                                                  1997.0
                                                                               Eng
27
                      Captain America: Civil War
                                                    250000000.0
                                                                  2016.0
                                                                               Eng
28
                                       Battleship
                                                    209000000.0
                                                                  2012.0
                                                                              Eng
29
                                   Jurassic World
                                                    150000000.0
                                                                  2015.0
                                                                               Eng
30
                                          Skyfall
                                                    20000000.0
                                                                  2012.0
                                                                               Eng
31
                                     Spider-Man 2
                                                    200000000.0
                                                                  2004.0
                                                                               Eng
32
                                       Iron Man 3
                                                    200000000.0
                                                                  2013.0
                                                                               Eng
33
                             Alice in Wonderland
                                                    20000000.0
                                                                  2010.0
                                                                               Eng
                                                                               Eng
34
                           X-Men: The Last Stand
                                                    210000000.0
                                                                  2006.0
35
                             Monsters University
                                                    20000000.0
                                                                  2013.0
                                                                               Eng
            Transformers: Revenge of the Fallen
36
                                                    200000000.0
                                                                  2009.0
                                                                               Eng
37
                 Transformers: Age of Extinction
                                                    210000000.0
                                                                  2014.0
                                                                               Eng
                       Oz the Great and Powerful
38
                                                    215000000.0
                                                                  2013.0
                                                                              Eng
39
                        The Amazing Spider-Man 2
                                                                  2014.0
                                                    200000000.0
                                                                               Eng
40
                                     TRON: Legacy
                                                    170000000.0
                                                                  2010.0
                                                                              Eng
41
                                           Cars 2
                                                    200000000.0
                                                                  2011.0
                                                                               Eng
42
                                    Green Lantern
                                                    200000000.0
                                                                  2011.0
                                                                              Eng
43
                                      Toy Story 3
                                                    200000000.0
                                                                  2010.0
                                                                               Eng
44
                            Terminator Salvation
                                                                  2009.0
                                                    200000000.0
                                                                              Eng
45
                                        Furious 7
                                                    19000000.0
                                                                  2015.0
                                                                              Eng
46
                                      World War Z
                                                    19000000.0
                                                                  2013.0
                                                                               Eng
47
                      X-Men: Days of Future Past
                                                    200000000.0
                                                                  2014.0
                                                                               Eng
48
                         Star Trek Into Darkness
                                                    190000000.0
                                                                  2013.0
                                                                               Eng
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49						Slayer	195000000.0	2013.0	Eng
50			•	The	Great	Gatsby	105000000.0	2013.0	Eng
	score	surname							
0	7.9	james							
1	7.1	gore							
2	6.8	sam							
3	8.5	christopher							
5	6.6	andrew							
6	6.2	sam							
7	7.8	nathan							
Q	7 5	ioss							

8 7.5 joss 7.5 9 david 10 6.9 zack 6.1 11 bryan 12 6.7 marc 13 7.3 gore 14 6.5 gore 15 7.2 zack 16 6.6 andrew 17 8.1 joss 6.7 18 rob 19 6.8 barry 20 7.5 peter 21 7.0 marc 22 6.7 ridley 7.9 23 peter 24 6.1 chris 25 7.2 peter 26 7.7 james anthony 27 8.2 28 5.9 peter 7.0 29 colin 30 7.8 sam7.3 31 sam7.2 32 shane 6.5 33 tim 34 6.8 brett 35 7.3 dan 6.0 36 michael 37 5.7 michael 6.4 38 sam6.7 39 marc joseph 40 6.8 6.3 41 john 42 5.6 martin 43 8.3 lee

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7.2
      45
                        james
      46
            7.0
                         marc
      47
            8.0
                        bryan
      48
            7.8
                         j.j.
            6.3
      49
                        bryan
      50
            7.3
                          baz
[16]: #decouper et prendre la partie 1
      movies['name'] = movies['director_name'].str.split(" ").str.get(1)
      #check
      movies.head(50)
[16]:
              director_name
                              duration
                                               gross
      0
              james cameron
                                  178.0
                                         760505847.0
      1
             gore verbinski
                                  169.0
                                         309404152.0
      2
                  sam mendes
                                  148.0
                                         200074175.0
      3
          christopher nolan
                                  164.0
                                         448130642.0
      5
                                  132.0
             andrew stanton
                                          73058679.0
      6
                   sam raimi
                                  156.0
                                         336530303.0
      7
               nathan greno
                                         200807262.0
                                  100.0
      8
                 joss whedon
                                  141.0
                                         458991599.0
      9
                 david yates
                                  153.0
                                         301956980.0
                 zack snyder
      10
                                  183.0
                                         330249062.0
      11
               bryan singer
                                  169.0
                                         200069408.0
      12
               marc forster
                                  106.0
                                         168368427.0
      13
             gore verbinski
                                  151.0
                                         423032628.0
      14
             gore verbinski
                                  150.0
                                          89289910.0
      15
                 zack snyder
                                  143.0
                                         291021565.0
      16
             andrew adamson
                                  150.0
                                         141614023.0
      17
                 joss whedon
                                  173.0
                                         623279547.0
      18
               rob marshall
                                  136.0
                                         241063875.0
      19
           barry sonnenfeld
                                  106.0
                                         179020854.0
      20
              peter jackson
                                  164.0
                                         255108370.0
      21
                  marc webb
                                  153.0
                                         262030663.0
      22
               ridley scott
                                  156.0
                                         105219735.0
      23
              peter jackson
                                  186.0
                                         258355354.0
      24
                 chris weitz
                                  113.0
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      25
              peter jackson
                                  201.0
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      26
              james cameron
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      27
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              anthony russo
                                  147.0
      28
                  peter berg
                                  131.0
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      29
            colin trevorrow
                                  124.0
                                         652177271.0
      30
                  sam mendes
                                  143.0
                                         304360277.0
      31
                   sam raimi
                                  135.0
                                         373377893.0
      32
                 shane black
                                  195.0
                                         408992272.0
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44

6.6

mcg

33	tim burton	108.0	334185206.0	
34	brett ratner	104.0	234360014.0	
35	dan scanlon	104.0	268488329.0	
36	michael bay	150.0	402076689.0	
37	michael bay	165.0	245428137.0	
38	sam raimi	130.0	234903076.0	
39	marc webb	142.0	202853933.0	
40		125.0	172051787.0	
41	joseph kosinski			
	john lasseter	106.0	191450875.0	
42	martin campbell	123.0	116593191.0	
43	lee unkrich	103.0	414984497.0	
44	mcg	118.0	125320003.0	
45	james wan	140.0	350034110.0	
46	marc forster	123.0	202351611.0	
47	bryan singer	149.0	233914986.0	
48	j.j. abrams	132.0	228756232.0	
49	bryan singer	114.0	65171860.0	
50	baz luhrmann	143.0	144812796.0	
			genres	\
0	Action Adventure Fantasy Sci-Fi			
1	Action Adventure Fantasy			
2	Action Adventure Thriller			
_		11001	011   114   011   041   0   1111   111   01	
3			Action Thriller	
3 5		۸۵	Action Thriller	
5			tion Adventure Sci-Fi	
5 6	Adventume   Animetica	Act	tion Adventure Sci-Fi ion Adventure Romance	
5 6 7	Adventure   Animation	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi	
5 6 7 8		Act  Comedy F Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi	
5 6 7 8 9		Act  Comedy F Ac venture F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery	
5 6 7 8 9 10		Act  Comedy F Ac venture F Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi	
5 6 7 8 9 10 11		Act  Comedy F Ac venture F Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi	
5 6 7 8 9 10 11 12		Act  Comedy F Ac venture F Ac Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure	
5 6 7 8 9 10 11		Act  Comedy F Ac venture F Ac Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy	
5 6 7 8 9 10 11 12		Act  Comedy F Ac venture F Ac Ac	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure	
5 6 7 8 9 10 11 12 13	Adv	Act  Comedy F Ac  renture F Ac Act Act	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy	
5 6 7 8 9 10 11 12 13	Adv Ad	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western	
5 6 7 8 9 10 11 12 13 14 15	Adv Ad	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi	
5 6 7 8 9 10 11 12 13 14 15 16	Adv Ad	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16	Adv Adv Adv	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Sci-Fi	
5 6 7 8 9 10 11 12 13 14 15 16 17	Adv Adv Adv	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi	
5 6 7 8 9 10 11 12 13 14 15 16 17 18	Adv Adv Adv	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy tion Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy tion Adventure Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy tion Adventure Fantasy tion Adventure Fantasy tion Adventure Fantasy ton Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy venture Drama History Adventure Fantasy enture Family Fantasy	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy enture Drama History Adventure Fantasy enture Family Fantasy venture Drama Romance	
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Adv Ac Action   Adventure	Act  Comedy F	tion Adventure Sci-Fi ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy tion Adventure Fantasy tion Adventure Fantasy tion Adventure Fantasy ton Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy venture Drama History Adventure Fantasy enture Family Fantasy	

28	Action Adventure Sci-Fi Thr	riller			
29	Action Adventure Sci-Fi Thriller				
30					
31	Action Adventure Fantasy Ro	mance			
32					
33					
34	Action Adventure Fantasy Sci-Fi Thr	iller			
35	Adventure   Animation   Comedy   Family   Fa	•			
36	Action Adventure S				
37	Action Adventure S				
38	Adventure Family Fa	•			
39	Action Adventure Fantasy S				
40	Action Adventure S				
41	Adventure   Animation   Comedy   Family				
42	Action   Adventure   S				
43	Adventure   Animation   Comedy   Family   Fa	•			
44 45	Action Adventure S Action Crime Thr				
45 46	Action Adventure Horror Sci-Fi Thr				
47	Action Adventure Fantasy Sci-Fi Thr				
48	Action Adventure S				
49	Adventure Fa				
50	Drama Ro	•			
	title	budget	year	language	\
0	title Avatar	budget 237000000.0	year 2009.0	language Eng	\
0 1		_	-		\
1 2	Avatar Pirates of the Caribbean: At World's End Spectre	237000000.0 300000000.0 245000000.0	2009.0 2007.0 2015.0	Eng	\
1 2 3	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises	237000000.0 300000000.0 245000000.0 250000000.0	2009.0 2007.0 2015.0 2012.0	Eng Eng	\
1 2 3 5	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0	2009.0 2007.0 2015.0 2012.0 2012.0	Eng Eng Eng Eng Eng	\
1 2 3 5 6	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0	Eng Eng Eng Eng Eng	\
1 2 3 5 6 7	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0	Eng Eng Eng Eng Eng Eng	\
1 2 3 5 6 7 8	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0	Eng Eng Eng Eng Eng Eng Eng	\
1 2 3 5 6 7 8 9	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0 2009.0	Eng Eng Eng Eng Eng Eng Eng	\
1 2 3 5 6 7 8 9	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0 2009.0 2016.0	Eng Eng Eng Eng Eng Eng Eng Eng Eng	\
1 2 3 5 6 7 8 9 10	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0	Eng	\
1 2 3 5 6 7 8 9 10 11 12	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0	Eng	\
1 2 3 5 6 7 8 9 10 11 12 13	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 200000000.0 200000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0	Eng	\
1 2 3 5 6 7 8 9 10 11 12 13 14	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0 225000000.0 215000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0	Eng	\
1 2 3 5 6 7 8 9 10 11 12 13 14 15	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2007.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0	Eng	\
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0 2008.0	Eng	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers	237000000.0 300000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2016.0 2006.0 2006.0 2013.0 2013.0 2013.0 2012.0	Eng	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0 2013.0 2012.0 2011.0	Eng	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0 2013.0 2013.0 2012.0 2012.0	Eng	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3 The Hobbit: The Battle of the Five Armies	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2009.0 2016.0 2006.0 2008.0 2013.0 2013.0 2012.0 2011.0	Eng	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009.0 2007.0 2015.0 2012.0 2012.0 2010.0 2015.0 2016.0 2006.0 2006.0 2013.0 2013.0 2013.0 2012.0 2011.0 2014.0	Eng	

```
Eng
23
            The Hobbit: The Desolation of Smaug
                                                   225000000.0
                                                                 2013.0
24
                              The Golden Compass
                                                   180000000.0
                                                                 2007.0
                                                                              Eng
                                                   207000000.0
25
                                        King Kong
                                                                 2005.0
                                                                              Eng
                                          Titanic
26
                                                   200000000.0
                                                                 1997.0
                                                                              Eng
27
                      Captain America: Civil War
                                                   250000000.0
                                                                 2016.0
                                                                              Eng
28
                                       Battleship
                                                   209000000.0
                                                                 2012.0
                                                                              Eng
29
                                  Jurassic World
                                                   150000000.0
                                                                 2015.0
                                                                              Eng
30
                                          Skyfall
                                                   20000000.0
                                                                 2012.0
                                                                              Eng
31
                                    Spider-Man 2
                                                   200000000.0
                                                                 2004.0
                                                                              Eng
32
                                       Iron Man 3
                                                   200000000.0
                                                                 2013.0
                                                                              Eng
33
                             Alice in Wonderland
                                                   200000000.0
                                                                 2010.0
                                                                              Eng
34
                           X-Men: The Last Stand
                                                   210000000.0
                                                                 2006.0
                                                                              Eng
35
                             Monsters University
                                                   200000000.0
                                                                 2013.0
                                                                              Eng
36
            Transformers: Revenge of the Fallen
                                                   200000000.0
                                                                 2009.0
                                                                              Eng
37
                Transformers: Age of Extinction
                                                   210000000.0
                                                                 2014.0
                                                                              Eng
38
                       Oz the Great and Powerful
                                                   215000000.0
                                                                 2013.0
                                                                              Eng
39
                        The Amazing Spider-Man 2
                                                   200000000.0
                                                                 2014.0
                                                                              Eng
40
                                    TRON: Legacy
                                                   170000000.0
                                                                 2010.0
                                                                              Eng
41
                                           Cars 2
                                                   200000000.0
                                                                 2011.0
                                                                              Eng
42
                                   Green Lantern
                                                   200000000.0
                                                                 2011.0
                                                                              Eng
43
                                      Toy Story 3
                                                                 2010.0
                                                   20000000.0
                                                                              Eng
44
                            Terminator Salvation
                                                   200000000.0
                                                                 2009.0
                                                                              Eng
45
                                        Furious 7
                                                   19000000.0
                                                                 2015.0
                                                                              Eng
46
                                     World War Z
                                                   19000000.0
                                                                 2013.0
                                                                              Eng
47
                      X-Men: Days of Future Past
                                                   200000000.0
                                                                 2014.0
                                                                              Eng
48
                         Star Trek Into Darkness
                                                   190000000.0
                                                                 2013.0
                                                                              Eng
                           Jack the Giant Slayer
49
                                                   195000000.0
                                                                 2013.0
                                                                              Eng
50
                                The Great Gatsby
                                                   105000000.0
                                                                 2013.0
                                                                              Eng
```

	score	surname	name
0	7.9	james	cameron
1	7.1	gore	verbinski
2	6.8	sam	mendes
3	8.5	christopher	nolan
5	6.6	andrew	stanton
6	6.2	sam	raimi
7	7.8	nathan	greno
8	7.5	joss	whedon
9	7.5	david	yates
10	6.9	zack	snyder
11	6.1	bryan	singer
12	6.7	marc	forster
13	7.3	gore	verbinski
14	6.5	gore	verbinski
15	7.2	zack	snyder
16	6.6	andrew	adamson
17	8.1	joss	whedon

```
6.7
18
                     rob
                            marshall
19
      6.8
                  barry
                          sonnenfeld
      7.5
20
                  peter
                              jackson
21
      7.0
                    marc
                                 webb
22
      6.7
                 ridley
                                scott
23
      7.9
                  peter
                              jackson
      6.1
24
                  chris
                                weitz
25
      7.2
                  peter
                              jackson
26
      7.7
                   james
                              cameron
27
      8.2
                anthony
                                russo
      5.9
28
                  peter
                                 berg
29
      7.0
                  colin
                            trevorrow
      7.8
30
                     sam
                              mendes
      7.3
31
                     sam
                                raimi
32
      7.2
                                black
                   shane
33
      6.5
                     tim
                               burton
      6.8
34
                  brett
                               ratner
      7.3
35
                              scanlon
                     dan
      6.0
36
                michael
                                  bay
37
      5.7
                michael
                                  bay
38
      6.4
                     sam
                                raimi
      6.7
39
                                 webb
                    marc
40
      6.8
                  joseph
                            kosinski
      6.3
41
                            lasseter
                    john
42
      5.6
                 martin
                             campbell
      8.3
43
                     lee
                             unkrich
      6.6
                     mcg
                                  NaN
45
      7.2
                  james
                                  wan
      7.0
46
                    marc
                             forster
47
      8.0
                  bryan
                               singer
48
      7.8
                               abrams
                    j.j.
      6.3
49
                  bryan
                               singer
50
      7.3
                     baz
                             luhrmann
```

```
[52]: #Extraire les datas contenant le nom du director name ZACK SNYDER

movies_contain_zack = movies[movies['director_name'].str.contains("ZACK")]

#check
movies_contain_zack.head(50)
```

```
[52]:
             director_name
                             duration
                                              gross
      10
               ZACK SNYDER
                                183.0
                                        330249062.0
                                        291021565.0
      15
               ZACK SNYDER
                                143.0
      164
               ZACK SNYDER
                                215.0
                                        107503316.0
               ZACK SNYDER
      308
                                101.0
                                         55673333.0
      558
               ZACK SNYDER
                                128.0
                                         36381716.0
```

```
1535
            JUSTIN ZACKHAM
                                  89.0
                                         21784432.0
      1743
                ZACK SNYDER
                                 110.0
                                         58885635.0
                                                  genres \
      10
                                Action | Adventure | Sci-Fi
      15
                       Action | Adventure | Fantasy | Sci-Fi
      164
                            Action|Drama|Mystery|Sci-Fi
      308
            Action | Adventure | Animation | Family | Fantasy
      558
                                         Action|Fantasy
      701
                               Action | Drama | Fantasy | War
      1535
                                                  Comedy
      1743
                                 Action|Horror|Thriller
                                                       title
                                                                    budget
                                                                               year \
                                                               250000000.0
      10
                                                                             2016.0
                        Batman v Superman: Dawn of Justice
      15
                                                               225000000.0
                                                                             2013.0
                                                Man of Steel
      164
                                                    Watchmen
                                                               130000000.0
                                                                             2009.0
      308
            Legend of the Guardians: The Owls of Ga'Hoole
                                                                80000000.0
                                                                             2010.0
      558
                                                Sucker Punch
                                                                82000000.0
                                                                             2011.0
      701
                                                                65000000.0
                                                                             2006.0
      1535
                                             The Big Wedding
                                                                35000000.0
                                                                             2013.0
      1743
                                           Dawn of the Dead
                                                                26000000.0 2004.0
           language
                     score surname
                                                surnmame
                                                              name
      10
                                          [ZACK, SNYDER]
                 Eng
                        6.9
                                ZACK
                                                            SNYDER
                                          [ZACK, SNYDER]
      15
                 Eng
                        7.2
                                ZACK
                                                            SNYDER
      164
                 Eng
                        7.7
                                ZACK
                                          [ZACK, SNYDER]
                                                            SNYDER
                                          [ZACK, SNYDER]
      308
                 Eng
                        7.0
                                ZACK
                                                            SNYDER
      558
                                ZACK
                                          [ZACK, SNYDER]
                                                            SNYDER
                 Eng
                        6.1
      701
                        7.7
                                          [ZACK, SNYDER]
                 Eng
                                ZACK
                                                            SNYDER
                                      [JUSTIN, ZACKHAM]
      1535
                             JUSTIN
                 Eng
                        5.6
                                                          ZACKHAM
      1743
                 Eng
                        7.4
                                ZACK
                                          [ZACK, SNYDER]
                                                            SNYDER
[53]: #voir le nombre de caractères des valeurs d'une table
      movies contain zack['director name'].str.len() #ceci affiche les index
[53]: 10
              11
      15
              11
      164
              11
      308
               11
      558
               11
      701
              11
      1535
               14
      1743
      Name: director_name, dtype: int64
```

117.0 210592590.0

701

ZACK SNYDER

```
[55]: #afficher les valeurs y correspondantes
     movies_contain_zack.loc[movies_contain_zack['director_name'].str.len().
       →idxmax(), 'director_name']
[55]: 'JUSTIN ZACKHAM'
[17]: #Remplacement des valeurs particulieres
     movies['year'].replace({'2009.0':'2009', '2010.0':'2010'})
     #check
     movies.head(50)
     #changer le type de year
     movies.info()
     movies['year'] = movies['year'].astype('int')
     #check
     movies.info()
     <class 'pandas.core.frame.DataFrame'>
     Int64Index: 3655 entries, 0 to 4915
     Data columns (total 11 columns):
                        Non-Null Count Dtype
         Column
      0
          director_name 3655 non-null
                                        object
                        3655 non-null
                                        float64
      1
          duration
      2
                        3655 non-null
                                        float64
          gross
                        3655 non-null
      3
         genres
                                        object
      4
         title
                        3655 non-null
                                        object
      5
         budget
                        3655 non-null
                                        float64
      6
                        3655 non-null
                                        float64
          year
      7
                        3655 non-null
                                        object
          language
          score
                        3655 non-null
                                        float64
      9
          surname
                        3655 non-null
                                        object
      10 name
                        3645 non-null
                                        object
     dtypes: float64(5), object(6)
     memory usage: 342.7+ KB
     <class 'pandas.core.frame.DataFrame'>
     Int64Index: 3655 entries, 0 to 4915
     Data columns (total 11 columns):
         Column
                        Non-Null Count Dtype
                        -----
     ____
      0
          director_name 3655 non-null
                                        object
          duration
                      3655 non-null
                                        float64
      1
      2
                        3655 non-null
                                        float64
          gross
          genres
                        3655 non-null
                                        object
```

```
4
     title
                     3655 non-null
                                      object
 5
     budget
                     3655 non-null
                                      float64
 6
     year
                     3655 non-null
                                      int32
 7
     language
                     3655 non-null
                                      object
 8
                                      float64
     score
                     3655 non-null
 9
     surname
                     3655 non-null
                                      object
 10
    name
                     3645 non-null
                                      object
dtypes: float64(4), int32(1), object(6)
```

memory usage: 328.4+ KB

# [60]: #check my new data movies.head(50)

```
[60]:
              director_name
                              duration
                                               gross
      0
              JAMES CAMERON
                                 178.0
                                        760505847.0
      1
             GORE VERBINSKI
                                 169.0
                                        309404152.0
      2
                 SAM MENDES
                                 148.0
                                        200074175.0
      3
          CHRISTOPHER NOLAN
                                 164.0
                                        448130642.0
      5
             ANDREW STANTON
                                 132.0
                                         73058679.0
                                 156.0
      6
                   SAM RAIMI
                                        336530303.0
      7
               NATHAN GRENO
                                 100.0
                                        200807262.0
      8
                JOSS WHEDON
                                 141.0
                                        458991599.0
      9
                DAVID YATES
                                 153.0
                                        301956980.0
      10
                ZACK SNYDER
                                 183.0
                                        330249062.0
               BRYAN SINGER
      11
                                 169.0
                                        200069408.0
      12
               MARC FORSTER
                                 106.0
                                        168368427.0
      13
             GORE VERBINSKI
                                 151.0
                                        423032628.0
      14
             GORE VERBINSKI
                                 150.0
                                         89289910.0
      15
                ZACK SNYDER
                                 143.0
                                        291021565.0
      16
             ANDREW ADAMSON
                                 150.0 141614023.0
      17
                JOSS WHEDON
                                 173.0
                                        623279547.0
      18
               ROB MARSHALL
                                 136.0
                                        241063875.0
      19
           BARRY SONNENFELD
                                 106.0 179020854.0
      20
              PETER JACKSON
                                 164.0
                                        255108370.0
      21
                  MARC WEBB
                                        262030663.0
                                 153.0
      22
               RIDLEY SCOTT
                                 156.0
                                        105219735.0
      23
              PETER JACKSON
                                 186.0
                                        258355354.0
      24
                CHRIS WEITZ
                                 113.0
                                         70083519.0
      25
              PETER JACKSON
                                 201.0
                                        218051260.0
      26
                                 194.0
                                        658672302.0
              JAMES CAMERON
      27
              ANTHONY RUSSO
                                 147.0
                                        407197282.0
      28
                 PETER BERG
                                         65173160.0
                                 131.0
      29
            COLIN TREVORROW
                                 124.0
                                        652177271.0
      30
                 SAM MENDES
                                 143.0
                                        304360277.0
      31
                   SAM RAIMI
                                 135.0
                                        373377893.0
      32
                SHANE BLACK
                                 195.0 408992272.0
```

33	TIM BURTON	108.0	334185206.0	
34	BRETT RATNER	104.0	234360014.0	
35	DAN SCANLON	104.0	268488329.0	
36	MICHAEL BAY	150.0	402076689.0	
37	MICHAEL BAY	165.0	245428137.0	
38	SAM RAIMI	130.0	234903076.0	
39	MARC WEBB	142.0	202853933.0	
40	JOSEPH KOSINSKI	125.0	172051787.0	
41	JOHN LASSETER	106.0	191450875.0	
42	MARTIN CAMPBELL	123.0	116593191.0	
43	LEE UNKRICH	103.0	414984497.0	
44	MCG	118.0	125320003.0	
45				
	JAMES WAN	140.0	350034110.0	
46	MARC FORSTER	123.0		
47	BRYAN SINGER	149.0	233914986.0	
48	J.J. ABRAMS	132.0	228756232.0	
49	BRYAN SINGER	114.0	65171860.0	
50	BAZ LUHRMANN	143.0	144812796.0	
			genres	\
0	Δ	rtion   Adv	enture Fantasy Sci-Fi	`
	, and		•	
1			ion Adventure Fantasy	
2		Acti	on Adventure Thriller	
3			Action Thriller	
5			tion Adventure Sci-Fi	
5 6			tion Adventure Sci-Fi ion Adventure Romance	
	Adventure   Animation	Act	ion Adventure Romance	
6	Adventure   Animation	Act  Comedy F	ion Adventure Romance	
6 7		Act  Comedy F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi	
6 7 8 9		Act  Comedy F Ac venture F	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery	
6 7 8 9 10		Act  Comedy F Ac venture F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi	
6 7 8 9 10 11		Act  Comedy F Ac venture F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi	
6 7 8 9 10 11 12		Act  Comedy F Ac  Zenture F Ac Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure	
6 7 8 9 10 11 12 13		Act  Comedy F Ac  Zenture F Ac Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure	
6 7 8 9 10 11 12 13	Adv	Act  Comedy F Ac  Yenture F Ac Act Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western	
6 7 8 9 10 11 12 13 14	Adv Ad	Act  Comedy F Ac  renture F Ac Act Act  ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi	
6 7 8 9 10 11 12 13	Adv Ad	Act  Comedy F Ac  renture F Ac Act Act  ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western	
6 7 8 9 10 11 12 13 14	Adv Ad	Act  Comedy F	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi	
6 7 8 9 10 11 12 13 14 15 16	Adv Ad	Act  Comedy F  Act  Act  Act  Ction Adv  Act  Act  Ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Sci-Fi	
6 7 8 9 10 11 12 13 14 15 16 17	Adv Adv Adv	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Sci-Fi ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18	Adv Adv Adv	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Adv Adv Adv	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Ac Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	Adv Ac Action   Adventure	Act Comedy F Ac Venture F Ac Act Act Ction Adv Ction Adv Act e Comedy  Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Adv Ac Action   Adventure	Act Comedy F Ac Venture F Ac Act Act Ction Adv Ction Adv Act e Comedy  Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Act  Ction Adv  Act  Comedy   Action Ad	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Sci-Fi enture Family Fantasy tion Adventure Fantasy tion Adventure Fantasy tion Adventure Fantasy ton Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy venture Drama History Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Comedy   Act  Act  Act  Act  Act  Act  Act  Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy enture Drama History Adventure Fantasy enture Family Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Comedy   Act  Act  Act  Act  Act  Act  Act  Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy Sci-Fi Adventure Fantasy venture Drama History Adventure Fantasy enture Family Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Comedy   Act  Act  Act  Act  Act  Act  Act  Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy enture Drama History Adventure Fantasy enture Family Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Adv Ac Action   Adventure	Act  Comedy F	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy Sci-Fi Adventure Fantasy venture Drama History Adventure Fantasy enture Family Fantasy	

28	Action Adventure Sci-Fi Thr	iller			
29	Action Adventure Sci-Fi Thr	iller			
30	Action Adventure Thr	iller			
31	Action Adventure Fantasy Ro	mance			
32	Action Adventure S	ci-Fi			
33	Adventure Family Fa	ntasy			
34	Action Adventure Fantasy Sci-Fi Thr	iller			
35	Adventure   Animation   Comedy   Family   Fa	ntasy			
36	Action Adventure S	ci-Fi			
37	Action Adventure S	ci-Fi			
38	Adventure Family Fa	ntasy			
39	Action Adventure Fantasy S	ci-Fi			
40	Action Adventure S	ci-Fi			
41	Adventure   Animation   Comedy   Family	Sport			
42	Action Adventure S				
43	Adventure   Animation   Comedy   Family   Fa	•			
44	Action Adventure S	ci-Fi			
45	Action Crime Thr				
46	Action Adventure Horror Sci-Fi Thr				
47	Action Adventure Fantasy Sci-Fi Thr				
48	Action Adventure S				
49	Adventure Fa	•			
50	Drama Ro	mance			
	#:#1.	hd		1	,
0	title Avatar	budget 237000000.0	2009	language	\
1	Pirates of the Caribbean: At World's End	300000000.0	2003	Eng Eng	
2	Spectre	2450000000.0	2015	Eng	
3	The Dark Knight Rises	250000000.0	2012	Eng	
5	John Carter	263700000.0	2012	Eng	
6	Spider-Man 3	258000000.0	2007	Eng	
7	Tangled	260000000.0	2010	Eng	
8	Avengers: Age of Ultron	250000000.0	2015	Eng	
9	Harry Potter and the Half-Blood Prince	250000000.0	2009	Eng	
10	Batman v Superman: Dawn of Justice	250000000.0	2016	Eng	
11	Superman Returns	209000000.0	2006	Eng	
12	Quantum of Solace	200000000.0	2008	Eng	
13	Pirates of the Caribbean: Dead Man's Chest	225000000.0	2006	Eng	
14	The Lone Ranger	215000000.0	2013	Eng	
15	Man of Steel	225000000.0	2013	Eng	
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008	Eng	
17	The Avengers	220000000.0	2012	Eng	
17 18				Eng Eng	
	The Avengers	220000000.0	2012	Eng Eng Eng	
18	The Avengers Pirates of the Caribbean: On Stranger Tides	220000000.0 250000000.0	2012 2011	Eng	
18 19	The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3	220000000.0 250000000.0 225000000.0	2012 2011 2012	Eng Eng	
18 19 20	The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3 The Hobbit: The Battle of the Five Armies	220000000.0 250000000.0 225000000.0 250000000.0	2012 2011 2012 2014	Eng Eng Eng	

```
23
             The Hobbit: The Desolation of Smaug
                                                     225000000.0
                                                                   2013
                                                                              Eng
24
                                                                   2007
                               The Golden Compass
                                                     18000000.0
                                                                             Eng
25
                                         King Kong
                                                     207000000.0
                                                                   2005
                                                                              Eng
                                           Titanic
26
                                                     20000000.0
                                                                   1997
                                                                             Eng
27
                      Captain America: Civil War
                                                     250000000.0
                                                                   2016
                                                                              Eng
28
                                        Battleship
                                                     209000000.0
                                                                   2012
                                                                             Eng
                                                                   2015
29
                                   Jurassic World
                                                    150000000.0
                                                                             Eng
30
                                           Skyfall
                                                     20000000.0
                                                                   2012
                                                                             Eng
31
                                     Spider-Man 2
                                                     20000000.0
                                                                   2004
                                                                             Eng
32
                                        Iron Man 3
                                                     20000000.0
                                                                   2013
                                                                             Eng
33
                              Alice in Wonderland
                                                    200000000.0
                                                                   2010
                                                                             Eng
34
                            X-Men: The Last Stand
                                                    210000000.0
                                                                   2006
                                                                             Eng
35
                              Monsters University
                                                     20000000.0
                                                                   2013
                                                                             Eng
                                                    20000000.0
36
             Transformers: Revenge of the Fallen
                                                                   2009
                                                                             Eng
37
                 Transformers: Age of Extinction
                                                     210000000.0
                                                                   2014
                                                                             Eng
38
                       Oz the Great and Powerful
                                                     215000000.0
                                                                   2013
                                                                              Eng
39
                        The Amazing Spider-Man 2
                                                     20000000.0
                                                                   2014
                                                                              Eng
40
                                     TRON: Legacy
                                                     170000000.0
                                                                   2010
                                                                             Eng
41
                                            Cars 2
                                                     20000000.0
                                                                   2011
                                                                              Eng
42
                                    Green Lantern
                                                    200000000.0
                                                                   2011
                                                                             Eng
43
                                       Toy Story 3
                                                     20000000.0
                                                                   2010
                                                                             Eng
44
                             Terminator Salvation
                                                    200000000.0
                                                                   2009
                                                                             Eng
45
                                         Furious 7
                                                     19000000.0
                                                                   2015
                                                                             Eng
46
                                                                   2013
                                      World War Z
                                                     190000000.0
                                                                             Eng
47
                      X-Men: Days of Future Past
                                                                   2014
                                                     200000000.0
                                                                             Eng
48
                          Star Trek Into Darkness
                                                     190000000.0
                                                                   2013
                                                                             Eng
49
                            Jack the Giant Slayer
                                                     195000000.0
                                                                   2013
                                                                             Eng
50
                                 The Great Gatsby
                                                     105000000.0
                                                                   2013
                                                                             Eng
    score
                surname
                                      surnmame
                                                        name
0
      7.9
                  JAMES
                              [JAMES, CAMERON]
                                                     CAMERON
1
      7.1
                             [GORE, VERBINSKI]
                   GORE
                                                  VERBINSKI
2
      6.8
                                 [SAM, MENDES]
                    SAM
                                                      MENDES
3
                          [CHRISTOPHER, NOLAN]
      8.5
            CHRISTOPHER
                                                       NOLAN
5
                             [ANDREW, STANTON]
      6.6
                 ANDREW
                                                    STANTON
6
      6.2
                    SAM
                                  [SAM, RAIMI]
                                                       RAIMI
7
      7.8
                 NATHAN
                               [NATHAN, GRENO]
                                                       GRENO
8
      7.5
                   JOSS
                                [JOSS, WHEDON]
                                                      WHEDON
                                [DAVID, YATES]
9
      7.5
                  DAVID
                                                       YATES
10
      6.9
                                [ZACK, SNYDER]
                   ZACK
                                                      SNYDER
11
      6.1
                               [BRYAN, SINGER]
                  BRYAN
                                                      SINGER
12
      6.7
                   MARC
                               [MARC, FORSTER]
                                                    FORSTER
13
      7.3
                   GORE
                             [GORE, VERBINSKI]
                                                  VERBINSKI
14
      6.5
                   GORE
                             [GORE, VERBINSKI]
                                                  VERBINSKI
15
      7.2
                                [ZACK, SNYDER]
                   ZACK
                                                      SNYDER
16
      6.6
                 ANDREW
                             [ANDREW, ADAMSON]
                                                     ADAMSON
                                [JOSS, WHEDON]
17
      8.1
                   JOSS
                                                      WHEDON
```

```
[ROB, MARSHALL]
18
      6.7
                    ROB
                                                    MARSHALL
      6.8
                  BARRY
                            [BARRY, SONNENFELD]
                                                  SONNENFELD
19
                               [PETER, JACKSON]
20
      7.5
                  PETER
                                                      JACKSON
21
      7.0
                                   [MARC, WEBB]
                   MARC
                                                         WEBB
22
      6.7
                 RIDLEY
                                [RIDLEY, SCOTT]
                                                        SCOTT
23
      7.9
                               [PETER, JACKSON]
                  PETER
                                                      JACKSON
                                 [CHRIS, WEITZ]
24
      6.1
                  CHRIS
                                                        WEITZ
      7.2
                               [PETER, JACKSON]
25
                  PETER
                                                      JACKSON
                               [JAMES, CAMERON]
26
      7.7
                  JAMES
                                                      CAMERON
27
      8.2
                ANTHONY
                               [ANTHONY, RUSSO]
                                                        RUSSO
      5.9
                                  [PETER, BERG]
28
                  PETER
                                                         BERG
29
      7.0
                  COLIN
                             [COLIN, TREVORROW]
                                                    TREVORROW
                                  [SAM, MENDES]
30
      7.8
                    SAM
                                                       MENDES
                                   [SAM, RAIMI]
31
      7.3
                     SAM
                                                        RAIMI
      7.2
                  SHANE
                                 [SHANE, BLACK]
32
                                                        BLACK
                                  [TIM, BURTON]
33
      6.5
                     TIM
                                                       BURTON
                                [BRETT, RATNER]
34
      6.8
                  BRETT
                                                       RATNER
35
      7.3
                                 [DAN, SCANLON]
                                                      SCANLON
                     DAN
36
      6.0
                                 [MICHAEL, BAY]
                MICHAEL
                                                          BAY
      5.7
                                 [MICHAEL, BAY]
37
                MICHAEL
                                                          BAY
38
      6.4
                                   [SAM, RAIMI]
                    SAM
                                                        RAIMI
                                   [MARC, WEBB]
39
      6.7
                                                         WEBB
                   MARC
40
      6.8
                 JOSEPH
                             [JOSEPH, KOSINSKI]
                                                    KOSINSKI
                               [JOHN, LASSETER]
41
      6.3
                    JOHN
                                                    LASSETER
42
      5.6
                 MARTIN
                             [MARTIN, CAMPBELL]
                                                     CAMPBELL
43
      8.3
                    LEE
                                 [LEE, UNKRICH]
                                                     UNKRICH
      6.6
                    MCG
                                           [MCG]
44
                                                          NaN
45
      7.2
                  JAMES
                                   [JAMES, WAN]
                                                          WAN
      7.0
                                [MARC, FORSTER]
46
                   MARC
                                                      FORSTER
47
      8.0
                  BRYAN
                                [BRYAN, SINGER]
                                                       SINGER
48
      7.8
                   J.J.
                                 [J.J., ABRAMS]
                                                       ABRAMS
                                [BRYAN, SINGER]
49
      6.3
                  BRYAN
                                                       SINGER
50
                                [BAZ, LUHRMANN]
      7.3
                     BAZ
                                                     LUHRMANN
```

```
[62]: #Changer les colonnes en Maj ou Minisucles
movies = movies.rename(columns = str.upper)
#check
movies.head(50)
```

```
[62]:
              DIRECTOR_NAME
                              DURATION
                                               GROSS
      0
              JAMES CAMERON
                                 178.0
                                         760505847.0
      1
             GORE VERBINSKI
                                 169.0
                                         309404152.0
      2
                 SAM MENDES
                                 148.0
                                         200074175.0
      3
          CHRISTOPHER NOLAN
                                 164.0
                                         448130642.0
      5
             ANDREW STANTON
                                          73058679.0
                                 132.0
```

6	SAM RAIMI	156.0	336530303.0
7	NATHAN GRENO	100.0	200807262.0
8	JOSS WHEDON	141.0	458991599.0
9	DAVID YATES	153.0	301956980.0
10	ZACK SNYDER	183.0	330249062.0
11	BRYAN SINGER	169.0	200069408.0
12	MARC FORSTER	106.0	168368427.0
13	GORE VERBINSKI	151.0	423032628.0
14	GORE VERBINSKI	150.0	89289910.0
15	ZACK SNYDER	143.0	291021565.0
16	ANDREW ADAMSON	150.0	141614023.0
17	JOSS WHEDON	173.0	623279547.0
18	ROB MARSHALL	136.0	241063875.0
19	BARRY SONNENFELD	106.0	179020854.0
20	PETER JACKSON	164.0	255108370.0
21	MARC WEBB	153.0	262030663.0
22	RIDLEY SCOTT	156.0	105219735.0
23	PETER JACKSON	186.0	258355354.0
24	CHRIS WEITZ	113.0	70083519.0
25	PETER JACKSON	201.0	218051260.0
26	JAMES CAMERON	194.0	658672302.0
27	ANTHONY RUSSO	147.0	407197282.0
28	PETER BERG	131.0	65173160.0
29	COLIN TREVORROW	124.0	652177271.0
30	SAM MENDES	143.0	304360277.0
31	SAM RAIMI	135.0	373377893.0
32	SHANE BLACK	195.0	408992272.0
33	TIM BURTON	108.0	334185206.0
34	BRETT RATNER	104.0	234360014.0
35	DAN SCANLON	104.0	268488329.0
36	MICHAEL BAY	150.0	402076689.0
37	MICHAEL BAY	165.0	245428137.0
38	SAM RAIMI	130.0	234903076.0
39	MARC WEBB	142.0	202853933.0
40	JOSEPH KOSINSKI	125.0	172051787.0
41	JOHN LASSETER	106.0	191450875.0
42	MARTIN CAMPBELL	123.0	116593191.0
43	LEE UNKRICH	103.0	414984497.0
44	MCG	118.0	125320003.0
45	JAMES WAN	140.0	350034110.0
46	MARC FORSTER	123.0	202351611.0
47	BRYAN SINGER	149.0	233914986.0
48	J.J. ABRAMS	132.0	228756232.0
49	BRYAN SINGER	114.0	65171860.0
50	BAZ LUHRMANN	143.0	144812796.0
00	PAG LOMMIANN	140.0	111012/00.0

GENRES \

0	Action Adventure Fantasy Sci-Fi
1	Action Adventure Fantasy
2	Action Adventure Thriller
3	Action Thriller
5	Action Adventure Sci-Fi
6	Action   Adventure   Romance
7	Adventure   Animation   Comedy   Family   Fantasy   Musi
8	Action   Adventure   Sci-Fi
9	Adventure Family Fantasy Mystery
10	Action Adventure Sci-Fi
11	Action Adventure Sci-Fi
12	Action   Adventure
13	
	Action Adventure Fantasy
14	Action Adventure Western
15	Action Adventure Fantasy Sci-Fi
16	Action Adventure Family Fantasy
17	Action Adventure Sci-Fi
18	Action Adventure Fantasy
19	Action Adventure Comedy Family Fantasy Sci-Fi
20	Adventure Fantasy
21	Action Adventure Fantasy
22	Action Adventure Drama History
23	Adventure Fantasy
24	Adventure Family Fantasy
25	Action Adventure Drama Romance
26	Drama Romance
27	Action Adventure Sci-Fi
28	Action Adventure Sci-Fi Thriller
29	Action Adventure Sci-Fi Thriller
30	Action   Adventure   Thriller
31	Action Adventure Fantasy Romance
32	Action Adventure Sci-Fi
33	Adventure Family Fantasy
34	Action   Adventure   Fantasy   Sci-Fi   Thriller
35	Adventure   Animation   Comedy   Family   Fantasy
36	Action Adventure Sci-Fi
37	Action Adventure Sci-Fi
38	Adventure Family Fantasy
39	Action Adventure Fantasy Sci-Fi
40	Action Adventure Sci-Fi
41	Adventure   Animation   Comedy   Family   Sport
42	Action   Adventure   Sci-Fi
43	Adventure   Animation   Comedy   Family   Fantasy
44	Action Adventure Sci-Fi
45	Action Crime Thriller
46	Action Adventure Horror Sci-Fi Thriller
47	Action Adventure Fantasy Sci-Fi Thriller

48					
49	·				
50	Drama Ro	mance			
	TITLE	BUDGET	YEAR	LANGUAGE	\
0	Avatar	237000000.0	2009	Eng	
1	Pirates of the Caribbean: At World's End	300000000.0	2007	Eng	
2	Spectre	245000000.0	2015	Eng	
3	The Dark Knight Rises	250000000.0	2012	Eng	
5	John Carter	263700000.0	2012	Eng	
6	Spider-Man 3	258000000.0	2007	Eng	
7	Tangled	260000000.0	2010	Eng	
8	Avengers: Age of Ultron	250000000.0	2015	Eng	
9	Harry Potter and the Half-Blood Prince	250000000.0	2009	Eng	
10	Batman v Superman: Dawn of Justice	250000000.0	2016	Eng	
11	Superman Returns	209000000.0	2006	Eng	
12	Quantum of Solace	200000000.0	2008	Eng	
13	Pirates of the Caribbean: Dead Man's Chest	225000000.0	2006	Eng	
14	The Lone Ranger	215000000.0	2013	Eng	
15	Man of Steel	225000000.0	2013	Eng	
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008	Eng	
17	The Avengers	220000000.0	2012	Eng	
18	Pirates of the Caribbean: On Stranger Tides	250000000.0	2011	Eng	
19	Men in Black 3	225000000.0	2012	Eng	
20 21	The Hobbit: The Battle of the Five Armies	250000000.0 230000000.0	2014 2012	Eng	
22	The Amazing Spider-Man Robin Hood	200000000.0	2012	Eng	
23	The Hobbit: The Desolation of Smaug	2250000000.0	2010	Eng Eng	
24	The Golden Compass	180000000.0	2017	Eng	
25	King Kong	207000000.0	2005	Eng	
26	Titanic	200000000.0	1997	Eng	
27	Captain America: Civil War	250000000.0	2016	Eng	
28	Battleship	209000000.0	2012	Eng	
29	Jurassic World	150000000.0	2015	Eng	
30	Skyfall	200000000.0	2012	Eng	
31	Spider-Man 2	200000000.0	2004	Eng	
32	Iron Man 3	200000000.0	2013	Eng	
33	Alice in Wonderland	200000000.0	2010	Eng	
34	X-Men: The Last Stand	210000000.0	2006	Eng	
35	Monsters University	200000000.0	2013	Eng	
36	Transformers: Revenge of the Fallen	200000000.0	2009	Eng	
37	Transformers: Age of Extinction	210000000.0	2014	Eng	
38	Oz the Great and Powerful	215000000.0	2013	Eng	
39	The Amazing Spider-Man 2	200000000.0	2014	Eng	
40	TRON: Legacy	170000000.0	2010	Eng	
41	Cars 2	200000000.0	2011	Eng	
42	Green Lantern	200000000.0	2011	Eng	

43 44 45 46 47		X-	Terminator Salvati Furious World War Men: Days of Future Pa	7 190000000.0 Z 190000000.0 st 200000000.0	2010 2009 2015 2013 2014	Eng Eng Eng Eng
48 49			Star Trek Into Darkne Jack the Giant Slay		2013 2013	Eng Eng
50			•	by 105000000.0		Eng
	SCORE	SURNAME	SURNMAME	NAME		
0	7.9	JAMES	[JAMES, CAMERON]	CAMERON		
1	7.1	GORE	[GORE, VERBINSKI]			
2	6.8	SAM	[SAM, MENDES]	MENDES		
3						
	8.5	CHRISTOPHER	[CHRISTOPHER, NOLAN]	NOLAN		
5	6.6	ANDREW	[ANDREW, STANTON]	STANTON		
6	6.2	SAM	[SAM, RAIMI]	RAIMI		
7	7.8	NATHAN	[NATHAN, GRENO]	GRENO		
8	7.5	JOSS	[JOSS, WHEDON]	WHEDON		
9	7.5	DAVID	[DAVID, YATES]	YATES		
10	6.9	ZACK	[ZACK, SNYDER]	SNYDER		
11	6.1	BRYAN	[BRYAN, SINGER]	SINGER		
12	6.7	MARC	[MARC, FORSTER]	FORSTER		
13	7.3	GORE	[GORE, VERBINSKI]	VERBINSKI		
14	6.5	GORE	[GORE, VERBINSKI]	VERBINSKI		
15	7.2	ZACK	[ZACK, SNYDER]	SNYDER		
16	6.6	ANDREW	[ANDREW, ADAMSON]	ADAMSON		
17	8.1	JOSS	[JOSS, WHEDON]	WHEDON		
18	6.7	ROB	[ROB, MARSHALL]	MARSHALL		
19	6.8	BARRY	[BARRY, SONNENFELD]	SONNENFELD		
20	7.5	PETER	[PETER, JACKSON]	JACKSON		
21	7.0	MARC	[MARC, WEBB]	WEBB		
22	6.7	RIDLEY	[RIDLEY, SCOTT]	SCOTT		
23	7.9	PETER	[PETER, JACKSON]	JACKSON		
24		CHRIS	[CHRIS, WEITZ]	WEITZ		
25	7.2	PETER	[PETER, JACKSON]			
26	7.7	JAMES	· · · · · · · · · · · · · · · · · · ·	CAMERON		
27	8.2	ANTHONY	[ANTHONY, RUSSO]			
28	5.9	PETER	[PETER, BERG]	BERG		
29	7.0	COLIN	[COLIN, TREVORROW]			
30	7.8	SAM	[SAM, MENDES]			
			· · · · · · · · · · · · · · · · · · ·	MENDES		
31	7.3	SAM	[SAM, RAIMI]	RAIMI		
32	7.2	SHANE	[SHANE, BLACK]	BLACK		
33	6.5	TIM	[TIM, BURTON]	BURTON		
34	6.8	BRETT		RATNER		
35	7.3	DAN	[DAN, SCANLON]			
36	6.0	MICHAEL	[MICHAEL, BAY]	BAY		
37	5.7	MICHAEL	[MICHAEL, BAY]	BAY		

```
6.4
                                   [SAM, RAIMI]
38
                     SAM
                                                        RAIMI
39
      6.7
                   MARC
                                   [MARC, WEBB]
                                                         WEBB
      6.8
40
                 JOSEPH
                             [JOSEPH, KOSINSKI]
                                                     KOSINSKI
      6.3
41
                               [JOHN, LASSETER]
                    JOHN
                                                     LASSETER
42
      5.6
                 MARTIN
                             [MARTIN, CAMPBELL]
                                                     CAMPBELL
43
      8.3
                     LEE
                                 [LEE, UNKRICH]
                                                      UNKRICH
44
      6.6
                     MCG
                                           [MCG]
                                                          NaN
      7.2
                                   [JAMES, WAN]
45
                  JAMES
                                                          WAN
                                [MARC, FORSTER]
46
      7.0
                   MARC
                                                      FORSTER
47
      8.0
                  BRYAN
                                [BRYAN, SINGER]
                                                       SINGER
      7.8
48
                    J.J.
                                 [J.J., ABRAMS]
                                                       ABRAMS
49
      6.3
                  BRYAN
                                [BRYAN, SINGER]
                                                       SINGER
50
      7.3
                     BAZ
                                [BAZ, LUHRMANN]
                                                     LUHRMANN
```

```
[18]: #remettre les noms de colonnes en miniscule
movies = movies.rename(columns = str.lower)

#check
movies.head(50)
```

```
[18]:
              director_name
                              duration
                                               gross
      0
                                  178.0
                                         760505847.0
              james cameron
      1
             gore verbinski
                                  169.0
                                         309404152.0
      2
                  sam mendes
                                  148.0
                                         200074175.0
      3
          christopher nolan
                                 164.0
                                         448130642.0
      5
             andrew stanton
                                  132.0
                                          73058679.0
      6
                   sam raimi
                                 156.0
                                         336530303.0
      7
               nathan greno
                                 100.0
                                         200807262.0
      8
                 joss whedon
                                 141.0
                                         458991599.0
      9
                david yates
                                 153.0
                                         301956980.0
      10
                zack snyder
                                 183.0
                                         330249062.0
      11
               bryan singer
                                 169.0
                                         200069408.0
      12
               marc forster
                                  106.0
                                         168368427.0
      13
             gore verbinski
                                 151.0
                                         423032628.0
      14
                                 150.0
             gore verbinski
                                          89289910.0
      15
                zack snyder
                                 143.0
                                         291021565.0
      16
             andrew adamson
                                 150.0
                                         141614023.0
      17
                 joss whedon
                                 173.0
                                         623279547.0
      18
                                 136.0
               rob marshall
                                         241063875.0
      19
           barry sonnenfeld
                                 106.0
                                         179020854.0
      20
              peter jackson
                                  164.0
                                         255108370.0
      21
                  marc webb
                                 153.0
                                         262030663.0
      22
               ridley scott
                                 156.0
                                         105219735.0
      23
              peter jackson
                                 186.0
                                         258355354.0
      24
                chris weitz
                                 113.0
                                          70083519.0
      25
              peter jackson
                                 201.0
                                         218051260.0
      26
              james cameron
                                  194.0
                                         658672302.0
```

27	anthony russo	147.0	407197282.0	
28	peter berg	131.0	65173160.0	
29	colin trevorrow	124.0	652177271.0	
30	sam mendes	143.0	304360277.0	
31	sam mendes sam raimi	135.0	373377893.0	
32	shane black	195.0	408992272.0	
33	tim burton	108.0	334185206.0	
34	brett ratner	104.0	234360014.0	
35	dan scanlon	104.0	268488329.0	
36	michael bay	150.0	402076689.0	
37	michael bay	165.0	245428137.0	
38	sam raimi	130.0	234903076.0	
39	marc webb	142.0	202853933.0	
40	joseph kosinski	125.0	172051787.0	
41	john lasseter	106.0	191450875.0	
42	martin campbell	123.0	116593191.0	
43	lee unkrich	103.0	414984497.0	
44	mcg	118.0	125320003.0	
45	james wan	140.0	350034110.0	
46	marc forster	123.0	202351611.0	
47	bryan singer	149.0	233914986.0	
48	j.j. abrams	132.0	228756232.0	
		114.0	65171860.0	
49	bryan singer			
50	baz luhrmann	143.0	144812796.0	
	•		144812796.0	,
50	baz luhrmann	143.0	144812796.0 genres	\
50	baz luhrmann	143.0	144812796.0 genres enture Fantasy Sci-Fi	\
50 0 1	baz luhrmann	143.0 ction Adv Act	144812796.0 genres enture Fantasy Sci-Fi ion Adventure Fantasy	\
50 0 1 2	baz luhrmann	143.0 ction Adv Act	144812796.0  genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3	baz luhrmann	143.0 ction Adv Act	144812796.0 genres enture Fantasy Sci-Fi ion Adventure Fantasy	\
50 0 1 2 3 5	baz luhrmann	143.0 ction Adv Act Acti	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3	baz luhrmann	143.0 ction Adv Act Acti	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller Action Thriller	\
50 0 1 2 3 5	baz luhrmann	143.0 ction Adv Act Acti Ac	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6	baz luhrmann	143.0 ction Adv Act Acti Ac Act  Comedy F	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7	baz luhrmann Adventure Animation	143.0 ction Adv Act Acti Ac  Comedy F	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8	baz luhrmann Adventure Animation	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8	baz luhrmann Adventure Animation	143.0 ction Adv Act Acti Ac  Comedy F Acventure F	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10	baz luhrmann Adventure Animation	143.0 ction Adv Act Acti Ac  Comedy F Acventure F	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12	baz luhrmann Adventure Animation	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13	baz luhrmann Adventure Animation	143.0 ction Adv Act Acti Ac  Comedy F Ac venture F Ac Act	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14	baz luhrmann  Adventure   Animation  Adv	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15	baz luhrmann  Adventure Animation  Adv	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16	baz luhrmann  Adventure Animation  Adv	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17	baz luhrmann  Adventure Animation  Adv	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	baz luhrmann  Adventure   Animation  Adventure   Animation	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	baz luhrmann  Adventure   Animation  Adventure   Animation	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	\
50 0 1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	baz luhrmann  Adventure   Animation  Adventure   Animation	143.0  ction Adv	genres enture Fantasy Sci-Fi ion Adventure Fantasy on Adventure Thriller	

22	Action   Adventure   Drama   Hi	story			
23	Adventure Fa	ntasv			
24	Adventure Family Fa	•			
25	Action   Adventure   Drama   Ro	•			
26	Drama Ro				
27	Action Adventure S				
28	Action Adventure Sci-Fi Thr	iller			
29	Action Adventure Sci-Fi Thr	iller			
30	Action   Adventure   Thr	iller			
31	Action Adventure Fantasy Ro				
32	Action   Adventure   S				
33	Adventure Family Fa	•			
34	Action Adventure Fantasy Sci-Fi Thr				
35	Adventure   Animation   Comedy   Family   Family	ntasy			
36	Action Adventure S	ci-Fi			
37	Action   Adventure   S	ci-Fi			
38	Adventure Family Fa				
39	Action Adventure Fantasy S	•			
	•				
40	Action Adventure S				
41	Adventure   Animation   Comedy   Family	_			
42	Action Adventure S	ci-Fi			
43	Adventure   Animation   Comedy   Family   Fa	ntasy			
44	Action Adventure S	ci-Fi			
45	Action Crime Thr	iller			
46	Action Adventure Horror Sci-Fi Thr				
47	Action Adventure Fantasy Sci-Fi Thr				
	· · · · · · · · · · · · · · · · · · ·				
48	Action Adventure S				
49	Adventure Fa	•			
50	Drama Ro	mance			
	title	budget	year	language	\
0	Avatar	237000000.0	2009	Eng	
1	Pirates of the Caribbean: At World's End	30000000.0	2007	Eng	
2	Spectre	245000000.0	2015	Eng	
	-			_	
3	The Dark Knight Rises	250000000.0	2012	Eng	
5	John Carter	263700000.0	2012	Eng	
6	Spider-Man 3	258000000.0	2007	Eng	
7	Tangled	260000000.0	2010	Eng	
8	Avengers: Age of Ultron	250000000.0	2015	Eng	
9	Harry Potter and the Half-Blood Prince	250000000.0	2009	Eng	
10	Batman v Superman: Dawn of Justice	250000000.0	2016	Eng	
11	-	209000000.0	2006		
	Superman Returns			Eng	
12	Quantum of Solace	200000000.0	2008	Eng	
13	Pirates of the Caribbean: Dead Man's Chest	225000000.0	2006	Eng	
14	The Lone Ranger	215000000.0	2013	Eng	
15	Man of Steel	225000000.0	2013	Eng	
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008	Eng	
				0	

17			The Avengers	220000000.0	2012	Eng
18	Pirates	of the Carib	bean: On Stranger Tides	250000000.0	2011	Eng
19			Men in Black 3	225000000.0	2012	Eng
20	The Ho	bbit: The Ba	attle of the Five Armies	250000000.0	2014	Eng
21			The Amazing Spider-Man	230000000.0	2012	Eng
22			Robin Hood	200000000.0	2010	Eng
23		The Hobbit:	The Desolation of Smaug	225000000.0	2013	Eng
24			The Golden Compass	180000000.0	2007	Eng
25			King Kong	207000000.0	2005	Eng
26			Titanic	200000000.0	1997	Eng
27		Cap	otain America: Civil War	250000000.0	2016	Eng
28			Battleship	209000000.0	2012	Eng
29			Jurassic World	150000000.0	2015	Eng
30			Skyfall	200000000.0	2012	Eng
31			Spider-Man 2	200000000.0	2004	Eng
32			Iron Man 3	200000000.0	2013	Eng
33			Alice in Wonderland	200000000.0	2010	Eng
34			X-Men: The Last Stand	210000000.0	2006	Eng
35			Monsters University	200000000.0	2013	Eng
36		Transformers	s: Revenge of the Fallen	200000000.0	2009	Eng
37		Transfor	mers: Age of Extinction	210000000.0	2014	Eng
38		0z	the Great and Powerful	215000000.0	2013	Eng
39		T	The Amazing Spider-Man 2	200000000.0	2014	Eng
40			TRON: Legacy	170000000.0	2010	Eng
41			Cars 2	200000000.0	2011	Eng
42			Green Lantern	200000000.0	2011	Eng
43			Toy Story 3	200000000.0	2010	Eng
44			Terminator Salvation	200000000.0	2009	Eng
45			Furious 7	190000000.0	2015	Eng
46			World War Z	190000000.0	2013	Eng
47		X-M	Men: Days of Future Past	200000000.0	2014	Eng
48			Star Trek Into Darkness	190000000.0	2013	Eng
49			Jack the Giant Slayer	195000000.0	2013	Eng
50			The Great Gatsby	105000000.0	2013	Eng
	score	surname	name			
0	7.9	james	cameron			
1	7.1	gore	verbinski			

name	surname	score	
cameron	james	7.9	0
verbinski	gore	7.1	1
mendes	sam	6.8	2
nolan	christopher	8.5	3
stanton	andrew	6.6	5
raimi	sam	6.2	6
greno	nathan	7.8	7
whedon	joss	7.5	8
yates	david	7.5	9
snyder	zack	6.9	10
singer	bryan	6.1	11

```
6.7
12
                              forster
                    marc
13
      7.3
                            verbinski
                    gore
14
      6.5
                    gore
                            verbinski
15
      7.2
                    zack
                               snyder
16
      6.6
                  andrew
                              adamson
17
      8.1
                    joss
                               whedon
18
      6.7
                             marshall
                     rob
      6.8
19
                   barry
                           sonnenfeld
20
      7.5
                   peter
                              jackson
21
      7.0
                    marc
                                 webb
22
      6.7
                  ridley
                                scott
23
      7.9
                   peter
                              jackson
24
      6.1
                   chris
                                weitz
25
      7.2
                   peter
                              jackson
26
      7.7
                   james
                              cameron
27
      8.2
                 anthony
                                russo
28
      5.9
                   peter
                                 berg
29
      7.0
                   colin
                            trevorrow
30
      7.8
                     sam
                               mendes
      7.3
31
                                raimi
                     sam
32
      7.2
                   shane
                                black
      6.5
33
                               burton
                     tim
34
      6.8
                   brett
                               ratner
      7.3
35
                     dan
                              scanlon
36
      6.0
                michael
                                  bay
      5.7
37
                 michael
                                  bay
      6.4
38
                     sam
                                raimi
39
      6.7
                                 webb
                    marc
40
      6.8
                  joseph
                             kosinski
41
      6.3
                    john
                             lasseter
42
      5.6
                  martin
                             campbell
      8.3
43
                     lee
                              unkrich
44
      6.6
                                  NaN
                     mcg
45
      7.2
                   james
                                  wan
      7.0
46
                    marc
                              forster
47
      8.0
                   bryan
                               singer
48
      7.8
                    j.j.
                               abrams
49
      6.3
                   bryan
                               singer
      7.3
50
                     baz
                             luhrmann
```

## 1.0.2 Creation des Colonnes Customized ou Personnalisees

```
[19]: #creation d'une colonne taux rendu

movies['taux_rendu'] = (movies['budget']/movies['score']) * 100

#check
```

## movies.head(50)

[19]:		director_name	duration	gross	\
	0	james cameron	178.0	760505847.0	
	1	gore verbinski	169.0	309404152.0	
	2	sam mendes	148.0	200074175.0	
	3	christopher nolan	164.0	448130642.0	
	5	andrew stanton	132.0	73058679.0	
	6	sam raimi	156.0	336530303.0	
	7	nathan greno	100.0	200807262.0	
	8	joss whedon	141.0	458991599.0	
	9	david yates	153.0	301956980.0	
	10	zack snyder	183.0	330249062.0	
	11	bryan singer	169.0	200069408.0	
	12	marc forster	106.0	168368427.0	
	13	gore verbinski	151.0	423032628.0	
	14	gore verbinski	150.0	89289910.0	
	15	zack snyder	143.0	291021565.0	
	16	andrew adamson	150.0	141614023.0	
	17	joss whedon	173.0	623279547.0	
	18	rob marshall	136.0	241063875.0	
	19	barry sonnenfeld	106.0	179020854.0	
	20	peter jackson	164.0	255108370.0	
	21	marc webb	153.0	262030663.0	
	22	ridley scott	156.0	105219735.0	
	23	peter jackson	186.0	258355354.0	
	24	chris weitz	113.0	70083519.0	
	25	peter jackson	201.0	218051260.0	
	26	james cameron	194.0	658672302.0	
	27	anthony russo	147.0	407197282.0	
	28	peter berg	131.0	65173160.0	
	29	colin trevorrow	124.0	652177271.0	
	30	sam mendes	143.0	304360277.0	
	31	sam raimi	135.0	373377893.0	
	32	shane black	195.0	408992272.0	
	33	tim burton	108.0	334185206.0	
	34	brett ratner	104.0	234360014.0	
	35	dan scanlon	104.0	268488329.0	
	36	michael bay	150.0	402076689.0	
	37	michael bay	165.0	245428137.0	
	38	sam raimi	130.0	234903076.0	
	39	marc webb	142.0	202853933.0	
	40	joseph kosinski	125.0	172051787.0	
	41	john lasseter	106.0	191450875.0	
	42	martin campbell	123.0	116593191.0	
	43	lee unkrich	103.0	414984497.0	
	44	mcg	118.0	125320003.0	

45	james wan	140.0	350034110.0	
46	marc forster	123.0	202351611.0	
47	bryan singer	149.0	233914986.0	
48	j.j. abrams	132.0	228756232.0	
49	bryan singer	114.0	65171860.0	
50	baz luhrmann	143.0	144812796.0	
		110.0	111012100.0	
			genre	es \
0	Ac	tion Adv	enture Fantasy Sci-F	
1			ion Adventure Fantas	
2			on Adventure Thrille	•
3			Action Thrille	
5		Ac	tion Adventure Sci-F	
6			ion Adventure Romano	
7	Adventure   Animation			
8			tion Adventure Sci-F	₹i
9	V P V		amily Fantasy Myster	
10			tion Adventure Sci-F	•
11			tion Adventure Sci-F	
12			Action   Adventur	
13		Act	ion Adventure Fantas	
14			ion Adventure Wester	•
15	Ac		enture Fantasy Sci-F	
16			enture Family Fantas	
17			tion Adventure Sci-F	•
18			ion Adventure Fantas	
19	Action Adventure		Family Fantasy Sci-F	•
20		- , J ,	Adventure Fantas	
21		Act	ion Adventure Fantas	•
22	A		venture Drama Histor	•
23			Adventure Fantas	-
24		Adv	enture Family Fantas	•
25	A		venture Drama Romano	•
26			Drama Romano	
27		Ac	tion Adventure Sci-F	
28	Act	ion Adve	nture Sci-Fi Thrille	er
29			nture Sci-Fi Thrille	
30			on Adventure Thrille	
31	Act		nture Fantasy Romand	
32			tion Adventure Sci-F	
33			enture Family Fantas	
34	Action Adve		ntasy Sci-Fi Thrille	•
35			Comedy Family Fantas	
36	114. 311 341 3   111.		tion Adventure Sci-F	-
37			tion Adventure Sci-F	
38			enture Family Fantas	
39	Δα		enture Fantasy Sci-F	•
	nc	Januv	July 1 amount 1	-

40	Action Adventure S	ci-Fi					
41	Adventure   Animation   Comedy   Family						
42	Action   Adventure   Sci-Fi						
43	Adventure   Animation   Comedy   Family   Fantasy						
44	Action   Adventure   Sci-Fi						
45	Action Crime Thr	iller					
46	Action Adventure Horror Sci-Fi Thr	iller					
47	Action Adventure Fantasy Sci-Fi Thr	iller					
48	Action Adventure S	ci-Fi					
49	Adventure Fa	ntasy					
50	Drama Ro	mance					
				5			
0	title	budget	-	language	\		
0	Avatar	237000000.0	2009	Eng			
1	Pirates of the Caribbean: At World's End	300000000.0	2007	Eng			
2 3	Spectre	245000000.0 250000000.0	2015 2012	Eng			
5	The Dark Knight Rises John Carter	263700000.0	2012	Eng			
6	Spider-Man 3	258000000.0	2012	Eng Eng			
7	Tangled	260000000.0	2010	Eng			
8	Avengers: Age of Ultron	2500000000.0	2015	Eng			
9	Harry Potter and the Half-Blood Prince	250000000.0	2009	Eng			
10	Batman v Superman: Dawn of Justice	250000000.0	2016	Eng			
11	Superman Returns	209000000.0	2006	Eng			
12	Quantum of Solace	200000000.0	2008	Eng			
13	Pirates of the Caribbean: Dead Man's Chest	225000000.0	2006	Eng			
14	The Lone Ranger	215000000.0	2013	Eng			
15	Man of Steel	225000000.0	2013	Eng			
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008	Eng			
17	The Avengers	220000000.0	2012	Eng			
18	Pirates of the Caribbean: On Stranger Tides	250000000.0	2011	Eng			
19	Men in Black 3	225000000.0	2012	Eng			
20	The Hobbit: The Battle of the Five Armies	250000000.0	2014	Eng			
21	The Amazing Spider-Man	230000000.0	2012	Eng			
22	Robin Hood	200000000.0	2010	Eng			
23	The Hobbit: The Desolation of Smaug	225000000.0	2013	Eng			
24	The Golden Compass	180000000.0	2007	Eng			
25	King Kong	207000000.0	2005	Eng			
26	Titanic	200000000.0	1997	Eng			
27	Captain America: Civil War	250000000.0	2016	Eng			
28	Battleship Jurassic World	209000000.0	2012	Eng			
29 30		150000000.0	2015	Eng			
31	Skyfall Spider-Man 2	200000000.0	2012 2004	Eng			
32	Iron Man 3	2000000000.0	2013	Eng Eng			
33	Alice in Wonderland	2000000000.0	2013	Eng			
34	X-Men: The Last Stand	2100000000.0	2016	Eng			
Jī	n non. The Last Stand	21000000.0	2000	E			

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35
                              Monsters University
                                                    200000000.0
                                                                  2013
                                                                             Eng
            Transformers: Revenge of the Fallen
36
                                                    20000000.0
                                                                  2009
                                                                             Eng
37
                 Transformers: Age of Extinction
                                                     210000000.0
                                                                   2014
                                                                             Eng
38
                       Oz the Great and Powerful
                                                    215000000.0
                                                                  2013
                                                                             Eng
39
                        The Amazing Spider-Man 2
                                                    20000000.0
                                                                  2014
                                                                             Eng
40
                                     TRON: Legacy
                                                     17000000.0
                                                                  2010
                                                                             Eng
41
                                            Cars 2
                                                                  2011
                                                    200000000.0
                                                                             Eng
42
                                    Green Lantern
                                                    200000000.0
                                                                  2011
                                                                             Eng
43
                                      Toy Story 3
                                                    200000000.0
                                                                  2010
                                                                             Eng
44
                             Terminator Salvation
                                                                  2009
                                                    200000000.0
                                                                             Eng
                                         Furious 7
45
                                                    190000000.0
                                                                  2015
                                                                             Eng
46
                                      World War Z
                                                    190000000.0
                                                                  2013
                                                                             Eng
47
                      X-Men: Days of Future Past
                                                    200000000.0
                                                                  2014
                                                                             Eng
48
                         Star Trek Into Darkness
                                                     19000000.0
                                                                  2013
                                                                             Eng
49
                            Jack the Giant Slayer
                                                     195000000.0
                                                                  2013
                                                                             Eng
50
                                 The Great Gatsby
                                                     105000000.0
                                                                  2013
                                                                             Eng
    score
                surname
                                name
                                         taux_rendu
0
      7.9
                                      3.000000e+09
                  james
                             cameron
                   gore
1
      7.1
                                       4.225352e+09
                           verbinski
2
      6.8
                    sam
                              mendes
                                      3.602941e+09
3
      8.5
                               nolan
            christopher
                                      2.941176e+09
5
      6.6
                 andrew
                                      3.995455e+09
                             stanton
6
      6.2
                    sam
                               raimi
                                      4.161290e+09
7
      7.8
                 nathan
                               greno
                                      3.33333e+09
8
      7.5
                   joss
                              whedon
                                      3.33333e+09
9
      7.5
                  david
                               yates
                                      3.33333e+09
10
      6.9
                   zack
                              snyder
                                      3.623188e+09
11
      6.1
                  bryan
                              singer
                                       3.426230e+09
12
      6.7
                             forster
                                       2.985075e+09
                   marc
13
      7.3
                   gore
                           verbinski
                                      3.082192e+09
14
      6.5
                           verbinski
                                      3.307692e+09
                   gore
15
      7.2
                   zack
                              snyder
                                      3.125000e+09
16
      6.6
                 andrew
                             adamson
                                      3.409091e+09
17
      8.1
                                      2.716049e+09
                   joss
                              whedon
18
      6.7
                    rob
                            marshall
                                      3.731343e+09
19
                                      3.308824e+09
      6.8
                  barry
                          sonnenfeld
20
      7.5
                                      3.33333e+09
                  peter
                             jackson
21
      7.0
                                      3.285714e+09
                   marc
                                webb
22
      6.7
                 ridley
                               scott
                                      2.985075e+09
23
      7.9
                  peter
                             jackson
                                      2.848101e+09
24
      6.1
                  chris
                               weitz
                                      2.950820e+09
25
      7.2
                  peter
                             jackson
                                      2.875000e+09
26
      7.7
                  james
                             cameron
                                      2.597403e+09
27
      8.2
```

3.048780e+09

3.542373e+09

2.142857e+09

russo

trevorrow

berg

anthony

peter

colin

28

29

5.9

7.0

```
30
      7.8
                              mendes
                                      2.564103e+09
                    sam
      7.3
31
                                      2.739726e+09
                    sam
                               raimi
32
      7.2
                  shane
                               black
                                      2.777778e+09
33
      6.5
                              burton
                                      3.076923e+09
                    tim
34
      6.8
                                      3.088235e+09
                  brett
                              ratner
      7.3
35
                    dan
                                      2.739726e+09
                             scanlon
36
      6.0
                michael
                                      3.33333e+09
                                 bay
37
      5.7
                michael
                                 bay
                                       3.684211e+09
      6.4
38
                               raimi
                                      3.359375e+09
                    sam
39
      6.7
                   marc
                                webb
                                      2.985075e+09
                            kosinski
40
      6.8
                 joseph
                                       2.500000e+09
41
      6.3
                            lasseter
                                      3.174603e+09
                   john
42
      5.6
                 martin
                            campbell
                                      3.571429e+09
                             unkrich
43
      8.3
                    lee
                                      2.409639e+09
44
      6.6
                                 {\tt NaN}
                                      3.030303e+09
                    mcg
      7.2
45
                  james
                                 wan
                                      2.638889e+09
      7.0
46
                                      2.714286e+09
                   marc
                             forster
47
      8.0
                  bryan
                              singer
                                      2.500000e+09
      7.8
48
                                       2.435897e+09
                   j.j.
                              abrams
49
      6.3
                                      3.095238e+09
                  bryan
                              singer
50
      7.3
                    baz
                            luhrmann
                                      1.438356e+09
```

#### colonne conditionnelle avec np.where()

```
[20]:
              director_name
                              duration
                                               gross \
      0
              james cameron
                                 178.0
                                        760505847.0
      1
             gore verbinski
                                 169.0
                                        309404152.0
      2
                 sam mendes
                                 148.0
                                        200074175.0
      3
          christopher nolan
                                 164.0
                                       448130642.0
      5
             andrew stanton
                                 132.0
                                         73058679.0
      6
                   sam raimi
                                 156.0
                                        336530303.0
                                        200807262.0
      7
               nathan greno
                                 100.0
      8
                joss whedon
                                 141.0
                                        458991599.0
      9
                david yates
                                 153.0
                                        301956980.0
      10
                zack snyder
                                 183.0
                                        330249062.0
               bryan singer
      11
                                 169.0
                                        200069408.0
      12
               marc forster
                                 106.0
                                        168368427.0
```

```
13
       gore verbinski
                            151.0
                                    423032628.0
14
       gore verbinski
                            150.0
                                     89289910.0
15
           zack snyder
                            143.0
                                    291021565.0
16
       andrew adamson
                            150.0
                                    141614023.0
17
           joss whedon
                            173.0
                                    623279547.0
18
          rob marshall
                            136.0
                                    241063875.0
19
     barry sonnenfeld
                            106.0
                                    179020854.0
20
        peter jackson
                            164.0
                                    255108370.0
21
             marc webb
                            153.0
                                    262030663.0
22
          ridley scott
                                    105219735.0
                            156.0
23
        peter jackson
                            186.0
                                    258355354.0
24
           chris weitz
                            113.0
                                     70083519.0
25
        peter jackson
                            201.0
                                    218051260.0
26
        james cameron
                            194.0
                                    658672302.0
27
        anthony russo
                            147.0
                                    407197282.0
28
            peter berg
                            131.0
                                     65173160.0
29
      colin trevorrow
                            124.0
                                    652177271.0
30
                            143.0
                                    304360277.0
            sam mendes
31
             sam raimi
                            135.0
                                    373377893.0
32
           shane black
                            195.0
                                    408992272.0
33
            tim burton
                            108.0
                                    334185206.0
          brett ratner
                            104.0
                                    234360014.0
34
35
           dan scanlon
                            104.0
                                    268488329.0
36
           michael bay
                            150.0
                                    402076689.0
37
           michael bay
                            165.0
                                    245428137.0
38
             sam raimi
                            130.0
                                    234903076.0
39
             marc webb
                            142.0
                                    202853933.0
40
      joseph kosinski
                            125.0
                                    172051787.0
41
        john lasseter
                            106.0
                                    191450875.0
42
      martin campbell
                            123.0
                                    116593191.0
43
           lee unkrich
                            103.0
                                    414984497.0
44
                   mcg
                            118.0
                                    125320003.0
45
             james wan
                            140.0
                                    350034110.0
46
          marc forster
                            123.0
                                    202351611.0
          bryan singer
47
                            149.0
                                    233914986.0
48
           j.j. abrams
                            132.0
                                    228756232.0
49
          bryan singer
                            114.0
                                     65171860.0
50
          baz luhrmann
                            143.0
                                    144812796.0
                                                   genres
0
                        Action | Adventure | Fantasy | Sci-Fi
1
                               Action | Adventure | Fantasy
2
                              Action | Adventure | Thriller
3
                                         Action|Thriller
5
                                 Action | Adventure | Sci-Fi
6
                               Action | Adventure | Romance
7
    Adventure | Animation | Comedy | Family | Fantasy | Musi...
```

8	Action Adventure Se	ci-Fi			
9	Adventure Family Fantasy My	stery			
10	Action   Adventure   S	ci-Fi			
11	Action Adventure S				
12	Action Adve	nture			
13	Action Adventure Far	ntasy			
14	Action   Adventure   Wes	stern			
15	Action Adventure Fantasy S	ci-Fi			
16	Action Adventure Family Family	ntasy			
17	Action Adventure Se	ci-Fi			
18	Action Adventure Far	ntasy			
19	Action Adventure Comedy Family Fantasy Se	ci-Fi			
20	Adventure Fa	ntasy			
21	Action Adventure Far	ntasy			
22	Action Adventure Drama Hi	story			
23	Adventure Far	ntasy			
24	Adventure Family Family	ntasy			
25	Action Adventure Drama Rom	mance			
26	Drama Rom	mance			
27	Action Adventure Se	ci-Fi			
28	Action Adventure Sci-Fi Thr	iller			
29	Action Adventure Sci-Fi Thr	iller			
30	Action Adventure Thr	iller			
31	Action Adventure Fantasy Rom	mance			
32	Action Adventure Se	ci-Fi			
33	Adventure Family Family	ntasy			
34	Action Adventure Fantasy Sci-Fi Thr	iller			
35	Adventure   Animation   Comedy   Family   Family	ntasy			
36	Action Adventure Se	ci-Fi			
37	Action Adventure Se	ci-Fi			
38	Adventure Family Family	ntasy			
39	Action Adventure Fantasy Se	ci-Fi			
40	Action Adventure Se	ci-Fi			
41	Adventure   Animation   Comedy   Family   3	Sport			
42	Action Adventure Se	ci-Fi			
43	Adventure   Animation   Comedy   Family   Family	ntasy			
44	Action Adventure Se	ci-Fi			
45	Action Crime Thr	iller			
46	Action Adventure Horror Sci-Fi Thr	iller			
47	Action Adventure Fantasy Sci-Fi Thr	iller			
48	Action Adventure S	ci-Fi			
49	Adventure Far	ntasy			
50	Drama Ro	•			
	title	budget	year	language	\
0	Avatar	237000000.0	2009	Eng	
1	Pirates of the Caribbean: At World's End	300000000.0	2007	Eng	
				•	

2	Spectre	245000000.0	2015	Eng
3	The Dark Knight Rises	250000000.0	2012	Eng
5	John Carter	263700000.0	2012	Eng
6	Spider-Man 3	258000000.0	2007	Eng
7	Tangled	260000000.0	2010	Eng
8	Avengers: Age of Ultron	250000000.0	2015	
				Eng
9	Harry Potter and the Half-Blood Prince	250000000.0	2009	Eng
10	Batman v Superman: Dawn of Justice	250000000.0	2016	Eng
11	Superman Returns	209000000.0	2006	Eng
12	Quantum of Solace	200000000.0	2008	Eng
13	Pirates of the Caribbean: Dead Man's Chest	225000000.0	2006	Eng
14	The Lone Ranger	215000000.0	2013	Eng
15	Man of Steel	225000000.0	2013	Eng
16	The Chronicles of Narnia: Prince Caspian	225000000.0	2008	Eng
17	The Avengers	220000000.0	2012	Eng
18	Pirates of the Caribbean: On Stranger Tides	250000000.0	2011	Eng
19	Men in Black 3	225000000.0	2012	_
		250000000.0		Eng
20	The Hobbit: The Battle of the Five Armies		2014	Eng
21	The Amazing Spider-Man	230000000.0	2012	Eng
22	Robin Hood	200000000.0	2010	Eng
23	The Hobbit: The Desolation of Smaug	225000000.0	2013	Eng
24	The Golden Compass	180000000.0	2007	Eng
25	King Kong	207000000.0	2005	Eng
26	Titanic	200000000.0	1997	Eng
27	Captain America: Civil War	250000000.0	2016	Eng
28	Battleship	209000000.0	2012	Eng
29	Jurassic World	150000000.0	2015	Eng
30	Skyfall	200000000.0	2012	Eng
	-			
31	Spider-Man 2	200000000.0	2004	Eng
32	Iron Man 3	200000000.0	2013	Eng
33	Alice in Wonderland	200000000.0	2010	Eng
34	X-Men: The Last Stand	210000000.0	2006	Eng
35	Monsters University	200000000.0	2013	Eng
36	Transformers: Revenge of the Fallen	200000000.0	2009	Eng
37	Transformers: Age of Extinction	210000000.0	2014	Eng
38	Oz the Great and Powerful	215000000.0	2013	Eng
39	The Amazing Spider-Man 2	200000000.0	2014	Eng
40	TRON: Legacy	170000000.0	2010	Eng
41	Cars 2	200000000.0	2011	Eng
42	Green Lantern	200000000.0	2011	Eng
43	Toy Story 3	2000000000.0	2010	
	· ·			Eng
44	Terminator Salvation	200000000.0	2009	Eng
45	Furious 7	190000000.0	2015	Eng
46	World War Z	190000000.0	2013	Eng
47	X-Men: Days of Future Past	200000000.0	2014	Eng
48	Star Trek Into Darkness	190000000.0	2013	Eng
49	Jack the Giant Slayer	195000000.0	2013	Eng

	score	surname	name	taux_rendu	siecle_simple
0	7.9	james	cameron	3.000000e+09	Maintain Siecle
1	7.1	gore	verbinski	4.225352e+09	Rejected Siecle
2	6.8	sam	mendes	3.602941e+09	Rejected Siecle
3	8.5	christopher	nolan	2.941176e+09	Rejected Siecle
5	6.6	andrew	stanton	3.995455e+09	Rejected Siecle
6	6.2	sam	raimi	4.161290e+09	Rejected Siecle
7	7.8	nathan	greno	3.33333e+09	Rejected Siecle
8	7.5	joss	whedon	3.33333e+09	Rejected Siecle
9	7.5	david	yates	3.33333e+09	Maintain Siecle
10	6.9	zack	snyder	3.623188e+09	Rejected Siecle
11	6.1	bryan	singer	3.426230e+09	Rejected Siecle
12	6.7	marc	forster	2.985075e+09	Rejected Siecle
13	7.3	gore	verbinski	3.082192e+09	Rejected Siecle
14	6.5	gore	verbinski	3.307692e+09	Rejected Siecle
15	7.2	zack	snyder	3.125000e+09	Rejected Siecle
16	6.6	andrew	adamson	3.409091e+09	Rejected Siecle
17	8.1	joss	whedon	2.716049e+09	Rejected Siecle
18	6.7	rob	marshall	3.731343e+09	Rejected Siecle
19	6.8	barry	sonnenfeld	3.308824e+09	Rejected Siecle
20	7.5	peter	jackson	3.33333e+09	Rejected Siecle
21	7.0	marc	webb	3.285714e+09	Rejected Siecle
22	6.7	ridley	scott	2.985075e+09	Rejected Siecle
23	7.9	peter	jackson	2.848101e+09	Rejected Siecle
24	6.1	chris	weitz	2.950820e+09	Rejected Siecle
25	7.2	peter	jackson	2.875000e+09	Rejected Siecle
26	7.7	james	cameron	2.597403e+09	Rejected Siecle
27	8.2	anthony	russo	3.048780e+09	Rejected Siecle
28	5.9	peter	berg	3.542373e+09	Rejected Siecle
29	7.0	colin	trevorrow	2.142857e+09	Rejected Siecle
30	7.8	sam	mendes	2.564103e+09	Rejected Siecle
31	7.3	sam	raimi	2.739726e+09	Rejected Siecle
32	7.2	shane	black	2.777778e+09	Rejected Siecle
33	6.5	tim	burton	3.076923e+09	Rejected Siecle
34	6.8	brett	ratner	3.088235e+09	Rejected Siecle
35	7.3	dan	scanlon	2.739726e+09	Rejected Siecle
36	6.0	michael	bay	3.33333e+09	Maintain Siecle
37	5.7	michael	bay	3.684211e+09	Rejected Siecle
38	6.4	sam	raimi	3.359375e+09	Rejected Siecle
39	6.7	marc	webb	2.985075e+09	Rejected Siecle
40	6.8	joseph	kosinski	2.500000e+09	Rejected Siecle
41	6.3	john	lasseter	3.174603e+09	Rejected Siecle
42	5.6	martin	campbell	3.571429e+09	Rejected Siecle
43	8.3	lee	unkrich	2.409639e+09	Rejected Siecle
44	6.6	mcg	NaN	3.030303e+09	Maintain Siecle

```
45
            7.2
                        james
                                          2.638889e+09
                                                          Rejected Siecle
                                      wan
            7.0
      46
                                           2.714286e+09
                                                          Rejected Siecle
                        marc
                                  forster
      47
            8.0
                       bryan
                                   singer
                                           2.500000e+09
                                                          Rejected Siecle
            7.8
      48
                                   abrams
                                           2.435897e+09
                                                          Rejected Siecle
                         j.j.
      49
            6.3
                                           3.095238e+09
                                                          Rejected Siecle
                       bryan
                                   singer
            7.3
      50
                          baz
                                 luhrmann
                                           1.438356e+09
                                                          Rejected Siecle
[71]: #utilisation de For
      movies['siecle_for'] = ['Maintain value' if year == 2009 else 'Rejected value'

¬for year in movies['year']]

      #check
      movies.head(50)
[71]:
              director_name
                              duration
                                              gross \
      0
              JAMES CAMERON
                                 178.0
                                        760505847.0
      1
             GORE VERBINSKI
                                 169.0
                                        309404152.0
      2
                 SAM MENDES
                                 148.0
                                        200074175.0
      3
          CHRISTOPHER NOLAN
                                 164.0
                                        448130642.0
      5
             ANDREW STANTON
                                 132.0
                                         73058679.0
      6
                  SAM RAIMI
                                 156.0
                                        336530303.0
      7
               NATHAN GRENO
                                 100.0
                                        200807262.0
      8
                JOSS WHEDON
                                 141.0
                                        458991599.0
                DAVID YATES
                                 153.0
                                        301956980.0
      10
                ZACK SNYDER
                                 183.0
                                        330249062.0
      11
               BRYAN SINGER
                                 169.0
                                        200069408.0
      12
               MARC FORSTER
                                 106.0 168368427.0
      13
             GORE VERBINSKI
                                 151.0 423032628.0
      14
             GORE VERBINSKI
                                 150.0
                                         89289910.0
      15
                ZACK SNYDER
                                 143.0
                                        291021565.0
      16
             ANDREW ADAMSON
                                 150.0
                                        141614023.0
      17
                JOSS WHEDON
                                 173.0
                                        623279547.0
      18
               ROB MARSHALL
                                 136.0
                                        241063875.0
      19
           BARRY SONNENFELD
                                 106.0 179020854.0
      20
              PETER JACKSON
                                 164.0
                                        255108370.0
      21
                  MARC WEBB
                                 153.0
                                        262030663.0
      22
                                 156.0
                                        105219735.0
               RIDLEY SCOTT
      23
              PETER JACKSON
                                 186.0
                                        258355354.0
      24
                CHRIS WEITZ
                                 113.0
                                         70083519.0
      25
                                 201.0
                                        218051260.0
              PETER JACKSON
      26
              JAMES CAMERON
                                 194.0 658672302.0
      27
              ANTHONY RUSSO
                                 147.0 407197282.0
      28
                 PETER BERG
                                 131.0
                                         65173160.0
      29
            COLIN TREVORROW
                                 124.0
                                        652177271.0
      30
                 SAM MENDES
                                 143.0
                                        304360277.0
      31
                  SAM RAIMI
                                 135.0
                                        373377893.0
```

408992272.0

195.0

32

SHANE BLACK

33	TIM BURTON	108.0	334185206.0	
34	BRETT RATNER	104.0	234360014.0	
35	DAN SCANLON	104.0	268488329.0	
36	MICHAEL BAY	150.0	402076689.0	
37	MICHAEL BAY	165.0	245428137.0	
38	SAM RAIMI	130.0	234903076.0	
39	MARC WEBB	142.0	202853933.0	
40	JOSEPH KOSINSKI	125.0	172051787.0	
41	JOHN LASSETER	106.0	191450875.0	
42	MARTIN CAMPBELL	123.0	116593191.0	
43	LEE UNKRICH	103.0	414984497.0	
44	MCG	118.0	125320003.0	
45				
	JAMES WAN	140.0	350034110.0	
46	MARC FORSTER	123.0		
47	BRYAN SINGER	149.0	233914986.0	
48	J.J. ABRAMS	132.0	228756232.0	
49	BRYAN SINGER	114.0	65171860.0	
50	BAZ LUHRMANN	143.0	144812796.0	
			genres	\
0	Δ	rtion Adv	enture Fantasy Sci-Fi	`
	, and		· · · · · · · · · · · · · · · · · · ·	
1			ion Adventure Fantasy	
2		Acti	on Adventure Thriller	
3			Action Thriller	
5				
			tion Adventure Sci-Fi	
6			tion Adventure Sci-Fi ion Adventure Romance	
	Adventure   Animation	Act	ion Adventure Romance	
6	Adventure   Animation	Act  Comedy F	ion Adventure Romance	
6 7		Act  Comedy F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi	
6 7 8 9		Act  Comedy F Ac venture F	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery	
6 7 8 9 10		Act  Comedy F Ac venture F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi	
6 7 8 9 10 11		Act  Comedy F Ac venture F Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi	
6 7 8 9 10 11 12		Act  Comedy F Ac  Zenture F Ac Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure	
6 7 8 9 10 11 12 13		Act  Comedy F Ac  Zenture F Ac Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy	
6 7 8 9 10 11 12 13	Adv	Act  Comedy F Ac  Yenture F Ac Act Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14	Adv Ad	Act  Comedy F Ac  renture F Ac Act Act  ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi	
6 7 8 9 10 11 12 13	Adv Ad	Act  Comedy F Ac  renture F Ac Act Act  ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14	Adv Ad	Act  Comedy F	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi	
6 7 8 9 10 11 12 13 14 15 16	Adv Ad	Act  Comedy F  Act  Act  Act  Ction Adv  Act  Act  Ction Adv	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy	
6 7 8 9 10 11 12 13 14 15 16	Adv Ad Ad	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Sci-Fi ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18	Adv Ad Ad	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy tion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Adv Ad Ad	Act Comedy F Ac Venture F Ac Act Act Act ction Adv ction Adv Ac Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	Adv Ac Action Adventure	Act Comedy F Ac Venture F Ac Act Act Ction Adv Ction Adv Act e Comedy  Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Adv Ac Action Adventure	Act Comedy F Ac Venture F Ac Act Act Ction Adv Ction Adv Act e Comedy  Act	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Adv Ac Action Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Act  Ction Adv  Act  Comedy   Action Ad	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Fantasy Sci-Fi enture Family Fantasy tion Adventure Fantasy family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy Family Fantasy Sci-Fi Adventure Fantasy ion Adventure Fantasy venture Drama History Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Comedy   Act  Act  Act  Act  Act  Act  Act  Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy ton Adventure Fantasy	
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Adv Ac Action   Adventure	Act  Comedy F  Act  Comedy F  Act  Act  Comedy   Act  Act  Act  Act  Act  Act  Act  Ac	ion Adventure Romance amily Fantasy Musi tion Adventure Sci-Fi amily Fantasy Mystery tion Adventure Sci-Fi tion Adventure Sci-Fi Action Adventure ion Adventure Fantasy ion Adventure Western enture Family Fantasy tion Adventure Fantasy ton Adventure Fantasy ton Adventure Fantasy enture Drama History Adventure Fantasy enture Family Fantasy venture Drama Romance	
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28	Action Adventure Sci-Fi Thr	iller				
29	Action Adventure Sci-Fi Thr	iller				
30	Action Adventure Thriller					
31	Action Adventure Fantasy Romance					
32	Action Adventure Sci-Fi					
33	Adventure Family Fantasy					
34	Action Adventure Fantasy Sci-Fi Thriller					
35	Adventure   Animation   Comedy   Family   Fa	•				
36	Action Adventure S					
37	Action Adventure S	ci-Fi				
38	Adventure Family Fa	ntasy				
39	Action Adventure Fantasy S	ci-Fi				
40	Action Adventure S	ci-Fi				
41	Adventure   Animation   Comedy   Family	Sport				
42	Action Adventure S	_				
43	Adventure   Animation   Comedy   Family   Fa					
44	Action   Adventure   S	*				
45	Action Crime Thr					
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46						
47	Action Adventure Fantasy Sci-Fi Thr					
48	Action Adventure S					
49	Adventure Fa	*				
50	Drama Ro	mance				
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	title	budget	-	language	\	
0	Avatar	237000000.0	2009	Eng	\	
1	Avatar Pirates of the Caribbean: At World's End	237000000.0 300000000.0	2009 2007	Eng Eng	\	
1 2	Avatar	237000000.0 300000000.0 245000000.0	2009 2007 2015	Eng	\	
1	Avatar Pirates of the Caribbean: At World's End	237000000.0 300000000.0	2009 2007	Eng Eng	\	
1 2	Avatar Pirates of the Caribbean: At World's End Spectre	237000000.0 300000000.0 245000000.0	2009 2007 2015	Eng Eng Eng	\	
1 2 3	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises	237000000.0 300000000.0 245000000.0 250000000.0	2009 2007 2015 2012	Eng Eng Eng Eng	\	
1 2 3 5	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0	2009 2007 2015 2012 2012	Eng Eng Eng Eng Eng	\	
1 2 3 5 6	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0	2009 2007 2015 2012 2012 2007	Eng Eng Eng Eng Eng Eng	\	
1 2 3 5 6 7	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0	2009 2007 2015 2012 2012 2007 2010 2015	Eng Eng Eng Eng Eng Eng Eng	\	
1 2 3 5 6 7 8	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009	Eng Eng Eng Eng Eng Eng Eng Eng	\	
1 2 3 5 6 7 8 9 10	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016	Eng Eng Eng Eng Eng Eng Eng Eng Eng	\	
1 2 3 5 6 7 8 9 10	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016 2006	Eng	\	
1 2 3 5 6 7 8 9 10 11	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016 2006 2008	Eng	\	
1 2 3 5 6 7 8 9 10 11 12 13	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest	237000000.0 300000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 209000000.0 2250000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016 2006 2008 2006	Eng	\	
1 2 3 5 6 7 8 9 10 11 12 13 14	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 209000000.0 20000000.0 215000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016 2006 2008 2013	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel	237000000.0 30000000.0 245000000.0 250000000.0 263700000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0	2009 2007 2015 2012 2012 2007 2010 2015 2009 2016 2006 2008 2013 2013	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian	237000000.0 30000000.0 245000000.0 250000000.0 253700000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2007 2010 2015 2009 2016 2006 2008 2013 2013 2008	Eng	`	
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 20000000.0 225000000.0 215000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2012 2010 2015 2009 2016 2006 2008 2013 2013 2013 2012	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2007 2010 2015 2009 2016 2006 2008 2013 2013 2013 2012 2011	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3	237000000.0 30000000.0 245000000.0 250000000.0 253700000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2010 2015 2009 2016 2008 2006 2013 2013 2013 2012 2011 2012	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2007 2010 2015 2009 2016 2006 2008 2013 2013 2013 2012 2011	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3	237000000.0 30000000.0 245000000.0 250000000.0 253700000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 215000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2010 2015 2009 2016 2008 2006 2013 2013 2013 2012 2011 2012	Eng		
1 2 3 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Avatar Pirates of the Caribbean: At World's End Spectre The Dark Knight Rises John Carter Spider-Man 3 Tangled Avengers: Age of Ultron Harry Potter and the Half-Blood Prince Batman v Superman: Dawn of Justice Superman Returns Quantum of Solace Pirates of the Caribbean: Dead Man's Chest The Lone Ranger Man of Steel The Chronicles of Narnia: Prince Caspian The Avengers Pirates of the Caribbean: On Stranger Tides Men in Black 3 The Hobbit: The Battle of the Five Armies	237000000.0 30000000.0 245000000.0 250000000.0 258000000.0 258000000.0 250000000.0 250000000.0 250000000.0 20000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0 225000000.0	2009 2007 2015 2012 2012 2010 2015 2009 2016 2006 2008 2013 2013 2013 2012 2011 2012	Eng		

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             The Hobbit: The Desolation of Smaug
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24
                               The Golden Compass
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25
                                         King Kong
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                                           Titanic
26
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                                                                   1997
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27
                      Captain America: Civil War
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28
                                       Battleship
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                                                                   2012
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29
                                   Jurassic World
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                                                                   2015
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30
                                           Skyfall
                                                     20000000.0
                                                                   2012
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31
                                     Spider-Man 2
                                                     20000000.0
                                                                   2004
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32
                                        Iron Man 3
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33
                              Alice in Wonderland
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34
                            X-Men: The Last Stand
                                                    210000000.0
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35
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36
             Transformers: Revenge of the Fallen
                                                    20000000.0
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37
                 Transformers: Age of Extinction
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                                                                   2014
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38
                       Oz the Great and Powerful
                                                     215000000.0
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39
                        The Amazing Spider-Man 2
                                                     20000000.0
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40
                                     TRON: Legacy
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41
                                            Cars 2
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42
                                    Green Lantern
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43
                                       Toy Story 3
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44
                             Terminator Salvation
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45
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                                         Furious 7
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46
                                      World War Z
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                                                                   2013
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47
                      X-Men: Days of Future Past
                                                                   2014
                                                     200000000.0
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48
                          Star Trek Into Darkness
                                                     190000000.0
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                                 The Great Gatsby
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                  JAMES
                              [JAMES, CAMERON]
                                                    CAMERON
1
                             [GORE, VERBINSKI]
      7.1
                                                  VERBINSKI
                                                              4.225352e+09
                   GORE
2
      6.8
                    SAM
                                 [SAM, MENDES]
                                                      MENDES
                                                              3.602941e+09
3
                          [CHRISTOPHER, NOLAN]
      8.5
            CHRISTOPHER
                                                       NOLAN
                                                              2.941176e+09
5
      6.6
                 ANDREW
                             [ANDREW, STANTON]
                                                    STANTON
                                                              3.995455e+09
6
      6.2
                    SAM
                                  [SAM, RAIMI]
                                                       RAIMI
                                                              4.161290e+09
7
      7.8
                 NATHAN
                               [NATHAN, GRENO]
                                                       GRENO
                                                              3.33333e+09
8
      7.5
                                [JOSS, WHEDON]
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                   JOSS
                                                      WHEDON
                                [DAVID, YATES]
9
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                  DAVID
                                                       YATES
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10
      6.9
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                                                      SNYDER
      6.1
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11
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12
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13
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15
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                                                              3.125000e+09
                                                      SNYDER
16
      6.6
                 ANDREW
                             [ANDREW, ADAMSON]
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                                [JOSS, WHEDON]
17
      8.1
                   JOSS
                                                      WHEDON
                                                              2.716049e+09
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			_		
18	6.7	ROB	[ROB, MARSHALL]	MARSHALL	3.731343e+09
19	6.8	BARRY	[BARRY, SONNENFELD]	SONNENFELD	3.308824e+09
20	7.5	PETER	[PETER, JACKSON]	JACKSON	3.33333e+09
21	7.0	MARC	[MARC, WEBB]	WEBB	3.285714e+09
22	6.7	RIDLEY	[RIDLEY, SCOTT]	SCOTT	2.985075e+09
23	7.9	PETER	[PETER, JACKSON]	JACKSON	2.848101e+09
24	6.1	CHRIS	[CHRIS, WEITZ]	WEITZ	2.950820e+09
25	7.2	PETER	[PETER, JACKSON]	JACKSON	2.875000e+09
26	7.7	JAMES	[JAMES, CAMERON]	CAMERON	2.597403e+09
27	8.2	ANTHONY	[ANTHONY, RUSSO]	RUSSO	3.048780e+09
28	5.9	PETER	[PETER, BERG]	BERG	3.542373e+09
29	7.0	COLIN	[COLIN, TREVORROW]	TREVORROW	2.142857e+09
30	7.8	SAM	[SAM, MENDES]	MENDES	2.564103e+09
31	7.3	SAM	[SAM, RAIMI]	RAIMI	2.739726e+09
32	7.2	SHANE	[SHANE, BLACK]	BLACK	2.777778e+09
33	6.5	TIM	[TIM, BURTON]	BURTON	3.076923e+09
34	6.8	BRETT	[BRETT, RATNER]	RATNER	3.088235e+09
35	7.3	DAN	[DAN, SCANLON]	SCANLON	2.739726e+09
36	6.0	MICHAEL	[MICHAEL, BAY]	BAY	3.33333e+09
37	5.7	MICHAEL	[MICHAEL, BAY]	BAY	3.684211e+09
38	6.4	SAM	[SAM, RAIMI]	RAIMI	3.359375e+09
39	6.7	MARC	[MARC, WEBB]	WEBB	2.985075e+09
40	6.8	JOSEPH	[JOSEPH, KOSINSKI]	KOSINSKI	2.500000e+09
41	6.3	JOHN	[JOHN, LASSETER]	LASSETER	3.174603e+09
42	5.6	MARTIN	[MARTIN, CAMPBELL]	CAMPBELL	3.571429e+09
43	8.3	LEE	[LEE, UNKRICH]	UNKRICH	2.409639e+09
44	6.6	MCG	[MCG]	NaN	3.030303e+09
45	7.2	JAMES	[JAMES, WAN]	WAN	2.638889e+09
46	7.0	MARC	[MARC, FORSTER]	FORSTER	2.714286e+09
47	8.0	BRYAN	[BRYAN, SINGER]	SINGER	2.500000e+09
48	7.8	J.J.	[J.J., ABRAMS]	ABRAMS	2.435897e+09
49	6.3	BRYAN	[BRYAN, SINGER]	SINGER	3.095238e+09
50	7.3	BAZ	[BAZ, LUHRMANN]	LUHRMANN	1.438356e+09

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```

#### colonne conditionnelle avec np.select()

```
[21]: #mettre en place les conditions

#check a valeur maximale
    #movies['year'].max()

conditions = [
        (movies['year'] >= 2005) & (movies['year'] <=2007),</pre>
```

```
(movies['year']>= 2008) & (movies['year'] <=2010),</pre>
   (movies['year'] >= 2011) & (movies['year'] <=2013),</pre>
    (movies['year'] >= 2014) & (movies['year'] <= 2016),</pre>
    (movies['year'] > 2016)
#mettre en place les choix correspondants aux conditions
choices = ['Between 2055 and 2007', '2008-2010', '2011-2013', '2014-2016', 'more_
⇔than 2016' ]
#mettre en place la nvlle colonne
movies['complexe_choix'] = np.select(conditions, choices, 'na')
#check
movies.head(50)
#les conditions peuvent se faire sur plusieurs colonnes, 2 ou plus et on peutu
 ⇔utiliser le ou /
\#conditions = \Gamma
    (movies['year'] == 2009) & (movies['score'] < 7.5),
  # (movies['year'] == 2010) & (movies['score'] >10)
#]
#choices = ['level1', 'level2']
#movies['new'] = np.select(conditions, choices, 'NA')
```

```
[21]:
             director_name duration
                                            gross \
                               178.0 760505847.0
     0
             james cameron
     1
            gore verbinski
                               169.0 309404152.0
     2
                               148.0 200074175.0
                sam mendes
         christopher nolan
                               164.0 448130642.0
     3
     5
            andrew stanton
                               132.0
                                      73058679.0
     6
                 sam raimi
                               156.0 336530303.0
     7
                               100.0 200807262.0
              nathan greno
     8
               joss whedon
                               141.0 458991599.0
               david yates
                               153.0 301956980.0
     9
     10
               zack snyder
                               183.0 330249062.0
              bryan singer
                               169.0 200069408.0
     11
     12
              marc forster
                               106.0 168368427.0
     13
            gore verbinski
                               151.0 423032628.0
     14
            gore verbinski
                               150.0
                                      89289910.0
     15
               zack snyder
                               143.0 291021565.0
```

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16
       andrew adamson
                            150.0
                                   141614023.0
17
           joss whedon
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18
          rob marshall
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19
     barry sonnenfeld
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20
                            164.0
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        peter jackson
21
             marc webb
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22
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           chris weitz
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        james cameron
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        anthony russo
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29
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                                    652177271.0
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            sam mendes
                            143.0
                                    304360277.0
31
             sam raimi
                            135.0
                                    373377893.0
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           shane black
                            195.0
                                    408992272.0
33
            tim burton
                            108.0
                                    334185206.0
34
          brett ratner
                            104.0
                                    234360014.0
35
           dan scanlon
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                                    268488329.0
36
           michael bay
                            150.0
                                    402076689.0
                                    245428137.0
37
           michael bay
                            165.0
38
             sam raimi
                            130.0
                                    234903076.0
39
             marc webb
                            142.0
                                    202853933.0
40
      joseph kosinski
                            125.0
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41
        john lasseter
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      martin campbell
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             james wan
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          bryan singer
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                                    233914986.0
48
           j.j. abrams
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                                    228756232.0
49
          bryan singer
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                                     65171860.0
50
          baz luhrmann
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                                                   genres
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                        Action | Adventure | Fantasy | Sci-Fi
1
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2
                               Action | Adventure | Thriller
3
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6
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                                 Action | Adventure | Sci-Fi
9
                       Adventure | Family | Fantasy | Mystery
10
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11	Action Adventure S	ci-Fi			
12	Action Adve	nture			
13	Action Adventure Fa	ntasy			
14	Action Adventure We	stern			
15	Action Adventure Fantasy S	ci-Fi			
16	Action Adventure Family Fa				
17	Action Adventure S	•			
18	Action Adventure Fa				
19	Action   Adventure   Comedy   Family   Fantasy   S	*			
20	Adventure Fa				
21	Action Adventure Fa	*			
22	Action Adventure Drama Hi	*			
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25	Action Adventure Drama Ro				
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27	Action Adventure S				
28	Action Adventure Sci-Fi Thr				
29	Action Adventure Sci-Fi Thr				
30	Action Adventure Thr				
31	Action Adventure Fantasy Ro				
32	Action Adventure S				
33	Adventure Family Fa	ntasy			
34	Action Adventure Fantasy Sci-Fi Thr	iller			
35	Adventure   Animation   Comedy   Family   Fa	ntasy			
36	Action Adventure S	ci-Fi			
37	Action Adventure S	ci-Fi			
38	Adventure Family Fa	ntasy			
39	Action Adventure Fantasy S	ci-Fi			
40	Action Adventure S	ci-Fi			
41	Adventure   Animation   Comedy   Family	Sport			
42	Action Adventure S	ci-Fi			
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46	Action   Adventure   Horror   Sci-Fi   Thr				
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	title	budget	year lang	າເລອຍ	\
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1	Pirates of the Caribbean: At World's End	300000000.0	2007	Eng	
2	Spectre	2450000000.0	2015	Eng	
3	The Dark Knight Rises	250000000.0	2013	Eng	
5	John Carter	263700000.0	2012	Eng	
J	John Carter	200100000.0	2012	FIIR	

Action|Adventure|Sci-Fi

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6
                                     Spider-Man 3
                                                    258000000.0
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7
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                                          Tangled
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              Batman v Superman: Dawn of Justice
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14
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15
                                     Man of Steel
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16
       The Chronicles of Narnia: Prince Caspian
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18
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19
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      The Hobbit: The Battle of the Five Armies
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30
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31
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                                       Iron Man 3
32
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33
                             Alice in Wonderland
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34
                           X-Men: The Last Stand
                                                    210000000.0
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35
                             Monsters University
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36
            Transformers: Revenge of the Fallen
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37
                 Transformers: Age of Extinction
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                       Oz the Great and Powerful
38
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39
                        The Amazing Spider-Man 2
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40
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41
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42
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43
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                                        Furious 7
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46
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47
                      X-Men: Days of Future Past
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48
                         Star Trek Into Darkness
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0	7.9	james	cameron	3.000000e+09	Maintain	
1	7.1	gore	verbinski	4.225352e+09	Rejected	
2	6.8	sam	mendes	3.602941e+09	Rejected	
3	8.5	christopher	nolan	2.941176e+09	Rejected	
5	6.6	andrew	stanton	3.995455e+09	Rejected	
6	6.2	sam	raimi	4.161290e+09	Rejected	Siecle
7	7.8	nathan	greno	3.333333e+09	Rejected	Siecle
8	7.5	joss	whedon	3.33333e+09	Rejected	Siecle
9	7.5	david	yates	3.33333e+09	Maintain	Siecle
10	6.9	zack	snyder	3.623188e+09	Rejected	Siecle
11	6.1	bryan	singer	3.426230e+09	Rejected	Siecle
12	6.7	marc	forster	2.985075e+09	Rejected	Siecle
13	7.3	gore	verbinski	3.082192e+09	Rejected	Siecle
14	6.5	gore	verbinski	3.307692e+09	Rejected	
15	7.2	zack	snyder	3.125000e+09	Rejected	
16	6.6	andrew	adamson	3.409091e+09	Rejected	
17	8.1	joss	whedon	2.716049e+09	Rejected	
18	6.7	rob	marshall	3.731343e+09	Rejected	
19	6.8	barry	sonnenfeld	3.308824e+09	Rejected	
20	7.5	•		3.333333e+09	Rejected	
21	7.0	peter	jackson webb	3.285714e+09	•	
		marc			Rejected	
22	6.7	ridley	scott	2.985075e+09	Rejected	
23	7.9	peter	jackson	2.848101e+09	Rejected	
24	6.1	chris	weitz	2.950820e+09	Rejected	
25	7.2	peter	jackson	2.875000e+09	Rejected	
26	7.7	james	cameron	2.597403e+09	Rejected	
27	8.2	anthony	russo	3.048780e+09	Rejected	Siecle
28	5.9	peter	berg	3.542373e+09	Rejected	
29	7.0	colin	trevorrow	2.142857e+09	Rejected	Siecle
30	7.8	sam	mendes	2.564103e+09	Rejected	Siecle
31	7.3	sam	raimi	2.739726e+09	Rejected	Siecle
32	7.2	shane	black	2.777778e+09	Rejected	Siecle
33	6.5	tim	burton	3.076923e+09	Rejected	Siecle
34	6.8	brett	ratner	3.088235e+09	Rejected	Siecle
35	7.3	dan	scanlon	2.739726e+09	Rejected	
36	6.0	michael	bay	3.33333e+09	Maintain	
37	5.7	michael	bay	3.684211e+09	Rejected	
38	6.4	sam	raimi	3.359375e+09	Rejected	
39	6.7	marc	webb	2.985075e+09	Rejected	
40	6.8	joseph	kosinski	2.500000e+09	Rejected	
41	6.3	john	lasseter	3.174603e+09	Rejected	
		•			•	
42	5.6	martin	campbell	3.571429e+09	Rejected	
43	8.3	lee	unkrich	2.409639e+09	Rejected	
44	6.6	mcg	NaN	3.030303e+09	Maintain	
45	7.2	james	wan	2.638889e+09	Rejected	
46	7.0	marc	forster	2.714286e+09	Rejected	
47	8.0	bryan	singer	2.500000e+09	Rejected	Siecle

48	7.8	j.j.	abrams	2.435897e+09	Rejected Siecle
49	6.3	bryan	singer	3.095238e+09	Rejected Siecle
50	7.3	baz	luhrmann	1.438356e+09	Rejected Siecle
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0	<b>5</b> .	2008-2010			
1	Between	2055 and 2007			
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10	<b>-</b> .	2014-2016			
11	Between	2055 and 2007			
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13	Between	2055 and 2007			
14		2011-2013			
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20		2014-2016			
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23	<b>5</b> .	2011-2013			
24		2055 and 2007			
25	Between	2055 and 2007			
26		na			
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34	Between	2055 and 2007			
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39		2014-2016			
40		2008-2010			
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42		2011-2013			

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43
                 2008-2010
44
                 2008-2010
45
                 2014-2016
46
                 2011-2013
47
                 2014-2016
48
                 2011-2013
49
                 2011-2013
50
                 2011-2013
```

### colonne conditionnelle avec assign()

```
[22]: #assign() sur une seule colonne et xa peut se faire sur deux ou trois colonnes,
       ⇒il suffit juste de changer le nom de la colonne
      #definition de la fonction
      def oneColumn(row):
          if row["year"] == 2009:
              return "year_2009"
          elif row["year"] == 2010:
              return "year_2010"
          elif row["year"] == 2013:
              return "year_2013"
          else:
              return "VIP"
      #assigne cette fonction a notre dataset
      movies = movies.assign(NewColonne = movies.apply(oneColumn, axis = 1))
      #check
      movies.head(50)
```

```
[22]:
              director_name duration
                                             gross \
      0
                                178.0 760505847.0
              james cameron
      1
             gore verbinski
                                169.0
                                       309404152.0
      2
                 sam mendes
                                148.0
                                       200074175.0
      3
          christopher nolan
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      5
             andrew stanton
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                                       73058679.0
      6
                  sam raimi
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      7
               nathan greno
                                100.0 200807262.0
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                joss whedon
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                david yates
                                153.0 301956980.0
                zack snyder
      10
                                183.0 330249062.0
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               bryan singer
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      12
               marc forster
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            gore verbinski
                                151.0 423032628.0
      14
             gore verbinski
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                zack snyder
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             andrew adamson
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17
           joss whedon
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                                    623279547.0
18
          rob marshall
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     barry sonnenfeld
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20
        peter jackson
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21
             marc webb
                            153.0
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22
         ridley scott
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23
        peter jackson
                                    258355354.0
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           chris weitz
24
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25
        peter jackson
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26
        james cameron
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        anthony russo
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29
      colin trevorrow
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            sam mendes
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31
             sam raimi
32
           shane black
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            tim burton
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          brett ratner
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           dan scanlon
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           michael bay
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             sam raimi
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           lee unkrich
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          marc forster
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          bryan singer
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           j.j. abrams
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          bryan singer
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                                                    genres
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                        Action | Adventure | Fantasy | Sci-Fi
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    Adventure | Animation | Comedy | Family | Fantasy | Musi...
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12	Action Adve	nture					
13	Action Adventure Fa	•					
14	Action Adventure We	stern					
15	Action Adventure Fantasy S	ci-Fi					
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18	Action Adventure Fa	ntasy					
19	Action   Adventure   Comedy   Family   Fantasy   S	ci-Fi					
20	Adventure Fa	ntasy					
21	Action Adventure Fa	ntasy					
22	Action Adventure Drama Hi	story					
23	Adventure Fa	ntasy					
24	Adventure Family Fa	ntasy					
25	Action Adventure Drama Ro	•					
26	Drama Ro	mance					
27	Action Adventure S						
28	Action Adventure Sci-Fi Thr						
29	Action Adventure Sci-Fi Thr						
30	Action   Adventure   Thr						
31	Action Adventure Fantasy Ro						
32	Action Adventure S						
33	Adventure Family Fa						
34	Action Adventure Fantasy Sci-Fi Thr	•					
35	Adventure   Animation   Comedy   Family   Fa						
36	Action   Adventure   S	•					
37	Action Adventure Sci-Fi						
38	Adventure Family Fantasy						
39	Action Adventure Fantasy S	•					
40	Action Adventure S						
41	Adventure   Animation   Comedy   Family						
42	Action   Adventure   S						
43	Adventure   Animation   Comedy   Family   Fa						
44	Action Adventure S	•					
45	Action Crime Thr						
46	Action   Adventure   Horror   Sci-Fi   Thr						
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50	Adventure Fantasy Drama Romance						
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0	Avatar	237000000.0	2009	Eng	`		
1	Pirates of the Caribbean: At World's End	30000000.0	2003	Eng			
2	Spectre	2450000000.0	2015	Eng			
3	The Dark Knight Rises	250000000.0	2013	Eng			
5	John Carter	263700000.0	2012	Eng			
6	Spider-Man 3	258000000.0	2012	Eng			
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10
              Batman v Superman: Dawn of Justice
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                                 Superman Returns
                                                    209000000.0
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                                Quantum of Solace
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13
     Pirates of the Caribbean: Dead Man's Chest
                                                    225000000.0
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14
                                  The Lone Ranger
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15
                                     Man of Steel
                                                    225000000.0
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       The Chronicles of Narnia: Prince Caspian
                                                    225000000.0
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17
                                     The Avengers
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18
    Pirates of the Caribbean: On Stranger Tides
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19
                                   Men in Black 3
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      The Hobbit: The Battle of the Five Armies
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                                                                             Eng
27
                      Captain America: Civil War
                                                    250000000.0
                                                                  2016
                                                                             Eng
28
                                       Battleship
                                                    209000000.0
                                                                  2012
                                                                             Eng
29
                                   Jurassic World
                                                    150000000.0
                                                                  2015
                                                                             Eng
30
                                           Skyfall
                                                    200000000.0
                                                                  2012
                                                                             Eng
31
                                     Spider-Man 2
                                                    20000000.0
                                                                  2004
                                                                             Eng
32
                                        Iron Man 3
                                                    20000000.0
                                                                  2013
                                                                             Eng
33
                              Alice in Wonderland
                                                    200000000.0
                                                                  2010
                                                                             Eng
34
                           X-Men: The Last Stand
                                                    210000000.0
                                                                  2006
                                                                             Eng
35
                              Monsters University
                                                    20000000.0
                                                                  2013
                                                                             Eng
36
             Transformers: Revenge of the Fallen
                                                    20000000.0
                                                                  2009
                                                                             Eng
37
                 Transformers: Age of Extinction
                                                    210000000.0
                                                                  2014
                                                                             Eng
38
                       Oz the Great and Powerful
                                                    215000000.0
                                                                  2013
                                                                             Eng
39
                                                                             Eng
                        The Amazing Spider-Man 2
                                                    200000000.0
                                                                  2014
40
                                     TRON: Legacy
                                                    17000000.0
                                                                  2010
                                                                             Eng
41
                                            Cars 2
                                                                             Eng
                                                    200000000.0
                                                                  2011
42
                                    Green Lantern
                                                    20000000.0
                                                                  2011
                                                                             Eng
                                      Toy Story 3
43
                                                    200000000.0
                                                                  2010
                                                                             Eng
44
                             Terminator Salvation
                                                    200000000.0
                                                                  2009
                                                                             Eng
45
                                        Furious 7
                                                    190000000.0
                                                                  2015
                                                                             Eng
46
                                      World War Z
                                                    190000000.0
                                                                  2013
                                                                             Eng
47
                      X-Men: Days of Future Past
                                                    200000000.0
                                                                  2014
                                                                             Eng
48
                         Star Trek Into Darkness
                                                    190000000.0
                                                                  2013
                                                                             Eng
49
                            Jack the Giant Slayer
                                                    195000000.0
                                                                  2013
                                                                             Eng
50
                                 The Great Gatsby
                                                    105000000.0
                                                                  2013
                                                                             Eng
    score
                surname
                                name
                                        taux_rendu
                                                        siecle_simple
0
      7.9
                  james
                             cameron
                                      3.000000e+09
                                                     Maintain Siecle
```

1	7.1	gore	verbinski	4.225352e+09	Rejected	Sioclo
2	6.8	gore	mendes	3.602941e+09	Rejected	
3	8.5	sam	nolan	2.941176e+09	•	
5	6.6	christopher andrew		3.995455e+09	Rejected	
			stanton		Rejected	
6	6.2	sam	raimi	4.161290e+09	Rejected	
7	7.8	nathan	greno	3.333333e+09	Rejected	
8	7.5	joss	whedon	3.333333e+09	Rejected	
9	7.5	david	yates	3.333333e+09	Maintain	
10	6.9	zack	snyder	3.623188e+09	Rejected	
11	6.1	bryan	singer	3.426230e+09	Rejected	Siecle
12	6.7	marc	forster	2.985075e+09	Rejected	Siecle
13	7.3	gore	verbinski	3.082192e+09	Rejected	Siecle
14	6.5	gore	verbinski	3.307692e+09	Rejected	Siecle
15	7.2	zack	snyder	3.125000e+09	Rejected	Siecle
16	6.6	andrew	adamson	3.409091e+09	Rejected	Siecle
17	8.1	joss	whedon	2.716049e+09	Rejected	Siecle
18	6.7	rob	marshall	3.731343e+09	Rejected	
19	6.8	barry	sonnenfeld	3.308824e+09	Rejected	
20	7.5	peter	jackson	3.33333e+09	Rejected	
21	7.0	marc	webb	3.285714e+09	Rejected	
22	6.7	ridley	scott	2.985075e+09	Rejected	
23	7.9	peter	jackson	2.848101e+09	Rejected	
24	6.1	chris	weitz	2.950820e+09	Rejected	
25	7.2	peter	jackson	2.875000e+09	Rejected	
26	7.7	-	· ·		•	
		james	cameron	2.597403e+09	Rejected	
27	8.2	anthony	russo	3.048780e+09	Rejected	
28	5.9	peter	berg	3.542373e+09	Rejected	
29	7.0	colin	trevorrow	2.142857e+09	Rejected	
30	7.8	sam	mendes	2.564103e+09	Rejected	
31	7.3	sam	raimi	2.739726e+09	Rejected	
32	7.2	shane	black	2.777778e+09	Rejected	
33	6.5	tim	burton	3.076923e+09	Rejected	
34	6.8	brett	ratner	3.088235e+09	Rejected	Siecle
35	7.3	dan	scanlon	2.739726e+09	Rejected	Siecle
36	6.0	michael	bay	3.33333e+09	Maintain	Siecle
37	5.7	michael	bay	3.684211e+09	Rejected	Siecle
38	6.4	sam	raimi	3.359375e+09	Rejected	Siecle
39	6.7	marc	webb	2.985075e+09	Rejected	Siecle
40	6.8	joseph	kosinski	2.500000e+09	Rejected	Siecle
41	6.3	john	lasseter	3.174603e+09	Rejected	
42	5.6	martin	campbell	3.571429e+09	Rejected	
43	8.3	lee	unkrich	2.409639e+09	Rejected	
44	6.6	mcg	NaN	3.030303e+09	Maintain	
45	7.2	james	wan	2.638889e+09	Rejected	
46	7.0	marc	forster	2.714286e+09	Rejected	
47	8.0		singer	2.714200e+09 2.500000e+09	•	
		bryan	_		Rejected	
48	7.8	j.j.	abrams	2.435897e+09	Rejected	precre

```
49
      6.3
                  bryan
                             singer 3.095238e+09 Rejected Siecle
50
      7.3
                           luhrmann 1.438356e+09 Rejected Siecle
                    baz
           complexe_choix NewColonne
0
                 2008-2010 year_2009
    Between 2055 and 2007
                                   VIP
1
2
                 2014-2016
                                   VIP
3
                 2011-2013
                                   VIP
5
                 2011-2013
                                   VIP
6
    Between 2055 and 2007
                                   VIP
7
                 2008-2010
                            year 2010
8
                 2014-2016
                                   VIP
                            year_2009
9
                 2008-2010
10
                 2014-2016
                                   VIP
    Between 2055 and 2007
                                   VIP
11
12
                 2008-2010
                                   VIP
    Between 2055 and 2007
13
                                   VIP
14
                 2011-2013
                            year_2013
15
                            year_2013
                 2011-2013
16
                 2008-2010
                                   VIP
17
                 2011-2013
                                   VIP
18
                 2011-2013
                                   VIP
19
                 2011-2013
                                   VIP
20
                 2014-2016
                                   VIP
21
                 2011-2013
                                   VIP
22
                 2008-2010
                            year_2010
                            year_2013
23
                 2011-2013
24
    Between 2055 and 2007
                                   VIP
    Between 2055 and 2007
25
                                   VIP
26
                                   VIP
                        na
27
                 2014-2016
                                   VIP
28
                 2011-2013
                                   VIP
29
                                   VIP
                 2014-2016
30
                 2011-2013
                                   VIP
31
                                   VIP
                        na
32
                 2011-2013
                            year_2013
33
                 2008-2010
                            year 2010
34
    Between 2055 and 2007
                                   VIP
35
                 2011-2013
                            year_2013
                            year_2009
36
                 2008-2010
37
                 2014-2016
                                   VIP
38
                 2011-2013
                            year_2013
39
                 2014-2016
                                   VIP
                            year_2010
40
                 2008-2010
41
                 2011-2013
                                   VIP
42
                                   VIP
                 2011-2013
43
                 2008-2010 year_2010
```

```
44
                2008-2010 year_2009
45
                2014-2016
                                  VIP
46
                2011-2013
                            year_2013
47
                2014-2016
                                  VIP
48
                2011-2013
                           year_2013
                            year_2013
49
                2011-2013
50
                2011-2013
                           year_2013
```

Utilisation de map, replace et category Data['sex'].map({'male':0, 'femelle': 1}) #Ceci prend toutes les valeurs male et femelle de la colonne sex et les remplace par 0 et 1

Data['sex'].replace(['male', 'female'], [1,0]) Data['sex'].astype('category').cat.codes #creer automatiquement des codes pour toutes les valeurs uniques de la colonne sex et assigne les valeurs

### 1.1 Decoupage des datas (Extraction des datas)

Choix d'une colonne, situation d'une colonne, condition sur les colonnes, etc...

```
[76]: #mettre en evidence la colonne year
year_movies = movies ["year"]
year_movies.head(20)
```

```
[76]: 0
             2009
             2007
      1
      2
             2015
      3
             2012
      5
             2012
      6
             2007
      7
             2010
      8
             2015
      9
             2009
      10
             2016
             2006
      11
      12
             2008
      13
             2006
      14
             2013
             2013
      15
      16
             2008
      17
             2012
      18
             2011
      19
             2012
      20
             2014
      Name: year, dtype: int32
```

```
[78]: #voir le nomnbre de lignes
movies["year"].shape
```

```
[78]: (3655,)
[79]: #Avoir juste le title et le year
      title_year = movies[["title", "year"]]
      #check
      title_year.head(20)
[79]:
                                                 title
                                                        year
      0
                                                Avatar
                                                         2009
      1
             Pirates of the Caribbean: At World's End
                                                        2007
      2
                                               Spectre
                                                         2015
      3
                                 The Dark Knight Rises
                                                         2012
      5
                                           John Carter
                                                         2012
      6
                                          Spider-Man 3
                                                         2007
      7
                                               Tangled
                                                        2010
      8
                               Avengers: Age of Ultron
                                                         2015
      9
               Harry Potter and the Half-Blood Prince
                                                         2009
      10
                   Batman v Superman: Dawn of Justice
                                                         2016
      11
                                      Superman Returns
                                                         2006
      12
                                     Quantum of Solace
                                                         2008
      13
           Pirates of the Caribbean: Dead Man's Chest
                                                         2006
      14
                                       The Lone Ranger
                                                        2013
      15
                                          Man of Steel
                                                        2013
      16
             The Chronicles of Narnia: Prince Caspian
                                                        2008
      17
                                          The Avengers
                                                         2012
          Pirates of the Caribbean: On Stranger Tides
      18
                                                         2011
      19
                                        Men in Black 3
                                                         2012
      20
            The Hobbit: The Battle of the Five Armies
                                                        2014
[80]: #movies after ou apres 2012
      movies_after_2012 = movies[movies['year'] > 2012]
     movies_after_2012.head(20)
[80]:
            director_name
                            duration
                                            gross
      2
               SAM MENDES
                               148.0
                                      200074175.0
      8
              JOSS WHEDON
                               141.0
                                      458991599.0
      10
              ZACK SNYDER
                               183.0 330249062.0
      14
           GORE VERBINSKI
                               150.0
                                       89289910.0
      15
              ZACK SNYDER
                               143.0 291021565.0
      20
            PETER JACKSON
                               164.0 255108370.0
      23
            PETER JACKSON
                               186.0 258355354.0
      27
            ANTHONY RUSSO
                               147.0 407197282.0
      29
          COLIN TREVORROW
                               124.0 652177271.0
      32
              SHANE BLACK
                               195.0 408992272.0
      35
              DAN SCANLON
                               104.0 268488329.0
```

```
37
         MICHAEL BAY
                           165.0
                                  245428137.0
38
           SAM RAIMI
                           130.0
                                  234903076.0
39
           MARC WEBB
                           142.0
                                  202853933.0
45
           JAMES WAN
                           140.0
                                  350034110.0
46
       MARC FORSTER
                           123.0
                                  202351611.0
47
       BRYAN SINGER
                           149.0
                                  233914986.0
48
         J.J. ABRAMS
                           132.0
                                  228756232.0
49
       BRYAN SINGER
                           114.0
                                   65171860.0
       BAZ LUHRMANN
                                  144812796.0
50
                           143.0
                                           genres
2
                      Action | Adventure | Thriller
8
                        Action | Adventure | Sci-Fi
10
                        Action | Adventure | Sci-Fi
                       Action | Adventure | Western
14
15
               Action | Adventure | Fantasy | Sci-Fi
20
                               Adventure | Fantasy
23
                               Adventure | Fantasy
                        Action|Adventure|Sci-Fi
27
29
              Action | Adventure | Sci-Fi | Thriller
32
                        Action | Adventure | Sci-Fi
    Adventure | Animation | Comedy | Family | Fantasy
35
37
                        Action | Adventure | Sci-Fi
38
                       Adventure | Family | Fantasy
39
               Action | Adventure | Fantasy | Sci-Fi
45
                           Action | Crime | Thriller
46
      Action | Adventure | Horror | Sci-Fi | Thriller
47
     Action | Adventure | Fantasy | Sci-Fi | Thriller
48
                        Action | Adventure | Sci-Fi
49
                               Adventure | Fantasy
50
                                   Drama | Romance
                                                                   year language
                                            title
                                                          budget
2
                                          Spectre
                                                    245000000.0
                                                                   2015
                                                                              Eng
8
                        Avengers: Age of Ultron
                                                    250000000.0
                                                                   2015
                                                                              Eng
10
            Batman v Superman: Dawn of Justice
                                                    250000000.0
                                                                   2016
                                                                              Eng
14
                                 The Lone Ranger
                                                    215000000.0
                                                                   2013
                                                                              Eng
15
                                    Man of Steel
                                                    225000000.0
                                                                  2013
                                                                              Eng
    The Hobbit: The Battle of the Five Armies
20
                                                    250000000.0
                                                                  2014
                                                                              Eng
23
           The Hobbit: The Desolation of Smaug
                                                    225000000.0
                                                                  2013
                                                                              Eng
27
                     Captain America: Civil War
                                                                  2016
                                                    250000000.0
                                                                              Eng
29
                                  Jurassic World
                                                    150000000.0
                                                                  2015
                                                                              Eng
32
                                       Iron Man 3
                                                    200000000.0
                                                                  2013
                                                                              Eng
35
                            Monsters University
                                                    200000000.0
                                                                  2013
                                                                              Eng
37
               Transformers: Age of Extinction
                                                                  2014
                                                    210000000.0
                                                                              Eng
38
                      Oz the Great and Powerful
                                                    215000000.0
                                                                   2013
                                                                              Eng
                       The Amazing Spider-Man 2
39
                                                    200000000.0
                                                                   2014
                                                                              Eng
```

```
45
                                      Furious 7
                                                  19000000.0
                                                               2015
                                                                          Eng
46
                                    World War Z
                                                  19000000.0
                                                               2013
                                                                          Eng
47
                    X-Men: Days of Future Past
                                                  200000000.0
                                                               2014
                                                                          Eng
48
                       Star Trek Into Darkness
                                                  190000000.0
                                                               2013
                                                                          Eng
49
                         Jack the Giant Slayer
                                                  195000000.0
                                                               2013
                                                                          Eng
50
                              The Great Gatsby
                                                  105000000.0
                                                               2013
                                                                          Eng
                                                        taux_rendu
    score
           surname
                                surnmame
                                               name
2
                          [SAM, MENDES]
      6.8
                SAM
                                             MENDES
                                                      3.602941e+09
8
      7.5
               JOSS
                         [JOSS, WHEDON]
                                             WHEDON
                                                      3.33333e+09
10
                         [ZACK, SNYDER]
      6.9
              ZACK
                                             SNYDER
                                                      3.623188e+09
      6.5
              GORE
                      [GORE, VERBINSKI]
                                                      3.307692e+09
                                          VERBINSKI
15
      7.2
              ZACK
                         [ZACK, SNYDER]
                                             SNYDER
                                                      3.125000e+09
20
      7.5
             PETER
                       [PETER, JACKSON]
                                            JACKSON
                                                      3.33333e+09
23
      7.9
             PETER
                       [PETER, JACKSON]
                                                      2.848101e+09
                                            JACKSON
27
      8.2
           ANTHONY
                       [ANTHONY, RUSSO]
                                              RUSSO
                                                      3.048780e+09
29
      7.0
                     [COLIN, TREVORROW]
             COLIN
                                          TREVORROW
                                                      2.142857e+09
32
      7.2
                         [SHANE, BLACK]
             SHANE
                                              BLACK
                                                      2.777778e+09
35
      7.3
                DAN
                         [DAN, SCANLON]
                                            SCANLON
                                                      2.739726e+09
37
      5.7
           MICHAEL
                         [MICHAEL, BAY]
                                                 BAY
                                                      3.684211e+09
38
      6.4
                SAM
                            [SAM, RAIMI]
                                              RAIMI
                                                      3.359375e+09
39
      6.7
                            [MARC, WEBB]
              MARC
                                               WEBB
                                                      2.985075e+09
45
      7.2
             JAMES
                           [JAMES, WAN]
                                                 WAN
                                                      2.638889e+09
46
      7.0
              MARC
                        [MARC, FORSTER]
                                            FORSTER
                                                      2.714286e+09
47
      8.0
             BRYAN
                        [BRYAN, SINGER]
                                              SINGER
                                                      2.500000e+09
48
      7.8
              J.J.
                         [J.J., ABRAMS]
                                              ABRAMS
                                                      2.435897e+09
                        [BRYAN, SINGER]
                                              SINGER
49
      6.3
             BRYAN
                                                      3.095238e+09
50
      7.3
               BAZ
                        [BAZ, LUHRMANN]
                                                      1.438356e+09
                                           LUHRMANN
                          siecle_for complexe_choix NewColonne
      siecle_simple
2
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
8
    Rejected Siecle
                      Rejected value
                                                             VIP
                                           2014-2016
10
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
14
    Rejected Siecle
                      Rejected value
                                           2011-2013
                                                       year_2013
15
                      Rejected value
    Rejected Siecle
                                           2011-2013
                                                       year_2013
20
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
23
    Rejected Siecle
                      Rejected value
                                           2011-2013
                                                       year 2013
27
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
29
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
    Rejected Siecle
                      Rejected value
                                                       year 2013
32
                                           2011-2013
35
    Rejected Siecle
                      Rejected value
                                           2011-2013
                                                       year 2013
37
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
                      Rejected value
38
    Rejected Siecle
                                           2011-2013
                                                       year 2013
39
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
45
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
46
    Rejected Siecle
                      Rejected value
                                           2011-2013
                                                       year_2013
47
    Rejected Siecle
                      Rejected value
                                           2014-2016
                                                             VIP
```

```
Rejected Siecle
                           Rejected value
                                                   2011-2013
                                                              year_2013
                                                              year_2013
      49
         Rejected Siecle
                             Rejected value
                                                   2011-2013
          Rejected Siecle
                             Rejected value
                                                   2011-2013
                                                              year_2013
[81]: #Movies for 2012 ou 2015 or
      movie_2012_or_2015 = movies[(movies['year'] == 2012) | (movies['year'] == 2015)]
      movie_2012_or_2015.head(20)
[81]:
                director_name
                                duration
                                                  gross
      2
                   SAM MENDES
                                    148.0
                                           200074175.0
      3
           CHRISTOPHER NOLAN
                                   164.0
                                          448130642.0
      5
               ANDREW STANTON
                                   132.0
                                            73058679.0
                  JOSS WHEDON
                                   141.0 458991599.0
      8
      17
                                   173.0
                                           623279547.0
                  JOSS WHEDON
      19
            BARRY SONNENFELD
                                   106.0
                                          179020854.0
      21
                    MARC WEBB
                                   153.0
                                           262030663.0
      28
                   PETER BERG
                                   131.0
                                            65173160.0
      29
             COLIN TREVORROW
                                   124.0 652177271.0
      30
                   SAM MENDES
                                   143.0
                                           304360277.0
      45
                    JAMES WAN
                                   140.0
                                           350034110.0
      56
                 MARK ANDREWS
                                    93.0
                                           237282182.0
      62
               LANA WACHOWSKI
                                   127.0
                                           47375327.0
      78
                  PETE DOCTER
                                    95.0
                                          356454367.0
      81
               RUPERT SANDERS
                                   132.0
                                          155111815.0
      88
                    BRAD BIRD
                                   130.0
                                           93417865.0
      90
                   RICH MOORE
                                   101.0 189412677.0
      103
            FRANCIS LAWRENCE
                                   137.0
                                           281666058.0
                  ALAN TAYLOR
                                   126.0
      109
                                            89732035.0
      128
                GEORGE MILLER
                                   120.0 153629485.0
                                                        genres
      2
                                   Action | Adventure | Thriller
      3
                                              Action|Thriller
      5
                                      Action | Adventure | Sci-Fi
      8
                                      Action | Adventure | Sci-Fi
      17
                                      Action | Adventure | Sci-Fi
      19
             Action | Adventure | Comedy | Family | Fantasy | Sci-Fi
      21
                                     Action | Adventure | Fantasy
      28
                            Action | Adventure | Sci-Fi | Thriller
      29
                            Action | Adventure | Sci-Fi| Thriller
      30
                                   Action | Adventure | Thriller
      45
                                        Action | Crime | Thriller
      56
                  Adventure | Animation | Comedy | Family | Fantasy
                                     Action|Adventure|Sci-Fi
      62
      78
           Adventure | Animation | Comedy | Drama | Family | Fantasy
```

```
81
                        Action | Adventure | Drama | Fantasy
88
               Action | Adventure | Family | Mystery | Sci-Fi
90
             Adventure | Animation | Comedy | Family | Sci-Fi
                                        Adventure | Sci-Fi
103
109
                                Action | Adventure | Sci-Fi
128
                      Action | Adventure | Sci-Fi | Thriller
                                         title
                                                      budget
                                                              year language
                                                                               score
2
                                                245000000.0
                                                              2015
                                      Spectre
                                                                          Eng
                                                                                 6.8
3
                       The Dark Knight Rises
                                                               2012
                                                                                 8.5
                                                250000000.0
                                                                          Eng
5
                                  John Carter
                                                              2012
                                                263700000.0
                                                                         Eng
                                                                                 6.6
                                                                         Eng
8
                     Avengers: Age of Ultron
                                                250000000.0
                                                               2015
                                                                                 7.5
17
                                 The Avengers
                                                220000000.0
                                                               2012
                                                                         Eng
                                                                                 8.1
                                                225000000.0
19
                               Men in Black 3
                                                              2012
                                                                          Eng
                                                                                 6.8
                                                               2012
21
                      The Amazing Spider-Man
                                                230000000.0
                                                                          Eng
                                                                                 7.0
28
                                   Battleship
                                                209000000.0
                                                              2012
                                                                          Eng
                                                                                 5.9
29
                                                                          Eng
                               Jurassic World
                                                150000000.0
                                                               2015
                                                                                 7.0
30
                                                               2012
                                                                                 7.8
                                      Skyfall
                                                200000000.0
                                                                          Eng
45
                                    Furious 7
                                                19000000.0
                                                               2015
                                                                          Eng
                                                                                 7.2
56
                                                185000000.0
                                                               2012
                                                                                 7.2
                                         Brave
                                                                          Eng
62
                                                              2015
                           Jupiter Ascending
                                                176000000.0
                                                                          Eng
                                                                                 5.4
78
                                   Inside Out
                                                              2015
                                                                                 8.3
                                                175000000.0
                                                                         Eng
81
                Snow White and the Huntsman
                                                17000000.0
                                                              2012
                                                                                 6.1
                                                                         Eng
88
                                 Tomorrowland
                                                              2015
                                                190000000.0
                                                                          Eng
                                                                                 6.5
90
                               Wreck-It Ralph
                                                              2012
                                                                          Eng
                                                                                 7.8
                                                165000000.0
103
     The Hunger Games: Mockingjay - Part 2
                                                160000000.0
                                                               2015
                                                                         Eng
                                                                                 6.6
109
                          Terminator Genisys
                                                155000000.0
                                                               2015
                                                                         Eng
                                                                                 6.6
128
                          Mad Max: Fury Road
                                                150000000.0
                                                               2015
                                                                                 8.1
                                                                         Eng
                                                           taux_rendu
          surname
                                 surnmame
                                                  name
2
                            [SAM, MENDES]
                                                         3.602941e+09
              SAM
                                                MENDES
3
                    [CHRISTOPHER, NOLAN]
     CHRISTOPHER
                                                         2.941176e+09
                                                 NOLAN
5
                       [ANDREW, STANTON]
           ANDREW
                                               STANTON
                                                         3.995455e+09
8
                           [JOSS, WHEDON]
             JOSS
                                                WHEDON
                                                         3.33333e+09
17
             JOSS
                           [JOSS, WHEDON]
                                                         2.716049e+09
                                                WHEDON
19
            BARRY
                     [BARRY, SONNENFELD]
                                            SONNENFELD
                                                         3.308824e+09
21
             MARC
                             [MARC, WEBB]
                                                         3.285714e+09
                                                  WEBB
28
            PETER
                            [PETER, BERG]
                                                  BERG
                                                         3.542373e+09
29
            COLIN
                      [COLIN, TREVORROW]
                                             TREVORROW
                                                         2.142857e+09
30
              SAM
                            [SAM, MENDES]
                                                MENDES
                                                         2.564103e+09
            JAMES
                             [JAMES, WAN]
45
                                                   WAN
                                                         2.638889e+09
56
             MARK
                         [MARK, ANDREWS]
                                               ANDREWS
                                                         2.569444e+09
62
             LANA
                       [LANA, WACHOWSKI]
                                                         3.259259e+09
                                             WACHOWSKI
78
             PETE
                          [PETE, DOCTER]
                                                DOCTER
                                                         2.108434e+09
           RUPERT
                       [RUPERT, SANDERS]
81
                                               SANDERS
                                                         2.786885e+09
                             [BRAD, BIRD]
                                                         2.923077e+09
88
             BRAD
                                                  BIRD
90
             RICH
                            [RICH, MOORE]
                                                 MOORE
                                                         2.115385e+09
```

```
103
         FRANCIS
                   [FRANCIS, LAWRENCE]
                                          LAWRENCE 2.424242e+09
109
                        [ALAN, TAYLOR]
            ALAN
                                            TAYLOR
                                                    2.348485e+09
128
          GEORGE
                      [GEORGE, MILLER]
                                            MILLER 1.851852e+09
                          siecle_for complexe_choix NewColonne
       siecle_simple
2
     Rejected Siecle
                      Rejected value
                                          2014-2016
                                                           VIP
3
     Rejected Siecle
                      Rejected value
                                          2011-2013
                                                           VIP
5
     Rejected Siecle
                     Rejected value
                                          2011-2013
                                                           VIP
     Rejected Siecle
                                          2014-2016
8
                      Rejected value
                                                           VIP
17
    Rejected Siecle
                      Rejected value
                                          2011-2013
                                                           VIP
    Rejected Siecle Rejected value
19
                                          2011-2013
                                                           VIP
21
    Rejected Siecle Rejected value
                                                           VIP
                                          2011-2013
28
    Rejected Siecle Rejected value
                                          2011-2013
                                                           VIP
29
    Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
    Rejected Siecle Rejected value
30
                                          2011-2013
                                                           VIP
45
    Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
56
    Rejected Siecle Rejected value
                                                           VIP
                                          2011-2013
62
    Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
78
    Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
81
    Rejected Siecle Rejected value
                                                           VIP
                                          2011-2013
88
    Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
90
    Rejected Siecle Rejected value
                                          2011-2013
                                                           VIP
103 Rejected Siecle Rejected value
                                          2014-2016
                                                           VIP
109
    Rejected Siecle
                      Rejected value
                                          2014-2016
                                                           VIP
128
    Rejected Siecle
                      Rejected value
                                          2014-2016
                                                           VIP
```

### 1.2 Analyses Preliminaires (Idees Globales ou Summaries des datas)

```
Moyenne
```

```
[82]: # Moyenne des scores de tous les films
movies["score"].mean()
```

[82]: 6.463365253077975

```
Mediane
```

```
[83]: movies["score"].median()
```

[83]: 6.6

```
[84]: #Moyenne et Meidane sur base de deux variables
movies[["score", "duration"]].mean()
movies[["score", "duration"]].median()
```

[84]: score 6.6 duration 106.0 dtype: float64

# Utilisation de la fonction desctribe

```
[85]: #voir les analyses descriptives preliminaires des nos datas sur base de toutes⊔

→les variables quantitatives

movies.describe()
```

```
[85]:
                duration
                                  gross
                                                budget
                                                               year
                                                                            score
             3655.000000
                           3.655000e+03
                                         3.655000e+03
                                                        3655.000000
                                                                      3655.000000
      count
              110.168263
                           5.177582e+07
                                         4.242414e+07
                                                        2002.904241
                                                                         6.463365
      mean
                                         1.087764e+08
      std
               22.699601
                           6.923325e+07
                                                           9.877499
                                                                         1.057851
               37.000000
                           1.620000e+02
                                         2.180000e+02
                                                        1927.000000
                                                                         1.600000
      min
      25%
               96.000000
                          7.970599e+06
                                         1.000000e+07
                                                        1999.000000
                                                                         5.900000
      50%
              106.000000
                           2.920000e+07
                                         2.500000e+07
                                                        2004.000000
                                                                         6.600000
      75%
              120.000000
                           6.646734e+07
                                         5.000000e+07
                                                        2010.000000
                                                                         7.200000
      max
              330.000000
                           7.605058e+08
                                         4.200000e+09
                                                        2016.000000
                                                                         9.300000
               taux_rendu
```

```
3.655000e+03
count
       6.629820e+08
mean
std
       1.489094e+09
min
       3.027778e+03
25%
       1.575188e+08
50%
       3.846154e+08
75%
       8.189270e+08
max
       5.454545e+10
```

### Utilisation de la fonction describe sur des variables bien definies (score, duration)

```
[87]: movies[["score", "duration"]].describe()
```

```
[87]:
                    score
                               duration
             3655.000000
                            3655.000000
      count
      mean
                 6.463365
                             110.168263
                 1.057851
                              22.699601
      std
      min
                 1.600000
                              37.000000
      25%
                 5.900000
                              96.000000
      50%
                 6.600000
                             106.000000
      75%
                 7.200000
                             120.000000
                 9.300000
                             330.000000
      max
```

#### 1.2.1 Utilisation de groupby pour categoriser les analyses

```
[95]: #group by genre et voir les analyses

#movies.columns

movies_by_genre = movies.groupby("genres")["score", "duration"].mean()

movies_by_genre
```

```
[95]:
                                                                            duration
                                                                  score
      genres
      Action
                                                                         111.000000
                                                               5.916667
      Action | Adventure
                                                               6.987500 114.125000
      Action | Adventure | Animation | Comedy | Crime | Family | ...
                                                            6.200000
                                                                        95.000000
      Action | Adventure | Animation | Comedy | Drama | Family | ...
                                                            7.950000
                                                                        96.000000
      Action | Adventure | Animation | Comedy | Family
                                                               7.160000
                                                                           92.000000
      Mystery|Thriller
                                                               6.713333 115.600000
      Romance | Sci-Fi| Thriller
                                                               7.100000
                                                                         106.000000
      Sci-Fi|Thriller
                                                               6.628571 108.142857
      Thriller
                                                               4.800000
                                                                          95.000000
      Western
                                                               8.100000 128.500000
      [745 rows x 2 columns]
[97]: #Fixer des conditions seulement sur des variables numeriques
      movies.groupby("genres").mean(numeric_only = True)
[97]:
                                                                 duration
                                                                                   gross \
      genres
      Action
                                                               111.000000 5.952091e+07
                                                               114.125000 1.471453e+08
      Action | Adventure
      Action | Adventure | Animation | Comedy | Crime | Family | ...
                                                             95.000000 1.359691e+07
      Action | Adventure | Animation | Comedy | Drama | Family | ...
                                                             96.000000 1.228235e+08
      Action | Adventure | Animation | Comedy | Family
                                                                92.000000 1.801411e+08
      Mystery|Thriller
                                                                            5.819329e+07
                                                               115.600000
      Romance | Sci-Fi | Thriller
                                                               106.000000
                                                                            6.245332e+07
      Sci-Fi|Thriller
                                                               108.142857
                                                                            2.979379e+07
      Thriller
                                                                95.000000
                                                                           2.468000e+03
      Western
                                                               128.500000 2.375000e+07
                                                                     budget
                                                                                     year \
      genres
      Action
                                                               9.216667e+07
                                                                              2000.833333
      Action | Adventure
                                                               7.337500e+07
                                                                              1998.125000
      Action | Adventure | Animation | Comedy | Crime | Family | ... 7.000000e+07 2001.000000
      Action | Adventure | Animation | Comedy | Drama | Family | ...
                                                            1.175000e+08 2006.500000
      Action | Adventure | Animation | Comedy | Family
                                                               1.330000e+08 2010.400000
      Mystery|Thriller
                                                               4.393333e+07
                                                                              2005.733333
      Romance | Sci-Fi| Thriller
                                                               5.020000e+07
                                                                              2011.000000
      Sci-FilThriller
                                                               2.772857e+07
                                                                              2001.285714
      Thriller
                                                               3.000000e+05
                                                                              2014.000000
      Western
                                                               4.050000e+06 1975.500000
```

```
genres
      Action
                                                                       1.677819e+09
                                                             5.916667
      Action | Adventure
                                                             6.987500 1.060507e+09
      Action|Adventure|Animation|Comedy|Crime|Family|... 6.200000 1.129032e+09
      Action | Adventure | Animation | Comedy | Drama | Family | ... 7.950000 1.481804e+09
      Action | Adventure | Animation | Comedy | Family
                                                             7.160000 1.860746e+09
      Mystery|Thriller
                                                             6.713333 6.455420e+08
      Romance|Sci-Fi|Thriller
                                                             7.100000 7.070423e+08
      Sci-Fi|Thriller
                                                             6.628571 4.572534e+08
      Thriller
                                                             4.800000 6.250000e+06
      Western
                                                             8.100000 5.400185e+07
      [745 rows x 6 columns]
[98]: #Grouper sur deux variables ou plus
      movies.groupby(["genres", "year"])["budget"].mean()
[98]: genres
                        year
      Action
                        1992
                                 80000000.0
                        1993
                                  3000000.0
                        1997
                                125000000.0
                        2003
                                 30000000.0
                        2008
                                30000000.0
      Sci-Fi|Thriller 2010
                                  1100000.0
                        2015
                                 12000000.0
      Thriller
                        2014
                                   300000.0
      Western
                        1966
                                  1200000.0
                        1985
                                  6900000.0
      Name: budget, Length: 2450, dtype: float64
     1.2.2 Utilisation de Count Pour compter les valeurs par categories d'analyse
[99]: #Compter les valeurs de Genres des films pour en voir la proportion
      movies["genres"].value_counts()
[99]: Comedy | Drama | Romance
                                                           145
      Drama
                                                           139
      Comedy
                                                           137
      Comedy | Drama
                                                           137
      Comedy | Romance
                                                           130
      Action | Adventure | Crime | Drama | Thriller
                                                             1
```

score

taux\_rendu

```
Action | Adventure | Comedy | Crime | Mystery | Thriller
                                                                1
       Action | Adventure | Comedy | Drama | Thriller
                                                                1
       Action|Family|Fantasy|Musical
                                                                1
       Comedy | Crime | Horror
       Name: genres, Length: 745, dtype: int64
[100]: #Normalizer (proportion)
       movies["genres"].value_counts(normalize = True)
[100]: Comedy | Drama | Romance
                                                             0.039672
       Drama
                                                             0.038030
                                                              0.037483
       Comedy
       Comedy | Drama
                                                             0.037483
       Comedy | Romance
                                                             0.035568
       Action | Adventure | Crime | Drama | Thriller
                                                             0.000274
       Action | Adventure | Comedy | Crime | Mystery | Thriller
                                                             0.000274
       Action | Adventure | Comedy | Drama | Thriller
                                                             0.000274
       Action|Family|Fantasy|Musical
                                                             0.000274
       Comedy | Crime | Horror
                                                              0.000274
       Name: genres, Length: 745, dtype: float64
[103]: # Normaliser et voir les pourcentages (representation)
       movies["genres"].value_counts(normalize = True) * 100
[103]: Comedy | Drama | Romance
                                                              3.967168
       Drama
                                                              3.803010
       Comedy
                                                             3.748290
       Comedy | Drama
                                                             3.748290
       Comedy | Romance
                                                             3.556772
       Action | Adventure | Crime | Drama | Thriller
                                                              0.027360
       Action | Adventure | Comedy | Crime | Mystery | Thriller
                                                              0.027360
       Action | Adventure | Comedy | Drama | Thriller
                                                             0.027360
       Action|Family|Fantasy|Musical
                                                             0.027360
       Comedy | Crime | Horror
                                                              0.027360
       Name: genres, Length: 745, dtype: float64
[104]: #voir le plus grand pourcentage
       (movies["genres"].value_counts(normalize = True) * 100).max()
[104]: 3.9671682626538987
      Utilisation de Group by complexe et Sort_values en Mm temps
[31]: #avoir la somme des scores de chq type de siecle simple
       movies.groupby(['siecle_simple'], as_index = False)['score'].sum().
         sort_values(by = 'score', ascending = False)
```

```
[31]:
           siecle_simple
                            score
      1 Rejected Siecle
                          22497.7
      O Maintain Siecle
                           1125.9
```

### 1.2.3 Utilisation de Sort pour trier les datas

```
[105]: #Trier les datas par les plus petits scores jusqu'aux grands scores
       movies.sort_values(by = "score").head()
[105]:
                                                                       genres
                  director_name
                                 duration
                                                 gross
                                                           Documentary | Music
       2789
                     JON M. CHU
                                     115.0
                                            73000942.0
       2240
                JASON FRIEDBERG
                                      88.0
                                            14174654.0
                                                                       Comedy
       2266
                                                        Comedy|Family|Sci-Fi
                      BOB CLARK
                                      88.0
                                             9109322.0
       3438
               DON MICHAEL PAUL
                                                                 Comedy | Sport
                                      93.0
                                             5694308.0
       3282 VONDIE CURTIS-HALL
                                     104.0
                                             4273372.0
                                                         Drama | Music | Romance
                                       title
                                                  budget
                                                          year language
                                                                          score
             Justin Bieber: Never Say Never
                                              13000000.0
       2789
                                                          2011
                                                                            1.6
                                                                     Eng
       2240
                             Disaster Movie
                                              25000000.0
                                                          2008
                                                                     Eng
                                                                            1.9
       2266
               Superbabies: Baby Geniuses 2
                                              20000000.0
                                                                            1.9
                                                          2004
                                                                     Eng
       3438
                          Who's Your Caddy?
                                               7000000.0
                                                          2007
                                                                     Eng
                                                                            2.0
       3282
                                     Glitter
                                              22000000.0
                                                          2001
                                                                            2.1
                                                                     Eng
            surname
                                   surnmame
                                                            taux_rendu \
                                                    name
       2789
                JON
                             [JON, M., CHU]
                                                      Μ.
                                                          8.125000e+08
                         [JASON, FRIEDBERG]
       2240
              JASON
                                               FRIEDBERG
                                                          1.315789e+09
       2266
                BOB
                               [BOB, CLARK]
                                                   CLARK
                                                          1.052632e+09
                       [DON, MICHAEL, PAUL]
       3438
                DON
                                                 MICHAEL
                                                          3.500000e+08
       3282 VONDIE
                     [VONDIE, CURTIS-HALL]
                                             CURTIS-HALL 1.047619e+09
               siecle simple
                                   siecle_for
                                                      complexe_choix NewColonne
       2789 Rejected Siecle Rejected value
                                                           2011-2013
                                                                             VIP
                                                           2008-2010
       2240 Rejected Siecle Rejected value
                                                                             VIP
       2266 Rejected Siecle Rejected value
                                                                             VIP
       3438
             Rejected Siecle Rejected value
                                              Between 2055 and 2007
                                                                             VIP
       3282
             Rejected Siecle
                              Rejected value
                                                                             VIP
[106]: #Trier sur base de deux variables et d'une maniere desc
       #head pour voir juste les 5 premieres lignes
       movies.sort_values(by = ["score", "year"], ascending = False).head()
[106]:
                    director name
                                    duration
                                                    gross \
                   FRANK DARABONT
                                       142.0
       1920
                                               28341469.0
       3402 FRANCIS FORD COPPOLA
                                       175.0
                                              134821952.0
                CHRISTOPHER NOLAN
                                       152.0
                                              533316061.0
       2791 FRANCIS FORD COPPOLA
                                       220.0
                                               57300000.0
```

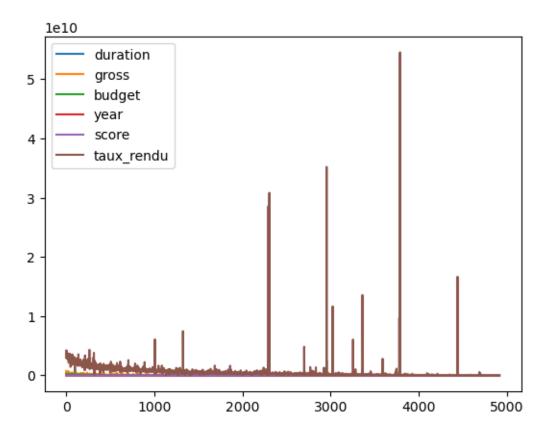
```
335
             PETER JACKSON
                                192.0 377019252.0
                               genres
1920
                          Crime | Drama
3402
                          Crime | Drama
66
         Action|Crime|Drama|Thriller
2791
                          Crime | Drama
335
      Action | Adventure | Drama | Fantasy
                                               title
                                                            budget
                                                                    year \
1920
                           The Shawshank Redemption
                                                        25000000.0
                                                                    1994
3402
                                       The Godfather
                                                         6000000.0
                                                                    1972
66
                                     The Dark Knight
                                                      185000000.0
                                                                    2008
2791
                              The Godfather: Part II
                                                        13000000.0
                                                                    1974
335
      The Lord of the Rings: The Return of the King
                                                        94000000.0 2003
     language
               score
                           surname
                                                     surnmame
                                                                   name \
                                            [FRANK, DARABONT]
1920
                 9.3
                                                               DARABONT
          Eng
                             FRANK
3402
                                    [FRANCIS, FORD, COPPOLA]
          Eng
                 9.2
                           FRANCIS
                                                                   FORD
66
                 9.0
                      CHRISTOPHER
                                        [CHRISTOPHER, NOLAN]
                                                                  NOLAN
          Eng
2791
                                    [FRANCIS, FORD, COPPOLA]
          Eng
                 9.0
                           FRANCIS
                                                                   FORD
335
                 8.9
                                             [PETER, JACKSON]
          Eng
                             PETER
                                                                JACKSON
        taux rendu
                      siecle simple
                                          siecle for complexe choix NewColonne
      2.688172e+08 Rejected Siecle
                                      Rejected value
1920
                                                                             VIP
3402 6.521739e+07 Rejected Siecle Rejected value
                                                                             VIP
66
      2.055556e+09 Rejected Siecle Rejected value
                                                           2008-2010
                                                                             VIP
2791 1.444444e+08 Rejected Siecle Rejected value
                                                                             VIP
                                                                  na
335
      1.056180e+09 Rejected Siecle Rejected value
                                                                  na
                                                                             VIP
```

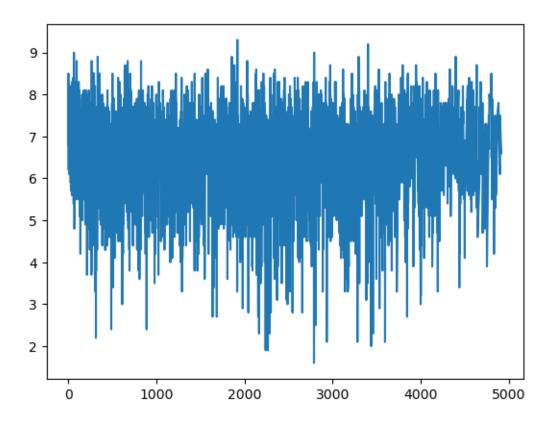
## 2 Visualisation de certains aspects des datas

#### 2.1 1. Utilisation de plot de MATPLOTLIB

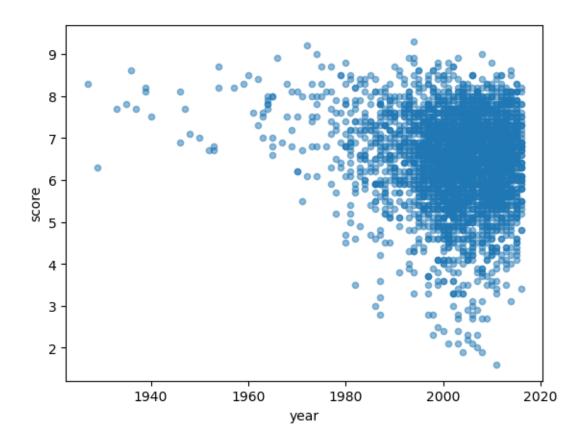
```
[107]: #Voir juste la representation des datas en general
movies.plot()

plt.show()
#ce graphique melange juste les valeurs mais tout en tenant compte des valeurs
numeriques<<>>>>
```





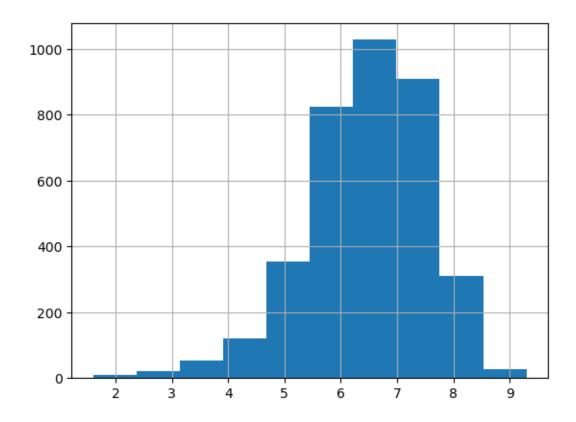
## Scatter Plot (Voir la correlation entre deux variables)



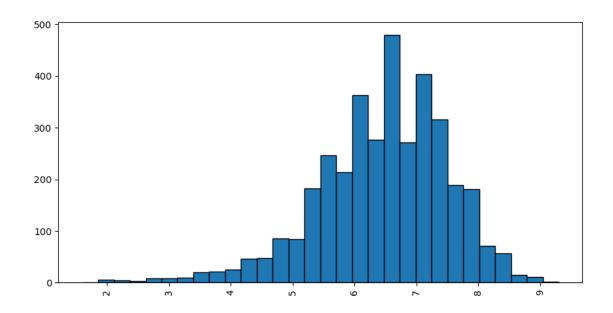
```
[ ]: ##### Utilisation de hist() pour voir la situation de notre score

[43]: movies['score'].hist()
```

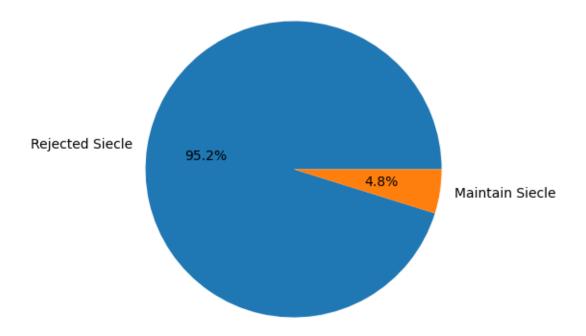
[43]: <Axes: >



```
[44]: #considerer notre dataframe d'une seule colonne des cores tout simplement
score_data = movies['score']
plt.figure(figsize =(10,5))
plt.hist(score_data, bins = 30, edgecolor = 'Black')
plt.xticks(rotation=90)
plt.show()
```

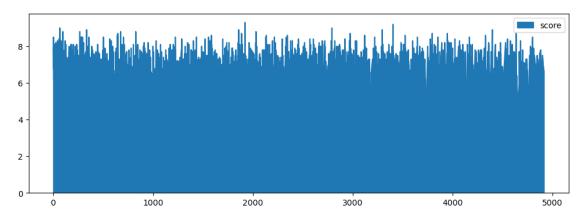


### Pie Plot (Pour repartir la repartition en proportion)

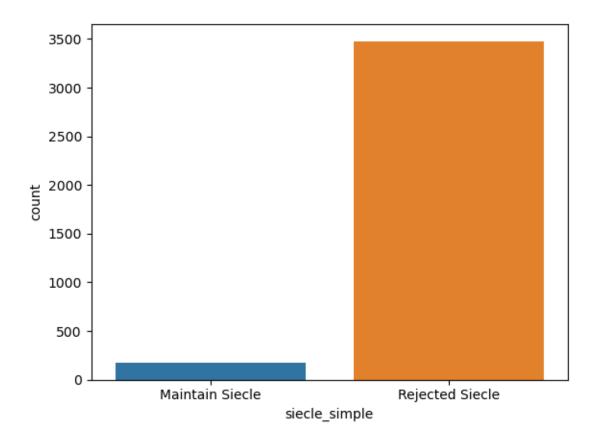


### utilisation de plot, area et subplot

```
[55]: siecle_simple_datas = movies[['score', 'siecle_simple']]
siecle_simple_datas
siecle_simple_datas.plot.area(figsize= (12,4), subplots = True)
plt.show()
```

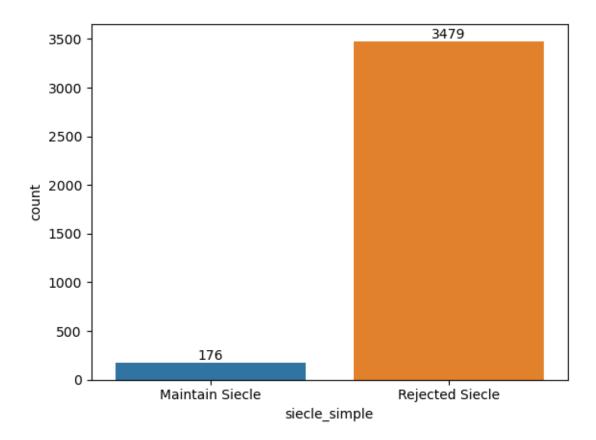


```
[]:
 []:
          2. Utilisation de SEABORN
[24]: #compter par language
      movies['language'].unique() #voir d'abors les valeurs uniques, ceci nous_
       →indique que pour cette varible nous avons aussi bcp de valeurs, cherchons
       →une autre varibale plus globale
[24]: array(['Eng', 'Mandarin', 'Aboriginal', 'Spanish', 'Paris', 'Filipino',
             'Maya', 'Kazakh', 'Cantonese', 'Japanese', 'Aramaic', 'Italian',
             'Dutch', 'Dari', 'German', 'Mongolian', 'Thai', 'Bosnian',
             'Korean', 'Hungarian', 'Hindi', 'Danish', 'Portuguese',
             'Norwegian', 'Czech', 'Russian', 'None', 'Zulu', 'Hebrew',
             'Arabic', 'Vietnamese', 'Indonesian', 'Romanian', 'Persian'],
            dtype=object)
[25]: #compter par Anne (year)
      movies['year'].unique() #elles sont aussi nombreuses, nous pouvons opter pour
       → la valeur siecle_for
[25]: array([2009, 2007, 2015, 2012, 2010, 2016, 2006, 2008, 2013, 2011, 2014,
             2005, 1997, 2004, 1999, 1995, 2003, 2001, 2002, 1998, 2000, 1990,
             1991, 1994, 1996, 1982, 1993, 1992, 1989, 1988, 1978, 1980, 1984,
             1985, 1940, 1963, 1987, 1986, 1973, 1983, 1979, 1981, 1977, 1970,
             1960, 1965, 1964, 1962, 1927, 1974, 1975, 1968, 1967, 1971, 1969,
             1972, 1976, 1961, 1946, 1953, 1952, 1939, 1950, 1948, 1957, 1959,
             1947, 1936, 1937, 1966, 1954, 1935, 1933, 1929])
     Utilisation de countplot pour compter les categories
[28]: #compter par siecle simple
      #movies.head()
      movies['siecle_simple'].unique()
[28]: array(['Maintain Siecle', 'Rejected Siecle'], dtype=object)
[29]: #comptons donc les valeurs par la variable qualitative siecle for
      ax = sns.countplot(x = 'siecle_simple', data = movies)
```



```
[30]: #si l'on veut afficher les valeurs sur les bars:
ax = sns.countplot(x = 'siecle_simple', data = movies)

for bars in ax.containers:
    ax.bar_label(bars)
```



```
Representation des valeurs avec barplot
```

```
[34]: portion_movies = movies.groupby(['siecle_simple'], as_index = False)['score'].

sum().sort_values(by = 'score', ascending = False)

#voir portion_movies
portion_movies
```

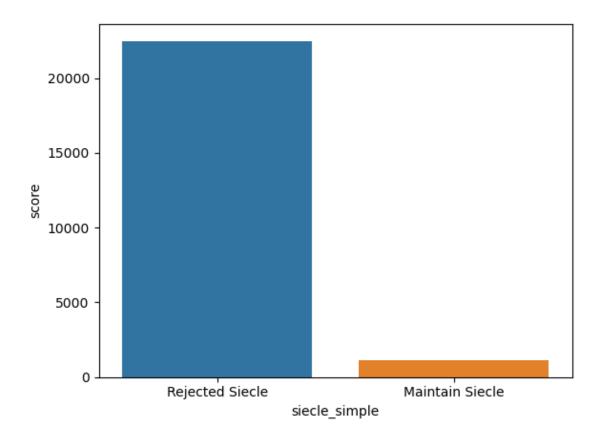
```
[34]: siecle_simple score
1 Rejected Siecle 22497.7
0 Maintain Siecle 1125.9
```

```
[35]: #ainsi la sous dataframe contien les variables siecle_simple et score en somme⊔

de chaque siecle simple

sns.barplot(x = 'siecle_simple', y = 'score', data = portion_movies)
```

[35]: <Axes: xlabel='siecle\_simple', ylabel='score'>



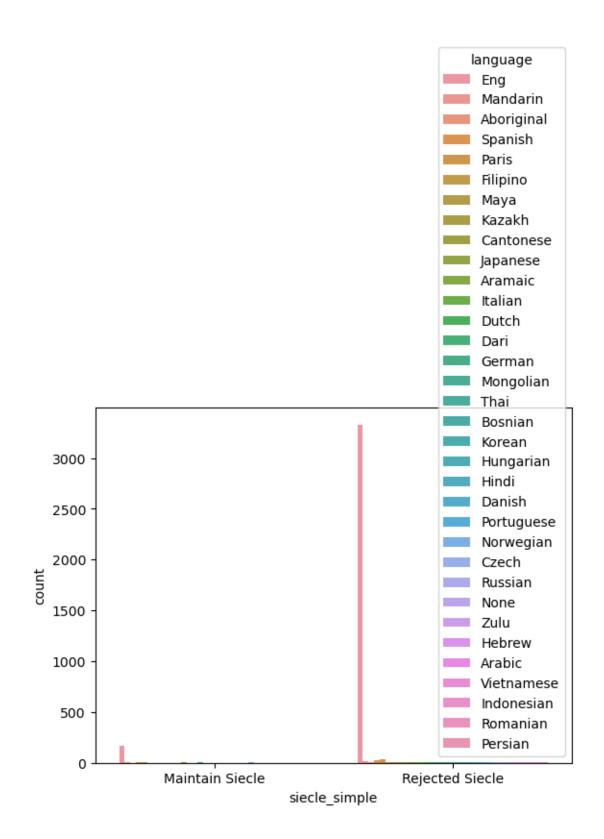
### Utilisation de countplot avecc la categorisation hue

```
[36]: #compter les siecle_simple par genres
sns.countplot(data = movies, x = 'siecle_simple', hue = 'language')

#avec ce graphique nous remarquons que nous avons plusieurs datas, raison pour

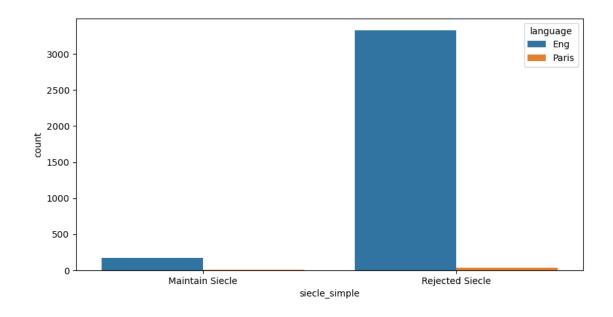
→laquelle ce n'est pas visible
```

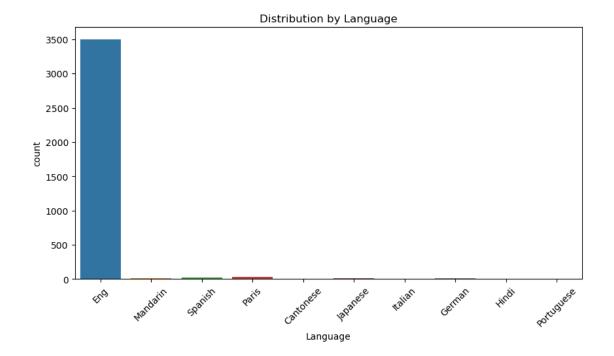
[36]: <Axes: xlabel='siecle\_simple', ylabel='count'>



```
[40]: #Decoupons nos donnees sur base de langauge
      movies_fr_en = movies[(movies['language'] == 'Eng') | (movies['language'] == __

¬'Paris')]
      movies_fr_en.head()
[40]:
             director_name
                             duration
                                                                               genres
                                             gross
                                                    Action | Adventure | Fantasy | Sci-Fi
      0
             james cameron
                                178.0 760505847.0
      1
            gore verbinski
                                169.0
                                       309404152.0
                                                            Action | Adventure | Fantasy
      2
                                148.0
                                       200074175.0
                                                           Action | Adventure | Thriller
                sam mendes
      3
         christopher nolan
                                164.0 448130642.0
                                                                      Action|Thriller
            andrew stanton
                                132.0
                                        73058679.0
                                                             Action | Adventure | Sci-Fi
                                             title
                                                          budget
                                                                  year language \
      0
                                                     237000000.0
                                                                  2009
                                            Avatar
                                                                             Eng
      1
        Pirates of the Caribbean: At World's End
                                                     30000000.0
                                                                  2007
                                                                             Eng
      2
                                                     245000000.0
                                                                  2015
                                            Spectre
                                                                             Eng
      3
                             The Dark Knight Rises
                                                     250000000.0
                                                                  2012
                                                                             Eng
      5
                                       John Carter
                                                     263700000.0
                                                                  2012
                                                                             Eng
                                           taux_rendu
                                                          siecle_simple
         score
                    surname
                                   name
      0
           7.9
                       james
                                cameron 3.000000e+09
                                                        Maintain Siecle
           7.1
                                                        Rejected Siecle
      1
                              verbinski
                                         4.225352e+09
                        gore
      2
           6.8
                                                        Rejected Siecle
                         sam
                                 mendes
                                         3.602941e+09
      3
                                                        Rejected Siecle
           8.5
                christopher
                                  nolan 2.941176e+09
           6.6
                      andrew
                                stanton 3.995455e+09
                                                        Rejected Siecle
                complexe_choix NewColonne
      0
                      2008-2010
                                 year_2009
        Between 2055 and 2007
                                       VIP
      2
                      2014-2016
                                       VIP
      3
                      2011-2013
                                       VIP
      5
                     2011-2013
                                       VIP
[42]: #voir la sitaution des siecle_simple par language
      plt.figure(figsize = (10,5))
      ax = sns.countplot(data = movies_fr_en, x = 'siecle_simple', hue = 'language')
      plt.show()
```





2.3 "Un autre Projet de Visualisation avec Pandas et Seaborn est en cours d'implémentation, considérons ce projet comme un projet de data preprocessing, de nettoyage et de manipulation des datas..."

[]:	
[]:	