

```
In [1]: import pandas as pd
import seaborn as sns
data=pd.read_csv("C:\Users\moayad\Desktop\Netflix Data analysis\Netflix Dataset.csv")
```

In [3]: data.head(5) *#show first 5 records in Dataset*

Out[3]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	s1	TV Show	3%	NaN	Jolo Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	August 14, 2020	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...
1	s2	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...
2	s3	Movie	23.59	Gilbert Chan	Tedd Chan, Siella Chung, Henley Hi, Lawrence ...	Singapore	December 20, 2018	R	78 min	Horror Movies, International Movies	When an army recruit is found dead, his fellow...
3	s4	Movie	9	Shane Acker	Eljah Wood, John C. Reilly, Jennifer Connelly...	United States	November 16, 2017	PG-13	80 min	Action & Adventure, Independent Movies, Sci-Fi...	In a postapocalyptic world, rag-doll robots hi...
4	s5	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	January 1, 2020	PG-13	123 min	Dramas	A brilliant group of students become card-coun...

In [4]: data.shape *#How many columns and rows I have (columns,rows)*

Out[4]: (7789, 11)

In [5]: data.duplicated().sum() *#How many duplicated records I have*

Out[5]: 2

In [6]: data[data.duplicated()] *#show the duplicated values*

Out[6]:

	Show_Id	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
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	When two would-be robbers accidentally kill a ...
6622	s6621	Movie	The Lost Korocho	Albaa T. Makama	Seun Ajayi, Judith Audu, Tope Tedela, Ifu Emu...	Nigeria	September 4, 2020	TV-MA	94 min	Comedies, Dramas, Independent Movies	A disillusioned security guard transforms into...

In [7]: data.data.drop\_duplicates() *#drop duplicates values*

In [8]: data.shape *#Show the numbers of columns and rows I have (columns,rows)*

Out[8]: (7787, 11)

In [9]: data.head(2)

Out[9]:

	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 a future where the elite inhabit an island ...
1	s2	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	December 23, 2016	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...

In [10]: data=data.drop(['Show\_Id'],axis=1) *#Drop Show\_Id Column in dataset*

In [11]: data.info() *#show the index ,columns names ,data type of each column*

```
>class 'pandas.core.frame.DataFrame'>
Int64Index: 7787 entries, 0 to 7788
Data columns (total 10 columns):
 #   Column        Non-Null Count  Dtype  
---  --
 0   Category      7787 non-null   object 
 1   Title         7787 non-null   object 
 2   Director      5399 non-null   object 
 3   Cast          7069 non-null   object 
 4   Country       7288 non-null   object 
 5   Release_Date  7777 non-null   object 
 6   Rating        7780 non-null   object 
 7   Duration      7787 non-null   object 
 8   Type          7787 non-null   object 
 9   Description    7787 non-null   object 
dtypes: object(10)
memory usage: 669.2+ KB
```

In [12]: data.columns *#show the names of columns*

Out[12]: Index(['Category', 'Title', 'Director', 'Cast', 'Country', 'Release\_Date', 'Rating', 'Duration', 'Type', 'Description'], dtype='object')

In [13]: data.dtypes *#show the types of each columns*

Out[13]:

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

In [14]: data['Release\_Date'].head() *# Here Release\_Date is shown as a String "object"*

Out[14]:

0	August 14, 2020
1	December 23, 2016
2	December 20, 2018
3	November 16, 2017
4	January 1, 2020

Name: Release\_Date, dtype: object

In [ ]:

## Show the maximum Release Date and minimum for movies and Tv show

In [15]: data['Release\_Date']=pd.to\_datetime(data['Release\_Date']) *#convert Release\_Date to date type*

In [16]: data['Release\_Date'].max() *#The greater Release\_Date*

Out[16]: Timestamp('2021-01-16 08:00:00')

In [17]: data['Release\_Date'].min() *#The Smaller Release\_Date*

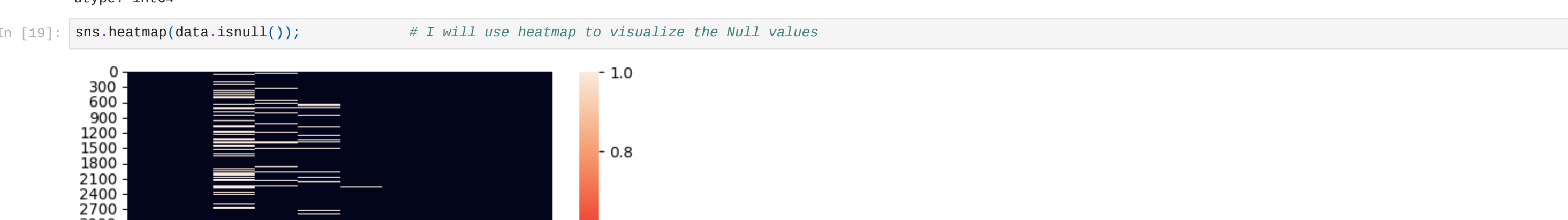
Out[17]: Timestamp('2008-01-01 00:00:00')

In [18]: data.isna().sum() *#Counts of null "Blackn" values*

Out[18]:

Category	0
Title	0
Director	2388
Cast	718
Country	587
Release_Date	10
Rating	7
Duration	0
Type	0
Description	0
dtype:	int64

In [19]: sns.heatmap(data.isnull()); *# I will use heatmap to visualize the Null values*



In [20]: data.head(5)

Out[20]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...
2	Movie	23.59	Gilbert Chan	Tedd Chan, Siella Chung, Henley Hill, Lawrence ...	Singapore	2018-12-20	R	78 min	Horror Movies, International Movies	When an army recruit is found dead, his fellow...
3	Movie	9	Shane Acker	Eljah Wood, John C. Reilly, Jennifer Connelly...	United States	2017-11-16	PG-13	80 min	Action & Adventure, Independent Movies, Sci-Fi...	In a postapocalyptic world, rag-doll robots hi...
4	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	2020-01-01	PG-13	123 min	Dramas	A brilliant group of students become card-coun...

In [21]: data[data['Title'].isin(['21'])] *#Here I want to search about specific movie if is in the dataset using -> isin*

Out[21]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
4	Movie	21	Robert Luketic	Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar...	United States	2020-01-01	PG-13	123 min	Dramas	A brilliant group of students become card-coun...

In [ ]:

## In which Year highest numbers of movie and Tv-show are Release

In [22]: data['Release\_Date'].dt.year.value\_counts()

Out[22]:

2019.0	2153
2020.0	2099
2018.0	1685
2017.0	1225
2016.0	443
2021.0	117
2015.0	88
2014.0	25
2011.0	13
2012.0	11
2012.0	3
2008.0	2
2009.0	2
2010.0	1

Name: Release\_Date, dtype: int64

In [23]: data.Movie=data[data['Category']=='Movie']

In [24]: data.Tv=data[data['Category']=='TV Show']

In [25]: data.Movie['Release\_Date'].dt.year.value\_counts() *#The highest year numbers of movie*

Out[25]:

2019	1497
2020	1312
2018	1255
2017	864
2016	258
2021	88
2015	58
2014	19
2011	13
2013	6
2012	3
2009	2
2010	1
2008	1

Name: Release\_Date, dtype: int64

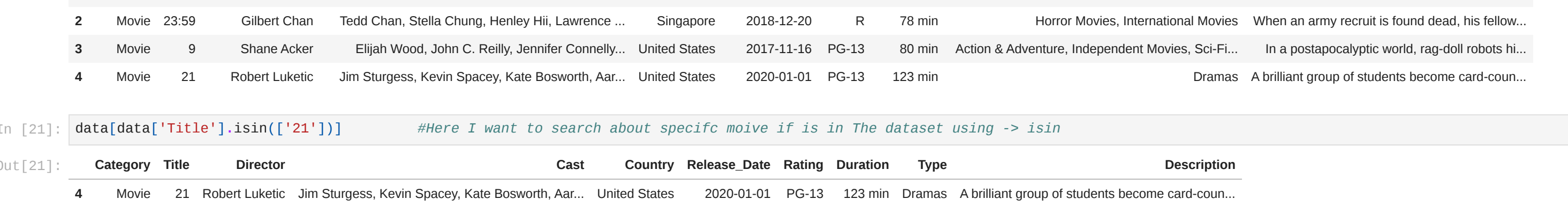
In [26]: data.Tv['Release\_Date'].dt.year.value\_counts().head(1) *#The highest year numbers of Tv show*

Out[26]:

2020.0	697
--------	-----

Name: Release\_Date, dtype: int64

In [27]: data['Release\_Date'].dt.year.value\_counts().plot(kind='bar'); *#Bar graph*



In [28]: data.head(2)

Out[28]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...

In [29]: data.groupby(by='Category').Category.count() *#Group all dataset by Category to show their counts*

Out[29]:

Category	5377
TV Show	2410

Name: Category, dtype: int64

In [30]: sns.countplot(data,x='Category');



In [31]: data.head(2)

Out[31]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...

In [ ]:

## which country introduced the highest number of TV Show

In [32]: data['Country'].value\_counts() *#United States*

Out[32]:

United States	2555
India	923
United Kingdom	397
Japan	226
South Korea	183
...	...
Russia, United States, China	1
Italy, Switzerland, France, Germany	1
United States, United Kingdom, Canada	1
United States, United Kingdom, Japan	1
Sweden, Czech Republic, United Kingdom, Denmark, Netherlands	1

Name: Country, Length: 681, dtype: int64

In [33]: Tv\_show=data[(data['Category']=='TV Show\*)]

In [34]: Tv\_show.Country.value\_counts()

Out[34]:

United States	705
United Kingdom	284
Japan	157
South Korea	147
India	71
...	...
Canada, United States, United Kingdom, France, Luxembourg	1
United States, Italy	1
China, Italy	1
Canada, United Kingdom	1
United States, France, South Korea, Indonesia	1

Name: Country, Length: 183, dtype: int64

In [ ]:

## The maximum duration of a Movie-Tv show in the data

In [35]: data.head(2)

Out[35]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...

In [36]: data.Duration.unique() *#Show the unique duration Time*

Out[36]:

```
array(['1 Seasons', '93 min', '78 min', '90 min', '123 min', '1 Season', '95 min', '119 min', '118 min', '143 min', '87 min', '110 min', '128 min', '117 min', '108 min', '2 Seasons', '84 min', '99 min', '80 min', '102 min', '184 min', '185 min', '56 min', '125 min', '81 min', '97 min', '106 min', '107 min', '109 min', '145 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', '70 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', '142 min', '79 min', '5 Seasons', '40 min', '45 min', '172 min', '10 min', '161 min', '9 Seasons', '155 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', '180 min', '40 min', '73 min', '68 min', '165 min', '166 min', '138 min', '159 min', '141 min', '132 min', '52 min', '67 min', '14 min', '14 min', '312 min', '180 min', '147 min', '6 Seasons', '155 min', '14 min', '177 min', '11 min', '9 min', '140 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', '141 min', '182 min', '224 min', '233 min', '189 min', '152 min', '19 min', '15 Seasons', '208 min', '237 min', '131 min', '178 min', '230 min', '194 min', '228 min', '196 min', '19 min', '16 min', '15 min', '18 min', '205 min', '190 min', '36 min', '201 min', '253 min', '203 min', '191 min'], dtype=object)
```

In [37]: data['Duration'].dtypes *#show the data type of Duration column*

Out[37]: dtype('O')

In [38]: data[['Minutes','Unit']] =data['Duration'].str.split(' ',expand=True) *#Here I split the Duration to two columns*

In [39]: data.head(2)

Out[39]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Minutes	Unit
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...	4	Seasons
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...	93	min

In [40]: data['Minutes'].max()

Out[40]: '99'

In [41]: data['Minutes'].min()

Out[41]: '1'

In [42]: data['Minutes'].mean() *#Here Infinite Because it's an object data type*

Out[42]: inf

In [43]: data['Minutes'].dtypes

Out[43]: dtype('O')

In [ ]:

In [44]: data.head(2)

Out[44]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Minutes	Unit
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...	4	Seasons
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...	93	min

In [45]: data['Rating'].nunique() *#show the numbers of Unique rating*

Out[45]: 14

In [46]: data['Rating'].unique() *#show Unique rating*

Out[46]:

```
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)
```

In [47]: data['Rating'].info() *#Here I want to know more about rating column*

>class 'pandas.core.series.Series'>
Int64Index: 7787 entries, 0 to 7788
Series name: Rating
Non-Null Count Dtype 
-----
7780 non-null object 
dtypes: object(1)
memory usage: 121.7+ KB

In [48]: data['Rating'].isna().sum() *#show the numbers of null values*

Out[48]: 7

In [49]: data.rating=data['Rating'].dropna()

In [50]: data.rating.isna().sum() *#check if is null values*

Out[50]: 0

In [ ]:

## What is the popluar rating Moive - Tv show

In [51]: data.rating.value\_counts() *#here the popluar rating is TV\_MA (Mature Audiences Only)*

Out[51]:

TV-MA	2863
TV-14	1931
TV-PG	866
R	665
PG-13	386
TV-Y	280
TV-Y7	271
NR	247
PG	84
G	39
TV-Y7-FV	6
UR	5
NC-17	3

Name: Rating, dtype: int64

In [52]: data['Type'].value\_counts().count() *#the numbers of Moive- Tv show types*

Out[52]: 492

In [53]: data['Type'].value\_counts() *#here the types of Moives and Tv show*

Out[53]:

Documentaries	334
Stand-Up Comedy	321
Dramas, International Movies	329
Comedies, Dramas, International Movies	243
Dramas, Independent Movies, International Movies	215
...	...
Crime TV Shows, Romantic TV Shows, Spanish-Language TV Shows	1
Crime TV Shows, International TV Shows, Reality TV	1
International Movies, Romantic Movies, Sci-Fi & Fantasy	1
Stand-Up Comedy & Talk Shows, TV Mysteries, TV Sci-Fi & Fantasy	1
International TV Shows, Spanish-Language TV Shows, Stand-Up Comedy & Talk Shows	1

Name: Type, Length: 492, dtype: int64

In [ ]:

## How many moive got Rating PG-13 and Type Anime Features

In [54]: data.head(2)

Out[54]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Minutes	Unit
0	TV Show	3%	NaN	João Miguel, Bianca Comparato, Michel Gomes, R...	Brazil	2020-08-14	TV-MA	4 Seasons	International TV Shows, TV Dramas, TV Sci-Fi &...	In a future where the elite inhabit an island ...	4	Seasons
1	Movie	07.19	Jorge Michel Grau	Demán Bichir, Héctor Bonilla, Oscar Serrano, ...	Mexico	2016-12-23	TV-MA	93 min	Dramas, International Movies	After a devastating earthquake hits Mexico Cti...	93	min

In [55]: data[(data['Rating']=='PG-13') & (data['Type']=='Anime Features')]

Out[55]:

	Category	Title	Director	Cast	Country	Release_Date	Rating	Duration	Type	Description	Minutes	Unit
4135	Movie	Miss Hokusai	Keiichi Hara	Anne Watanabe, Yutaka Matsushige, Gaku Hamada, ...	Japan	2017-10-01	PG-13	90 min	Anime Features	Herself a talented artist, O-Ei works with her...	90	min

In [ ]: