

Netflix dataset Analysis tools use Pandas , seaborn

```
In [150]: import pandas as pd
```

```
In [4]: data = pd.read_csv(r'C:\Users\ALBAB\Downloads\8. Netflix Dataset.csv')
```

```
In [6]: data.head()
```

```
Out[6]:
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	wt
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	ea
2	s3	Movie	23:59	Gilbert Chan	Tedd Chan, Stella Chung, Henley Hii, Lawrence ...	Singapore	December 20, 2018	R	78 min	Horror Movies, International Movies	W re
3	s4	Movie	9	Shane Acker	Elijah Wood, John C. Reilly, Jennifer Connelly...	United States	November 16, 2017	PG-13	80 min	Action & Adventure, Independent Movies, Sci-Fi...	pos w
4	s5	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	January 1, 2020	PG-13	123 min	Dramas	b

Getting some basic information about the dataset

```
In [8]: data.tail()
```

Out[8]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type
7784	s7783	Movie	Zozo	Josef Fares	Imad Creidi, Antoinette Turk, Elias Gergi, Car...	Sweden, Czech Republic, United Kingdom, Denmar...	October 19, 2020	TV-MA	99 min	Dram Internatio Mov
7785	s7784	Movie	Zubaan	Mozez Singh	Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...	India	March 2, 2019	TV-14	111 min	Dram Internatio Movies, Ml & Music
7786	s7785	Movie	Zulu Man in Japan	NaN	Nasty C	NaN	September 25, 2020	TV-MA	44 min	Documentari Internatio Movies, Ml & I
7787	s7786	TV Show	Zumbo's Just Desserts	NaN	Adriano Zumbo, Rachel Khoo	Australia	October 31, 2020	TV-PG	1 Season	International Shows, Rec
7788	s7787	Movie	ZZ TOP: THAT LITTLE OL' BAND FROM TEXAS	Sam Dunn	NaN	United Kingdom, Canada, United States	March 1, 2020	TV-MA	90 min	Documentari Musi Music

In [9]:

```
#shape to show number of row and column
data.shape
```

Out[9]:

```
(7789, 11)
```

In [10]:

```
#Size to show the number of element in the data fram
data.size
```

Out[10]:

```
85679
```

In [12]:

```
#to show the column name
data.columns
```

Out[12]:

```
Index(['Show_Id', 'Category', 'Title', 'Director', 'Cast', 'Country',
       'Release_Date', 'Rating', 'Duration', 'Type', 'Description'],
      dtype='object')
```

In [13]:

```
#dtypes
data.dtypes
```

```
Out[13]: Show_Id      object
          Category    object
          Title       object
          Director    object
          Cast        object
          Country     object
          Release_Date object
          Rating      object
          Duration    object
          Type        object
          Description  object
          dtype: object
```

```
In [ ]:
```

```
In [ ]:
```

```
In [15]: #info
          data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7789 entries, 0 to 7788
Data columns (total 11 columns):
#   Column          Non-Null Count  Dtype
---  -
0   Show_Id         7789 non-null   object
1   Category        7789 non-null   object
2   Title           7789 non-null   object
3   Director        5401 non-null   object
4   Cast            7071 non-null   object
5   Country         7282 non-null   object
6   Release_Date    7779 non-null   object
7   Rating          7782 non-null   object
8   Duration        7789 non-null   object
9   Type            7789 non-null   object
10  Description      7789 non-null   object
dtypes: object(11)
memory usage: 669.5+ KB
```

Task1:-Is there any duplicate record in this dataset ? if yes, then remove the duplicate records.

```
In [16]: data.head(2)
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

```
In [18]: data[data.duplicated()]
```

Out[18]:

Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
6300	s684	Movie	Backfire	Dave Patten	Black Deniro, Byron "Squally" Vinson, Dominic ...	United States	April 5, 2019	TV-MA	97 min	Dramas, Independent Movies, Thrillers
6622	s6621	Movie	The Lost Okoroshi	Abba T. Makama	Seun Ajayi, Judith Audu, Tope Tedela, Ifu Enna...	Nigeria	September 4, 2020	TV-MA	94 min	Comedies, Dramas, Independent Movies

```
In [30]: #to drop the duplicates
data.drop_duplicates(inplace=True)
```

```
In [32]: data.shape
```

```
Out[32]: (7787, 11)
```

Is there any null value present in any column ?
show with Heat map.

```
In [39]: # to check the null value

data.head(2)
```

Out[39]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Desi
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

```
In [37]: data[data.isnull()]
```

Out[37]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
3	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
4	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
...
7784	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
7785	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
7786	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
7787	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
7788	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

7787 rows × 11 columns

In [38]:

data.isnull().sum()

Out[38]:

Show_Id0
Category0
Title0
Director2388
Cast718
Country507
Release_Date10
Rating7
Duration0
Type0
Description0
dtype: int64

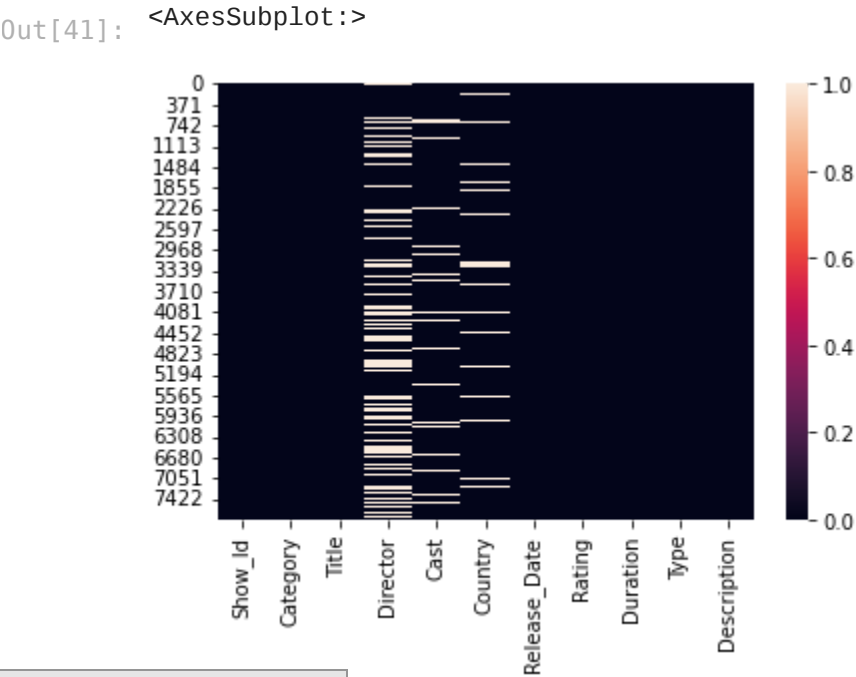
import seaborn library (heat map)

In [40]:

import seaborn as sms

In [41]:

sms.heatmap(data.isnull())



For the 'House of cards' what is the show id and who is the Director of this show ?

```
In [ ]: #this can be solve by the two methods
# 1- isin() and 2nd is str.contains()
```

```
In [43]: data.head()
```

Out[43]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	wt
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	ea
2	s3	Movie	23:59	Gilbert Chan	Tedd Chan, Stella Chung, Henley Hii, Lawrence ...	Singapore	December 20, 2018	R	78 min	Horror Movies, International Movies	W re
3	s4	Movie	9	Shane Acker	Elijah Wood, John C. Reilly, Jennifer Connelly...	United States	November 16, 2017	PG-13	80 min	Action & Adventure, Independent Movies, Sci-Fi...	pos w
4	s5	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	January 1, 2020	PG-13	123 min	Dramas	b

```
In [48]: data[data['Title'].isin(['House of Cards'])]
```

Out[48]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Descr
2832	s2833	TV Show	House of Cards	Robin Wright, David Fincher, Gerald McRaney, J...	Kevin Spacey, Robin Wright, Kate Mara, Corey S...	United States	November 2, 2018	TV-MA	6 Seasons	TV Dramas, TV Thrillers	A ru political nothing

```
In [51]: #2nd method
data[data['Title'].str.contains('House of Cards')]
```

Out[51]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Descr
2832	s2833	TV Show	House of Cards	Robin Wright, David Fincher, Gerald McRaney, J...	Kevin Spacey, Robin Wright, Kate Mara, Corey S...	United States	November 2, 2018	TV-MA	6 Seasons	TV Dramas, TV Thrillers	A ru political s nothing

in which ear highest number of the TV shows & Movies were released ? show with Bar Graph

In []:

In []:

In [52]:

data.dtypes

Out[52]:

Show_Id object
Category object
Title object
Director object
Cast object
Country object
Release_Date object
Rating object
Duration object
Type object
Description object
dtype: object

In [55]:

to datetime
data['Date_N']= pd.to_datetime(data['Release_Date'])

In [56]:

data.head(2)

Out[56]:

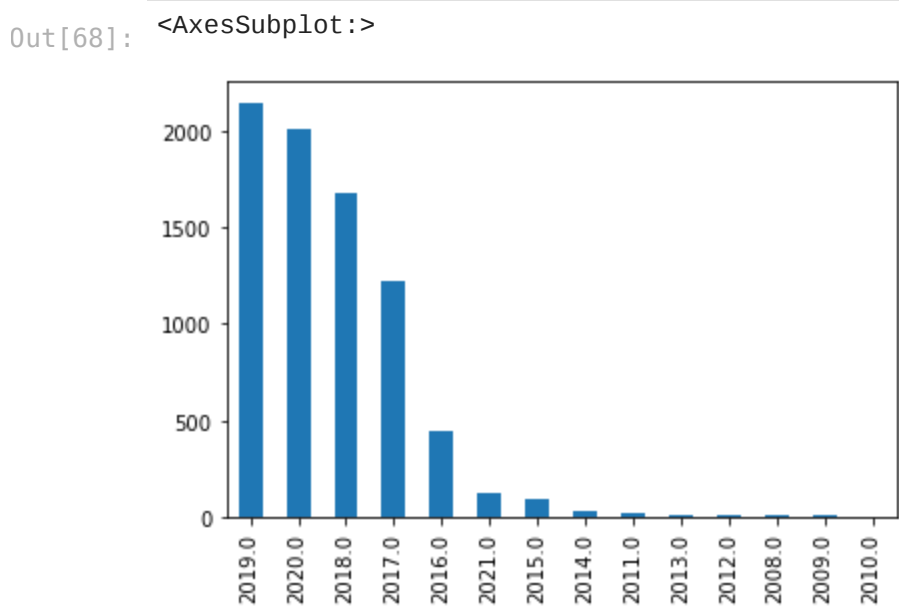
	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

In [66]:

data['Date_N'].dt.year.value_counts()

```
Out[66]:
2019.0    2153
2020.0    2009
2018.0    1685
2017.0    1225
2016.0     443
2021.0     117
2015.0      88
2014.0      25
2011.0      13
2013.0      11
2012.0       3
2008.0       2
2009.0       2
2010.0       1
Name: Date_N, dtype: int64
```

```
In [68]: #to show in bar graph
data['Date_N'].dt.year.value_counts().plot(kind='bar')
```



many movies and TV show s are in the dataset ?
show with Bar Graph

```
In [69]: data.head(2)
```

```
Out[69]:
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

```
In [73]: data['Category']
```



```
Out[73]: 0      TV Show
          1      Movie
          2      Movie
          3      Movie
          4      Movie
          ...
        7784     Movie
        7785     Movie
        7786     Movie
        7787     TV Show
        7788     Movie
Name: Category, Length: 7787, dtype: object
```

```
In [77]: data.groupby('Category').Category.count() #to group all the unique item of a col
```

```
Out[77]: Category
Movie      5377
TV Show    2410
Name: Category, dtype: int64
```

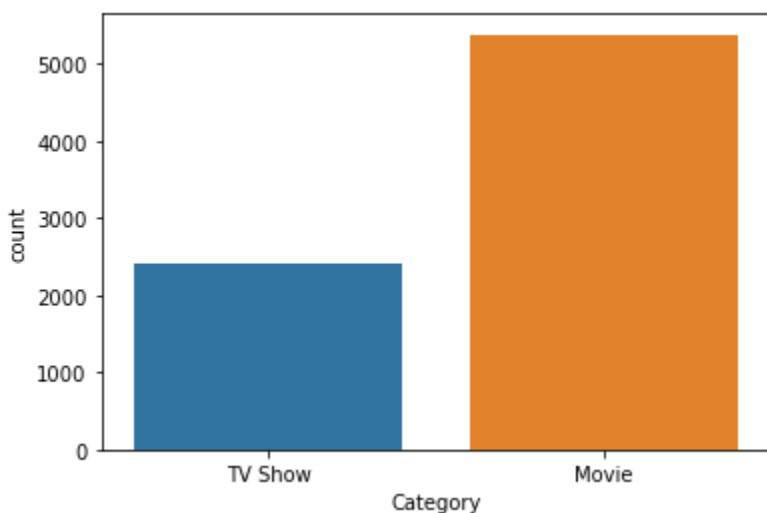
```
In [78]: #to show the bar graph
```

```
sms.countplot(data['Category'])
```

```
C:\Users\ALBAB\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning: Pas
s the following variable as a keyword arg: x. From version 0.12, the only valid position
al argument will be `data`, and passing other arguments without an explicit keyword will
result in an error or misinterpretation.
```

```
warnings.warn(
```

```
Out[78]: <AxesSubplot:xlabel='Category', ylabel='count'>
```



show all the Movies that were released in year 2000.

```
In [79]: data.head(2)
```

Out [79]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

In [80]:

```
data['Year'] = data['Date_N'].dt.year
```

In [81]:

```
data.head(2)
```

Out [81]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

In [83]:

```
data[(data['Category'] == 'Movie') & (data['Year'] == 2000)]
```

Out [83]:

Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Date_
---------	----------	-------	----------	------	---------	--------------	--------	----------	------	-------------	-------

In [84]:

```
data[(data['Category'] == 'Movie') & (data['Year'] == 2020)]
```

Out[84] :											
	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration		
	4	s5	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aaron Eckhart	United States	January 1, 2020	PG-13	123 min	Documentary
	6	s7	Movie	122	Yasir Al Yasiri	Amina Khalil, Ahmed Dawood, Tarek Lotfy, Ahmed El Sakka	Egypt	June 1, 2020	TV-MA	95 min	Horror Movies, International Movies
	14	s15	Movie	3022	John Suits	Omar Epps, Kate Walsh, Miranda Cosgrove, Angus T. Jones	United States	March 19, 2020	R	91 min	Independent Movies, & Family TV Shows
	27	s28	Movie	#Alive	Cho Il	Yoo Ah-in, Park Shin-hye	South Korea	September 8, 2020	TV-MA	99 min	Horror Movies, International Movies, TV Shows
	28	s29	Movie	#AnneFrank - Parallel Stories	Sabina Fedeli, Anna Migotto	Helen Mirren, Gengher Gatti	Italy	July 1, 2020	TV-14	95 min	Documentary, International
	
	7762	s7761	Movie	Zaki Chan	Wael Ihsan	Ahmed Helmy, Yasmin Abdulaziz, Hassan Hosny, Hossam El Shabrawy	Egypt	May 19, 2020	TV-PG	109 min	Comedy, International Movies, Role Playing
	7783	s7782	Movie	Zoom	Peter Hewitt	Tim Allen, Courteney Cox, Chevy Chase, Kate MacLaren	United States	January 11, 2020	PG	88 min	Children's Family Movies, Comedy
	7784	s7783	Movie	Zozo	Josef Fares	Imad Creidi, Antoinette Turk, Elias Gergi, Carsten Schaefer	Sweden, Czech Republic, United Kingdom, Denmark	October 19, 2020	TV-MA	99 min	Documentary, International
	7786	s7785	Movie	Zulu Man in Japan	NaN	Nasty C	NaN	September 25, 2020	TV-MA	44 min	Documentary, International Movies,
	7788	s7787	Movie	ZZ TOP: THAT LITTLE OL' BAND FROM TEXAS	Sam Dunn	NaN	United Kingdom, Canada, United States	March 1, 2020	TV-MA	90 min	Documentary, Music Movies

show the Titles of TV show that were released in india only

In [85]: `#filtering`

`data.head(2)`

Out[85]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

In [90]: `data[(data['Category']=='TV Show')&(data['Country']=='India')] ['Title']`

Out[90]:

```

86          21 Sarfarosh: Saragarhi 1897
132          7 (Seven)
340          Agent Raghav
364          Akbar Birbal
533          Anjaan: Rural Myths
...
6249          The Creative Indians
6400  The Golden Years with Javed Akhtar
6469          The House That Made Me
7294          Typewriter
7705          Yeh Meri Family
Name: Title, Length: 71, dtype: object

```

Show Top directors, who gave the highest number of TV shows & Movies to Netflix?

In [91]: `data.head(2)`

Out[91]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

```
In [93]: data['Director'].value_counts().head(10)
```

```
Out[93]: Raúl Campos, Jan Suter      18
Marcus Raboy                      16
Jay Karas                         14
Cathy Garcia-Molina               13
Jay Chapman                       12
Youssef Chahine                   12
Martin Scorsese                   12
Steven Spielberg                  10
David Dhawan                       9
Hakan Algül                       8
Name: Director, dtype: int64
```

Show all the records, where 'Category is Movie and Type is Comedies' or 'country is United kingdom

```
In [94]: data.head(2)
```

Out[94]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

```
In [95]: data[(data['Category']=='Movie')&(data['Type']=='Comedies')|(data['Country']=='United ki
```

Out[95]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
	33	s34	Movie	#realityhigh	Fernando Lebrija	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	TV-14	99 min	Comedie
	72	s73	Movie	17 Again	Burr Steers	Zac Efron, Leslie Mann, Matthew Perry, Thomas ...	United States	January 1, 2021	PG-13	102 min	Comedie
	84	s85	Movie	21 & Over	Jon Lucas, Scott Moore	Miles Teller, Skylar Astin, Justin Chon, Sarah...	United States	April 16, 2019	R	93 min	Comedie
	148	s149	Movie	A Bad Moms Christmas	Jon Lucas, Scott Moore	Mila Kunis, Kristen Bell, Kathryn Hahn, Susan ...	United States, China	February 14, 2020	R	104 min	Comedie
	174	s175	Movie	A Futile and Stupid Gesture	David Wain	Will Forte, Domhnall Gleeson, Martin Mull, Joe...	United States	January 26, 2018	TV-MA	102 min	Comedie
	
	7341	s7340	Movie	Undercover Brother 2	Leslie Small	Michael Jai White, Vince Swann, Barry Bostwick...	United States	November 5, 2019	R	85 min	Comedie
	7590	s7589	Movie	Where's the Money	Scott Zabielski	Andrew Bachelor, Kat Graham, Mike Epps, Terry ...	United States	January 22, 2018	R	86 min	Comedie
	7623	s7622	Movie	Wild Oats	Andy Tennant	Shirley MacLaine, Jessica Lange, Billy Connoll...	Germany, United States	May 13, 2017	PG-13	86 min	Comedie
	7634	s7633	Movie	Wine Country	Amy Poehler	Amy Poehler, Maya Rudolph, Ana Gasteyer, Rache...	United States	May 10, 2019	R	104 min	Comedie

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type
7664	s7663	Movie	Work It	Laura Terruso	Sabrina Carpenter, Jordan Fisher, Liza Koshy, ...	United States	August 7, 2020	TV-14	94 min	Comedic

97 rows × 13 columns

In how many movies/shows , Tom cruise was cast?

In [96]: `data.head(2)`

Out[96]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In wl elite an i
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	dev ear hits

In [100]: `data[data['Cast']=='Tom Cruise']`

Out[100]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Date
--	---------	----------	-------	----------	------	---------	--------------	--------	----------	------	-------------	------

In [102]: `#2nd - str.contains()`

```
data[data['Cast'].str.contains('Tom Cruise')]
```

```

ValueError                                Traceback (most recent call last)
Input In [102], in <cell line: 3>()
      1 #2nd - str.contains()
----> 3 data[data['Cast'].str.contains('Tom Cruise')]

File ~\anaconda3\lib\site-packages\pandas\core\frame.py:3495, in DataFrame.__getitem__(self, key)
    3492     return self.where(key)
    3494 # Do we have a (boolean) 1d indexer?
-> 3495 if com.is_bool_indexer(key):
    3496     return self._getitem_bool_array(key)
    3498 # We are left with two options: a single key, and a collection of keys,
    3499 # We interpret tuples as collections only for non-MultiIndex

File ~\anaconda3\lib\site-packages\pandas\core\common.py:144, in is_bool_indexer(key)
    140     na_msg = "Cannot mask with non-boolean array containing NA / NaN values"
    141     if lib.infer_dtype(key) == "boolean" and isna(key).any():
    142         # Don't raise on e.g. ["A", "B", np.nan], see
    143         # test_loc_getitem_list_of_labels_categoricalindex_with_na
--> 144     raise ValueError(na_msg)
    145     return False
    146 return True

ValueError: Cannot mask with non-boolean array containing NA / NaN values

```

```
In [ ]: # so first we have to remove null values than we can try to find the result
```

Create new data frame

```
In [103... data_new= data.dropna()                                #it will drop the rows that conatians all o
```

```
In [104... data_new.head(2)
```

```
Out[104]:
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de ea hit
2	s3	Movie	23:59	Gilbert Chan	Tedd Chan, Stella Chung, Henley Hii, Lawrence ...	Singapore	December 20, 2018	R	78 min	Horror Movies, International Movies	arr

```
In [105... data_new[data_new['Cast'].str.contains('Tom Cruise')]
```


Out[105]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
	3860	s3861	Movie	Magnolia	Paul Thomas Anderson	Jeremy Blackman, Tom Cruise, Melinda Dillon, A...	United States	January 1, 2020	R	189 min	Dramas, Independent Movie
	5071	s5071	Movie	Rain Man	Barry Levinson	Dustin Hoffman, Tom Cruise, Valeria Golino, Ge...	United States	July 1, 1919	R	134 min	Classics, Movies, Drama

What are the different ratings defined by Netflix ?

```
In [106]: # data.nunique()
data.head(2)
```

Out[106]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	De	
	0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v eli an
	1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eā hit

```
In [107]: data['Rating'].nunique()
```

```
Out[107]: 14
```

```
In [108]: data['Rating'].unique()
```

```
Out[108]: array(['TV-MA', 'R', 'PG-13', 'TV-14', 'TV-PG', 'NR', 'TV-G', 'TV-Y', nan,
      'TV-Y7', 'PG', 'G', 'NC-17', 'TV-Y7-FV', 'UR'], dtype=object)
```

How many movies got the 'TV-14' rating in canada

```
In [109]: data.head(2)
```

Out [109]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	De:
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v eli an
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eá hit

In [112...

data[(data['Category']=='Movie')&(data['Rating']=='TV-14')&(data['Country']=='Canada')]

Out[112]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	
	30	s31	Movie	#cats_the_mewvie	Michael Margolis	NaN	Canada	February 5, 2020	TV-14	90 min
	34	s35	Movie	#Roxy	Michael Kennedy	Jake Short, Sarah Fisher, Booboo Stewart, Dann...	Canada	April 10, 2019	TV-14	105 min
	608	s609	Movie	At First Light	Jason Stone	Stefanie Scott, Theodore Pellerin, Percy Hynes...	Canada	December 27, 2018	TV-14	91 min
	1506	s1507	Movie	Counterfeiting in Suburbia	Jason Bourque	Sarah Butler, Larissa Albuquerque, Kayla Walla...	Canada	July 1, 2018	TV-14	88 min
	3713	s3714	Movie	Long Time Running	Jennifer Baichwal, Nicholas de Pencier	Gord Downie, Paul Langlois, Gord Sinclair, Rob...	Canada	November 12, 2017	TV-14	96 min
	3956	s3957	Movie	Martin Matte: La vie, la mort...eh la la..!	Jean-François Blais	Martin Matte	Canada	October 14, 2019	TV-14	62 min
	5336	s5336	Movie	Sadie's Last Days on Earth	Michael Seater	Morgan Taylor Campbell, Clark Backo, Ricardo H...	Canada	August 22, 2017	TV-14	94 min
	5393	s5393	Movie	Sardaar ji	Rohit Jugraj	Diljit Dosanjh, Neeru Bajwa, Mandy Takhar, Jas...	Canada	December 1, 2017	TV-14	140 min
	6062	s6062	Movie	The Accountant of Auschwitz	Matthew Shoychet	NaN	Canada	July 1, 2019	TV-14	78 min
	7025	s7024	Movie	The Wrong Babysitter	George Mendeluk	Daphne Zuniga, Seann Gallagher, Lisa Marie Car...	Canada	June 18, 2019	TV-14	89 min
	7041	s7040	Movie	There's Something in the Water	Ellen Page, Ian Daniel	Ellen Page	Canada	March 27, 2020	TV-14	72 min

How many tv shows get the "R" rating after year 2018

```
In [113]: data.head(2)
```

Out[113]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v elian
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eá hit

```
In [118]: data[(data['Category']=='TV Show')&(data['Rating']=='R')&(data['Year']>2018)]
```

Out[118]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
6437	s6436	TV Show	The Hateful Eight: Extended Version	Quentin Tarantino	Samuel L. Jackson, Kurt Russell, Jennifer Jaso...	NaN	April 25, 2019	R	1 Season	TV Shows	sta : sto

What is the maximum duration of a Movie/show on Netflix

```
In [119]: data.head(2)
```

Out[119]:	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v elian
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eá hit

```
In [121]: data['Duration'].unique()
```

```
Out[121]: array(['4 Seasons', '93 min', '78 min', '80 min', '123 min', '1 Season',
'95 min', '119 min', '118 min', '143 min', '103 min', '89 min',
'91 min', '149 min', '144 min', '124 min', '87 min', '110 min',
'128 min', '117 min', '100 min', '2 Seasons', '84 min', '99 min',
'90 min', '102 min', '104 min', '105 min', '56 min', '125 min',
'81 min', '97 min', '106 min', '107 min', '109 min', '44 min',
'75 min', '101 min', '3 Seasons', '37 min', '113 min', '114 min',
'130 min', '94 min', '140 min', '135 min', '82 min', '70 min',
'121 min', '92 min', '164 min', '53 min', '83 min', '116 min',
'86 min', '120 min', '96 min', '126 min', '129 min', '77 min',
'137 min', '148 min', '28 min', '122 min', '176 min', '85 min',
'22 min', '68 min', '111 min', '29 min', '142 min', '168 min',
'21 min', '59 min', '20 min', '98 min', '108 min', '76 min',
'26 min', '156 min', '30 min', '57 min', '150 min', '133 min',
'115 min', '154 min', '127 min', '146 min', '136 min', '88 min',
'131 min', '24 min', '112 min', '74 min', '63 min', '38 min',
'25 min', '174 min', '60 min', '153 min', '158 min', '151 min',
'162 min', '54 min', '51 min', '69 min', '64 min', '147 min',
'42 min', '79 min', '5 Seasons', '40 min', '45 min', '172 min',
'10 min', '163 min', '9 Seasons', '55 min', '72 min', '61 min',
'71 min', '160 min', '171 min', '48 min', '139 min', '157 min',
'15 min', '65 min', '134 min', '161 min', '62 min', '8 Seasons',
'186 min', '49 min', '73 min', '58 min', '165 min', '166 min',
'138 min', '159 min', '141 min', '132 min', '52 min', '67 min',
'34 min', '66 min', '312 min', '180 min', '47 min', '6 Seasons',
'155 min', '14 min', '177 min', '11 min', '9 min', '46 min',
'145 min', '11 Seasons', '7 Seasons', '13 Seasons', '8 min',
'12 min', '12 Seasons', '10 Seasons', '43 min', '50 min', '23 min',
'185 min', '200 min', '169 min', '27 min', '170 min', '196 min',
'33 min', '181 min', '204 min', '32 min', '35 min', '167 min',
'16 Seasons', '179 min', '193 min', '13 min', '214 min', '17 min',
'173 min', '192 min', '209 min', '187 min', '41 min', '182 min',
'224 min', '233 min', '189 min', '152 min', '19 min', '15 Seasons',
'208 min', '237 min', '31 min', '178 min', '230 min', '194 min',
'228 min', '195 min', '3 min', '16 min', '5 min', '18 min',
'205 min', '190 min', '36 min', '201 min', '253 min', '203 min',
'191 min'], dtype=object)
```

```
In [122]: data.Duration.dtypes
```

```
Out[122]: dtype('O')
```

```
In [126]: # str.split()

data[['Minutes', 'unit']] = data['Duration'].str.split(' ', expand= True)
```

```
In [127]: data.head(2)
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	De
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v eli an
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eñ hil

```
In [130... #max()

data['Minutes'].max()
```

```
Out[130]: '99'
```

```
In [131... data['Minutes'].min()
```

```
Out[131]: '1'
```

```
In [132... data['Minutes'].mean()
```

```
Out[132]: inf
```

```
In [ ]:
```

Which individual contry has the Higest No. Of TV shows?

```
In [133... data.head(2)
```

```
Out[133]:
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	De
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	li v eli an
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de eā hil

```
In [136... data_tvshow= data[data['Category']=='TV Show']
```

```
In [137... data_tvshow.head(2)
```

```
Out[137]:
```

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Des
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In w elit an
5	s6	TV Show	46	Serdar Akar	Erdal Beşikçioğlu, Yasemin Allen, Melis Birkan...	Turkey	July 1, 2017	TV-MA	1 Season	International TV Shows, TV Dramas, TV Mysteries	A p exp

```
In [139... data_tvshow.Country.value_counts().head(1)
```

```
Out[139]: United States      705
           Name: Country, dtype: int64
```

How can we sort dataset by Year?

```
In [140]: data.head(2)
```

Out[140]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	De
0	s1	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	Il v eli an
1	s2	Movie	07:19	Jorge Michel Grau	Demián Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	de e z hil

```
In [142]: data.sort_values(by = 'Year')
```

Out[142]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	
7115	s7114	Movie	To and From New York	Sorin Dan Mihalcescu	Barbara King, Shaana Diya, John Krisiukenas, Y...	United States	January 1, 2008	TV-MA	81 min	Independen...
1765	s1766	TV Show	Dinner for Five	NaN	NaN	United States	February 4, 2008	TV-MA	1 Season	St Co Talk
3248	s3249	Movie	Just Another Love Story	Ole Børnedal	Anders W. Berthelsen, Rebecka Hemse, Nikolaj L...	Denmark	May 5, 2009	TV-MA	104 min	Interi...
5766	s5766	Movie	Splatter	Joe Dante	Corey Feldman, Tony Todd, Tara Leigh, Erin Way...	United States	November 18, 2009	TV-MA	29 min	
3840	s3841	Movie	Mad Ron's Prevues from Hell	Jim Monaco	Nick Pawlow, Jordu Schell, Jay Kushwara, Micha...	United States	November 1, 2010	NR	84 min	Cult I
...	
3374	s3375	TV Show	Kikoriki	NaN	Igor Dmitriev	NaN	NaN	TV-Y	2 Seasons	k
3492	s3493	TV Show	La Familia P. Luche	NaN	Eugenio Derbez, Consuelo Duval, Luis Manuel Áv...	United States	NaN	TV-14	3 Seasons	Interi TV S La 1
3946	s3947	TV Show	Maron	NaN	Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...	United States	NaN	TV-MA	4 Seasons	Co
5138	s5138	TV Show	Red vs. Blue	NaN	Burnie Burns, Jason Saldaña, Gustavo Sorola, G...	United States	NaN	NR	13 Seasons	TV A Adv Cor TV S
6066	s6066	TV Show	The Adventures of Figaro Pho	NaN	Luke Jurevicius, Craig Behenna, Charlotte Haml...	Australia	NaN	TV-Y7	2 Seasons	Kids' Co

7787 rows × 15 columns

Out[143]:											
	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration		
	5564	s5564	Movie	Sherlock Holmes	Guy Ritchie	Robert Downey Jr., Jude Law, Rachel McAdams, M...	United States, Germany, United Kingdom, Australia	January 1, 2021	PG-13	128 min	Ac Adve Cor
	5919	s5919	Movie	Surf's Up	Ash Brannon, Chris Buck	Shia LaBeouf, Jeff Bridges, Zooey Deschanel, J...	United States	January 1, 2021	PG	86 min	Child F M Com s M
	980	s981	TV Show	Bling Empire	NaN	NaN	NaN	January 15, 2021	TV-MA	1 Season	Real
	5955	s5955	Movie	Taare Zameen Par	Aamir Khan	Aamir Khan, Darsheel Safary, Tanay Chheda, Tis...	India	January 10, 2021	PG	162 min	Dr Intern M
	366	s367	Movie	Al acecho	Francisco D'Eufemia	Rodrigo de la Serna, Belen Blanco, Walter Jako...	NaN	January 12, 2021	TV-MA	81 min	Intern M Tr
	
	3374	s3375	TV Show	Kikoriki	NaN	Igor Dmitriev	NaN	NaN	TV-Y	2 Seasons	Ki
	3492	s3493	TV Show	La Familia P. Luche	NaN	Eugenio Derbez, Consuelo Duval, Luis Manuel Áv...	United States	NaN	TV-14	3 Seasons	Intern TV S Sp Lang TV
	3946	s3947	TV Show	Maron	NaN	Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...	United States	NaN	TV-MA	4 Seasons	Cor
	5138	s5138	TV Show	Red vs. Blue	NaN	Burnie Burns, Jason Saldaña, Gustavo Sorola, G...	United States	NaN	NR	13 Seasons	TV Ac Adve Com TV Sc
	6066	s6066	TV Show	The Adventures of Figaro Pho	NaN	Luke Jurevicius, Craig Behenna, Charlotte Haml...	Australia	NaN	TV-Y7	2 Seasons	Kids' 1 Cor

Find all the instances where : Category is 'Movie' and Type is 'Dramas' or Category is 'TV Show ' & Type is 'Kids' 'TV'

In [149... data.tail(2)

Out[149]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type
7787	s7786	TV Show	Zumbo's Just Desserts	NaN	Adriano Zumbo, Rachel Khoo	Australia	October 31, 2020	TV-PG	1 Season	International TV Shows, Reality
7788	s7787	Movie	ZZ TOP: THAT LITTLE OL' BAND FROM TEXAS	Sam Dunn	NaN	United Kingdom, Canada, United States	March 1, 2020	TV-MA	90 min	Documentary Music Musicals

In [148... data[(data['Category']=='Movie') & (data['Type']=='Dramas')] | (data['Category']=='TV Show')]

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	
	4	s5	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	January 1, 2020	PG-13	123 min	Dramas
	7	s8	Movie	187	Kevin Reynolds	Samuel L. Jackson, John Heard, Kelly Rowan, Cl...	United States	November 1, 2019	R	119 min	Dramas
	170	s171	Movie	A Family Man	Mark Williams	Gerard Butler, Gretchen Mol, Alison Brie, Will...	Canada, United States	December 15, 2019	R	110 min	Dramas
	232	s233	Movie	A Stoning in Fulham County	Larry Elikann	Ken Olin, Jill Eikenberry, Maureen Mueller, Gr...	United States	October 1, 2011	TV-14	95 min	Dramas
	295	s296	Movie	Across Grace Alley	Ralph Macchio	Ben Hyland, Marsha Mason, Karina Smirnoff, Col...	United States	December 1, 2016	TV-PG	24 min	Dramas
	
	7417	s7416	Movie	Victor	Brandon Dickerson	Patrick Davis, Lisa Vidal, Josh Pence, José Zú...	United States	July 24, 2017	PG-13	110 min	Dramas
	7422	s7421	Movie	Villain	Philip Barantini	Craig Fairbrass, George Russo, Robert Gleniste...	United Kingdom	September 5, 2020	R	97 min	Dramas
	7449	s7448	Movie	VS.	Ed Lilly	Connor Swindells, Fola Evans-Akingbola, Nichol...	United Kingdom	June 19, 2019	TV-MA	99 min	Dramas
	7465	s7464	Movie	Wakefield	Robin Swicord	Bryan Cranston, Jennifer Garner, Jason O'Mara,...	United States	March 2, 2019	R	109 min	Dramas
	7480	s7479	Movie	War Horse	Steven Spielberg	Emily Watson, David Thewlis, Peter Mullan, Nie...	United States, India	May 6, 2019	PG-13	147 min	Dramas

117 rows × 15 columns

In []:

In []:

In []:

In []:

In []:

In []: