

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

df=pd.read_csv('C:/Users/rahul.kumar/Downloads/netflix.csv')
```

1 : Analyse netflix data to bring data driven insights and recommendation

```
'''
Problem Statemnet : To get meaningful data driven conclusion to
identify the bottleneck and improve the business.
'''
```

2 : Observations on the shape of data, data types of all the attributes, conversion of categorical attributes to 'category' (If required), missing value detection, statistical summary

```
df.head()
```

	show_id	type	title	director	\
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	
1	s2	TV Show	Blood & Water	NaN	
2	s3	TV Show	Ganglands	Julien Leclercq	
3	s4	TV Show	Jailbirds New Orleans	NaN	
4	s5	TV Show	Kota Factory	NaN	

	cast	country	\
0	NaN	United States	
1	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	
2	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	
3	NaN	NaN	
4	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	

	date_added	release_year	rating	duration	\
0	September 25, 2021	2020	PG-13	90 min	
1	September 24, 2021	2021	TV-MA	2 Seasons	
2	September 24, 2021	2021	TV-MA	1 Season	
3	September 24, 2021	2021	TV-MA	1 Season	
4	September 24, 2021	2021	TV-MA	2 Seasons	

	listed_in	\
0	Documentaries	
1	International TV Shows, TV Dramas, TV Mysteries	
2	Crime TV Shows, International TV Shows, TV Act...	
3	Docuseries, Reality TV	
4	International TV Shows, Romantic TV Shows, TV ...	

```

                                description
0  As her father nears the end of his life, filmm...
1  After crossing paths at a party, a Cape Town t...
2  To protect his family from a powerful drug lor...
3  Feuds, flirtations and toilet talk go down amo...
4  In a city of coaching centers known to train I...

```

```
df.info()
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8807 entries, 0 to 8806
Data columns (total 12 columns):
#   Column                Non-Null Count  Dtype
---  -
0   show_id               8807 non-null   object
1   type                  8807 non-null   object
2   title                 8807 non-null   object
3   director              6173 non-null   object
4   cast                  7982 non-null   object
5   country               7976 non-null   object
6   date_added            8797 non-null   object
7   release_year          8807 non-null   int64
8   rating                8803 non-null   object
9   duration              8804 non-null   object
10  listed_in             8807 non-null   object
11  description            8807 non-null   object
dtypes: int64(1), object(11)
memory usage: 825.8+ KB

```

```
df.shape
```

```
(8807, 12)
```

3 : Non-Graphical Analysis: Value counts and unique attributes

```
df.nunique()
```

```

show_id      8807
type          2
title        8807
director     4528
cast         7692
country       748
date_added   1767
release_year   74
rating        17
duration      220
listed_in     514
description   8775
dtype: int64

```

```

for i in range(df.shape[1]):
    print(df.iloc[:,i].value_counts())

print('.....')
print('.....')
print()
s1      1
s5875   1
s5869   1
s5870   1
s5871   1
..
s2931   1
s2930   1
s2929   1
s2928   1
s8807   1
Name: show_id, Length: 8807, dtype: int64
.....
.....

Movie      6131
TV Show    2676
Name: type, dtype: int64
.....
.....

Dick Johnson Is Dead      1
Ip Man 2                  1
Hannibal Buress: Comedy Camisado 1
Turbo FAST                1
Masha's Tales             1
..
Love for Sale 2           1
ROAD TO ROMA              1
Good Time                 1
Captain Underpants Epic Choice-o-Rama 1
Zubaan                    1
Name: title, Length: 8807, dtype: int64
.....
.....

Rajiv Chilaka      19
Raúl Campos, Jan Suter 18
Marcus Raboy       16
Suhas Kadav        16
Jay Karas          14
..
Raymie Muzquiz, Stu Livingston 1

```

Joe Menendez 1
Eric Bross 1
Will Eisenberg 1
Mozez Singh 1
Name: director, Length: 4528, dtype: int64

.....
.....

David Attenborough
19
Vatsal Dubey, Julie Tejwani, Rupa Bhimani, Jigna Bhardwaj, Rajesh
Kava, Mousam, Swapnil
14
Samuel West
10
Jeff Dunham
7
David Spade, London Hughes, Fortune Feimster
6

..
Michael Peña, Diego Luna, Tenoch Huerta, Joaquin Cosio, Jos   Mar  a
Yazpik, Matt Letscher, Alyssa Diaz
1
Nick Lachey, Vanessa Lachey
1
Takeru Sato, Kasumi Arimura, Haru, Kentaro Sakaguchi, Takayuki Yamada,
Kendo Kobayashi, Ken Yasuda, Arata Furuta, Suzuki Matsuo, Koichi
Yamadera, Arata Iura, Chikako Kaku, Kotaro Yoshida 1
Toyin Abraham, Sambasa Nzeribe, Chioma Chukwuka Akpotha, Chioma
Omeruah, Chiwetelu Agu, Dele Odule, Femi Adebayo, Bayray McNwizu,
Biodun Stephen 1
Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanana, Manish Chaudhary,
Meghna Malik, Malkeet Rauni, Anita Shabdish, Chittaranjan Tripathy
1
Name: cast, Length: 7692, dtype: int64

.....
.....

United States 2818
India 972
United Kingdom 419
Japan 245
South Korea 199
...
Romania, Bulgaria, Hungary 1
Uruguay, Guatemala 1
France, Senegal, Belgium 1
Mexico, United States, Spain, Colombia 1
United Arab Emirates, Jordan 1

Name: country, Length: 748, dtype: int64

.....
.....

January 1, 2020	109
November 1, 2019	89
March 1, 2018	75
December 31, 2019	74
October 1, 2018	71

...	
December 4, 2016	1
November 21, 2016	1
November 19, 2016	1
November 17, 2016	1
January 11, 2020	1

Name: date_added, Length: 1767, dtype: int64

.....
.....

2018	1147
2017	1032
2019	1030
2020	953
2016	902

...	
1959	1
1925	1
1961	1
1947	1
1966	1

Name: release_year, Length: 74, dtype: int64

.....
.....

TV-MA	3207
TV-14	2160
TV-PG	863
R	799
PG-13	490
TV-Y7	334
TV-Y	307
PG	287
TV-G	220
NR	80
G	41
TV-Y7-FV	6
NC-17	3
UR	3
74 min	1
84 min	1

```

66 min          1
Name: rating, dtype: int64
.....
.....

```

```

1 Season        1793
2 Seasons        425
3 Seasons        199
90 min          152
94 min          146

```

```

...
16 min          1
186 min         1
193 min         1
189 min         1
191 min         1
Name: duration, Length: 220, dtype: int64

```

```

.....
.....

```

```

Dramas, International Movies          362
Documentaries                         359
Stand-Up Comedy                       334
Comedies, Dramas, International Movies 274
Dramas, Independent Movies, International Movies 252

```

```

...
Kids' TV, TV Action & Adventure, TV Dramas          1
TV Comedies, TV Dramas, TV Horror                  1
Children & Family Movies, Comedies, LGBTQ Movies    1
Kids' TV, Spanish-Language TV Shows, Teen TV Shows  1
Cult Movies, Dramas, Thrillers                     1

```

```

Name: listed_in, Length: 514, dtype: int64
.....
.....

```

Paranormal activity at a lush, abandoned property alarms a group eager to redevelop the site, but the eerie events may not be as unearthly as they think. 4

Challenged to compose 100 songs before he can marry the girl he loves, a tortured but passionate singer-songwriter embarks on a poignant musical journey. 3

A surly septuagenarian gets another chance at her 20s after having her photo snapped at a studio that magically takes 50 years off her life. 3

Multiple women report their husbands as missing but when it appears they are looking for the same man, a police officer traces their cryptic connection. 3

Secrets bubble to the surface after a sensual encounter and an unforeseen crime entangle two friends and a woman caught between them. 2

```

..
Sent away to evade an arranged marriage, a 14-year-old begins a
harrowing journey of sex work and poverty in the slums of Accra.
1
When his partner in crime goes missing, a small-time crook's life is
transformed as he dedicates himself to raising the daughter his friend
left behind.      1
During 1962's Cuban missile crisis, a troubled math genius finds
himself drafted to play in a U.S.-Soviet chess match " and a deadly
game of espionage.      1
A teen's discovery of a vintage Polaroid camera develops into a darker
tale when she finds that whoever takes their photo with it dies soon
afterward.      1
A scrappy but poor boy worms his way into a tycoon's dysfunctional
family, while facing his fear of music and the truth about his past.
1

```

```

Name: description, Length: 8775, dtype: int64

```

```

.....
.....

```

```

for i in range(df.shape[1]):
    print(df.keys()[i])
    print('No. of NaN :')
    print(df.iloc[:,i].isnull().sum())

```

```

print('.....')
.....')
    print()

```

```

show_id
No. of NaN :
0
.....
.....

```

```

type
No. of NaN :
0
.....
.....

```

```

title
No. of NaN :
0
.....
.....

```

```

director

```

No. of NaN :
2634

.....
.....

cast
No. of NaN :
825

.....
.....

country
No. of NaN :
831

.....
.....

date_added
No. of NaN :
10

.....
.....

release_year
No. of NaN :
0

.....
.....

rating
No. of NaN :
4

.....
.....

duration
No. of NaN :
3

.....
.....

listed_in
No. of NaN :
0

.....
.....

description
No. of NaN :

0

.....
.....

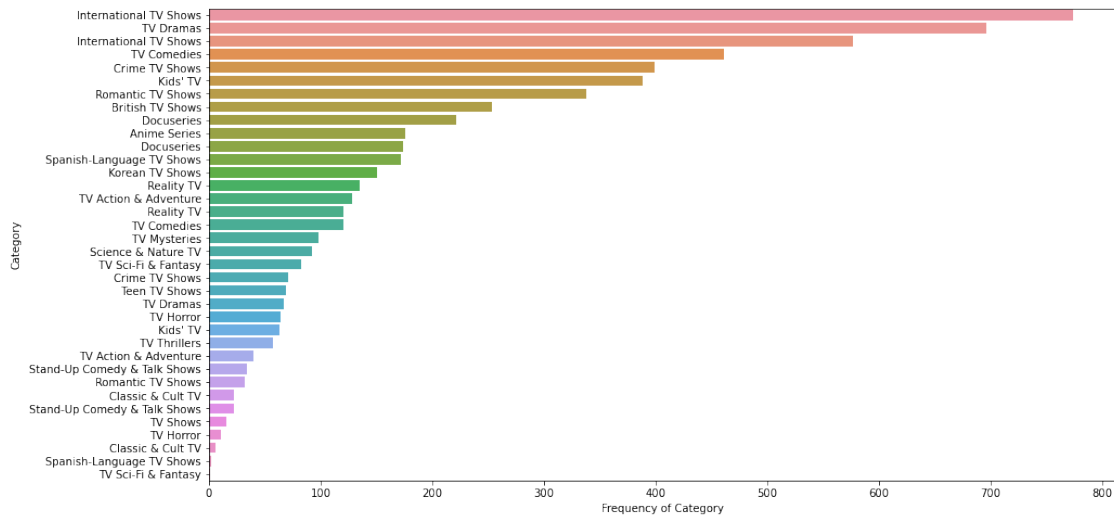
4 : Visual Analysis - Univariate, Bivariate after pre-processing of the data

```
df['listed_in']=df['listed_in'].str.split(",")
df=df.explode('listed_in').reset_index(drop=True)
df['cast']=df['cast'].str.split(",")
df=df.explode('cast').reset_index(drop=True)
df['country']=df['country'].str.split(", ")
df=df.explode('country').reset_index(drop=True)
df['director']=df['director'].str.split(", ")
df=df.explode('director').reset_index(drop=True)

df["month_added"] = pd.to_datetime(df["date_added"]).dt.month_name()
df["day_added"] = pd.to_datetime(df["date_added"]).dt.day_name()
df["year_added"] = pd.to_datetime(df["date_added"]).dt.year

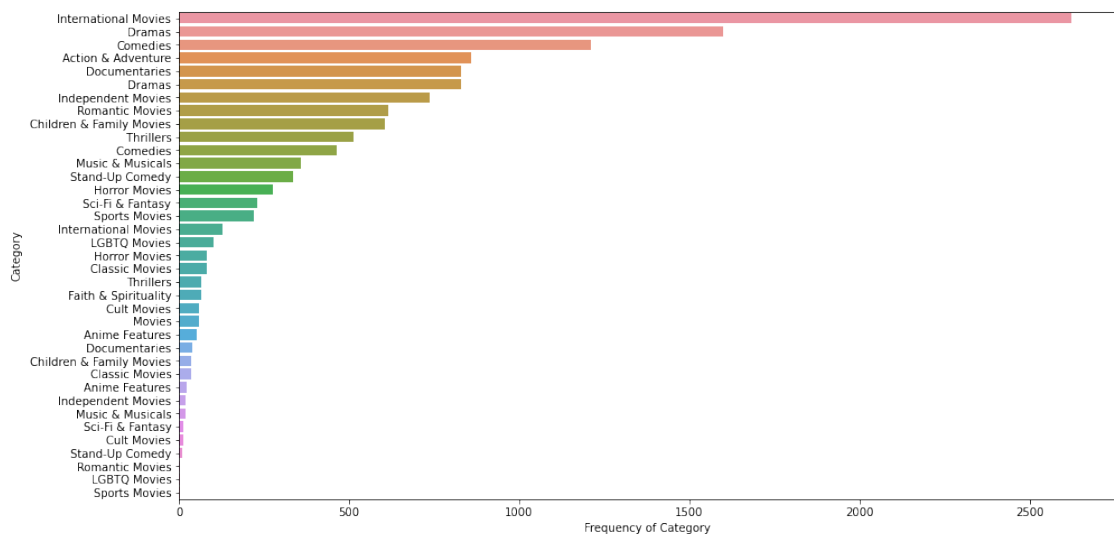
shows_df = df[df["type"]=="TV Show"][["title", "cast", "director",
"country", "listed_in", "rating", "release_year", "month_added",
"year_added"]]
shows_df.reset_index(inplace=True)
shows_df.drop(labels="index", axis=1, inplace=True)
shows_category_df =
shows_df.groupby("listed_in").agg({"title":"nunique"}).reset_index().s
ort_values(by=["title"], ascending=False)
plt.figure(figsize=(15,8))
bar_plot = sns.barplot(data=shows_category_df, x="title",
y="listed_in")
bar_plot.set(ylabel="Category", xlabel="Frequency of Category")
bar_plot

<AxesSubplot:xlabel='Frequency of Category', ylabel='Category'>
```



```
shows_df = df[df["type"]=="Movie"][["title", "cast", "director",
"country", "listed_in", "rating", "release_year", "month_added",
"year_added"]]
shows_df.reset_index(inplace=True)
shows_df.drop(labels="index", axis=1, inplace=True)
shows_category_df =
shows_df.groupby("listed_in").agg({"title":"nunique"}).reset_index().s
ort_values(by=["title"], ascending=False)
plt.figure(figsize=(15,8))
bar_plot = sns.barplot(data=shows_category_df, x="title",
y="listed_in")
bar_plot.set(ylabel="Category", xlabel="Frequency of Category")
bar_plot
```

<AxesSubplot:xlabel='Frequency of Category', ylabel='Category'>



```
df.head(20)
```

show_id	type	title		director	
cast \					
0 s1	Movie	Dick Johnson	Is Dead	Kirsten Johnson	
NaN					
1 s2	TV Show		Blood & Water	NaN	Ama
Qamata					
2 s2	TV Show		Blood & Water	NaN	Ama
Qamata					
3 s2	TV Show		Blood & Water	NaN	Ama
Qamata					
4 s2	TV Show		Blood & Water	NaN	
Khosi Ngema					
5 s2	TV Show		Blood & Water	NaN	
Khosi Ngema					
6 s2	TV Show		Blood & Water	NaN	
Khosi Ngema					
7 s2	TV Show		Blood & Water	NaN	Gail
Mabalane					
8 s2	TV Show		Blood & Water	NaN	Gail
Mabalane					
9 s2	TV Show		Blood & Water	NaN	Gail
Mabalane					
10 s2	TV Show		Blood & Water	NaN	Thabang
Molaba					
11 s2	TV Show		Blood & Water	NaN	Thabang
Molaba					
12 s2	TV Show		Blood & Water	NaN	Thabang
Molaba					
13 s2	TV Show		Blood & Water	NaN	Dillon
Windvogel					
14 s2	TV Show		Blood & Water	NaN	Dillon
Windvogel					
15 s2	TV Show		Blood & Water	NaN	Dillon
Windvogel					
16 s2	TV Show		Blood & Water	NaN	Natasha
Thahane					
17 s2	TV Show		Blood & Water	NaN	Natasha
Thahane					
18 s2	TV Show		Blood & Water	NaN	Natasha
Thahane					
19 s2	TV Show		Blood & Water	NaN	Arno
Greeff					

	country	date_added	release_year	rating	duration
\					
0	United States	September 25, 2021	2020	PG-13	90 min
1	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
2	South Africa	September 24, 2021	2021	TV-MA	2 Seasons

3	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
4	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
5	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
6	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
7	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
8	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
9	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
10	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
11	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
12	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
13	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
14	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
15	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
16	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
17	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
18	South Africa	September 24, 2021	2021	TV-MA	2 Seasons
19	South Africa	September 24, 2021	2021	TV-MA	2 Seasons

	description	listed_in
0	Documentaries	As her father nears the end of his life, filmm...
1	International TV Shows	After crossing paths at a party, a Cape Town t...
2	TV Dramas	After crossing paths at a party, a Cape Town t...
3	TV Mysteries	After crossing paths at a party, a Cape Town t...
4	International TV Shows	After crossing paths at a party, a Cape Town t...

5	TV Dramas	After crossing paths at a party, a Cape Town t...
6	TV Mysteries	After crossing paths at a party, a Cape Town t...
7	International TV Shows	After crossing paths at a party, a Cape Town t...
8	TV Dramas	After crossing paths at a party, a Cape Town t...
9	TV Mysteries	After crossing paths at a party, a Cape Town t...
10	International TV Shows	After crossing paths at a party, a Cape Town t...
11	TV Dramas	After crossing paths at a party, a Cape Town t...
12	TV Mysteries	After crossing paths at a party, a Cape Town t...
13	International TV Shows	After crossing paths at a party, a Cape Town t...
14	TV Dramas	After crossing paths at a party, a Cape Town t...
15	TV Mysteries	After crossing paths at a party, a Cape Town t...
16	International TV Shows	After crossing paths at a party, a Cape Town t...
17	TV Dramas	After crossing paths at a party, a Cape Town t...
18	TV Mysteries	After crossing paths at a party, a Cape Town t...
19	International TV Shows	After crossing paths at a party, a Cape Town t...

	movie_duration	month_added	day_added	year_added
0	90	September	Saturday	2021.0
1	NaN	September	Friday	2021.0
2	NaN	September	Friday	2021.0
3	NaN	September	Friday	2021.0
4	NaN	September	Friday	2021.0
5	NaN	September	Friday	2021.0
6	NaN	September	Friday	2021.0
7	NaN	September	Friday	2021.0
8	NaN	September	Friday	2021.0
9	NaN	September	Friday	2021.0
10	NaN	September	Friday	2021.0
11	NaN	September	Friday	2021.0
12	NaN	September	Friday	2021.0
13	NaN	September	Friday	2021.0
14	NaN	September	Friday	2021.0
15	NaN	September	Friday	2021.0
16	NaN	September	Friday	2021.0
17	NaN	September	Friday	2021.0

18	NaN	September	Friday	2021.0
19	NaN	September	Friday	2021.0

df

	show_id	type		title	director \
0	s1	Movie	Dick Johnson	Is Dead	Kirsten Johnson
1	s2	TV Show		Blood & Water	NaN
2	s2	TV Show		Blood & Water	NaN
3	s2	TV Show		Blood & Water	NaN
4	s2	TV Show		Blood & Water	NaN
...
201986	s8807	Movie		Zubaan	Mozez Singh
201987	s8807	Movie		Zubaan	Mozez Singh
201988	s8807	Movie		Zubaan	Mozez Singh
201989	s8807	Movie		Zubaan	Mozez Singh
201990	s8807	Movie		Zubaan	Mozez Singh

		cast	country	date_added \
0		NaN	United States	September 25, 2021
1		Ama Qamata	South Africa	September 24, 2021
2		Ama Qamata	South Africa	September 24, 2021
3		Ama Qamata	South Africa	September 24, 2021
4		Khosi Ngema	South Africa	September 24, 2021
...	
201986		Anita Shabdish	India	March 2, 2019
201987		Anita Shabdish	India	March 2, 2019
201988	Chittaranjan Tripathy		India	March 2, 2019
201989	Chittaranjan Tripathy		India	March 2, 2019
201990	Chittaranjan Tripathy		India	March 2, 2019

	release_year	rating	duration	listed_in \
0	2020	PG-13	90 min	Documentaries
1	2021	TV-MA	2 Seasons	International TV Shows
2	2021	TV-MA	2 Seasons	TV Dramas
3	2021	TV-MA	2 Seasons	TV Mysteries
4	2021	TV-MA	2 Seasons	International TV Shows
...
201986	2015	TV-14	111 min	International Movies
201987	2015	TV-14	111 min	Music & Musicals
201988	2015	TV-14	111 min	Dramas
201989	2015	TV-14	111 min	International Movies
201990	2015	TV-14	111 min	Music & Musicals

	description
movie_duration \	
0	As her father nears the end of his life, filmm...
90	
1	After crossing paths at a party, a Cape Town t...
NaN	

```

2      After crossing paths at a party, a Cape Town t...
NaN
3      After crossing paths at a party, a Cape Town t...
NaN
4      After crossing paths at a party, a Cape Town t...
NaN
...
..
201986 A scrappy but poor boy worms his way into a ty...
111
201987 A scrappy but poor boy worms his way into a ty...
111
201988 A scrappy but poor boy worms his way into a ty...
111
201989 A scrappy but poor boy worms his way into a ty...
111
201990 A scrappy but poor boy worms his way into a ty...
111

```

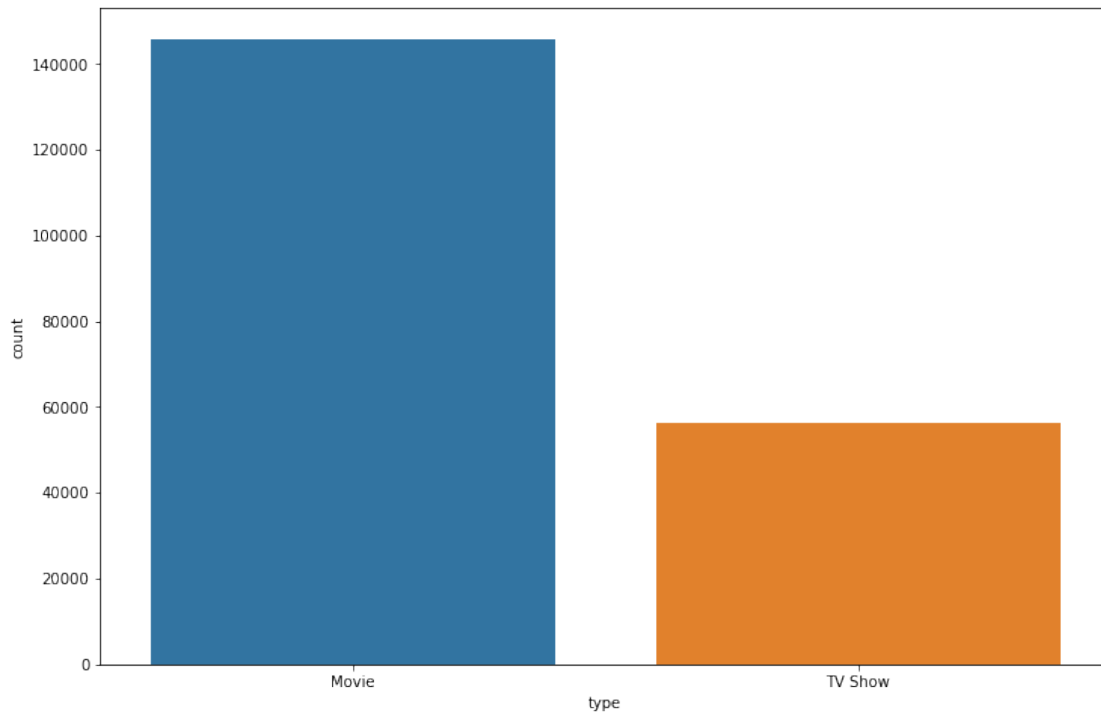
	month_added	day_added	year_added
0	September	Saturday	2021.0
1	September	Friday	2021.0
2	September	Friday	2021.0
3	September	Friday	2021.0
4	September	Friday	2021.0
...
201986	March	Saturday	2019.0
201987	March	Saturday	2019.0
201988	March	Saturday	2019.0
201989	March	Saturday	2019.0
201990	March	Saturday	2019.0

[201991 rows x 16 columns]

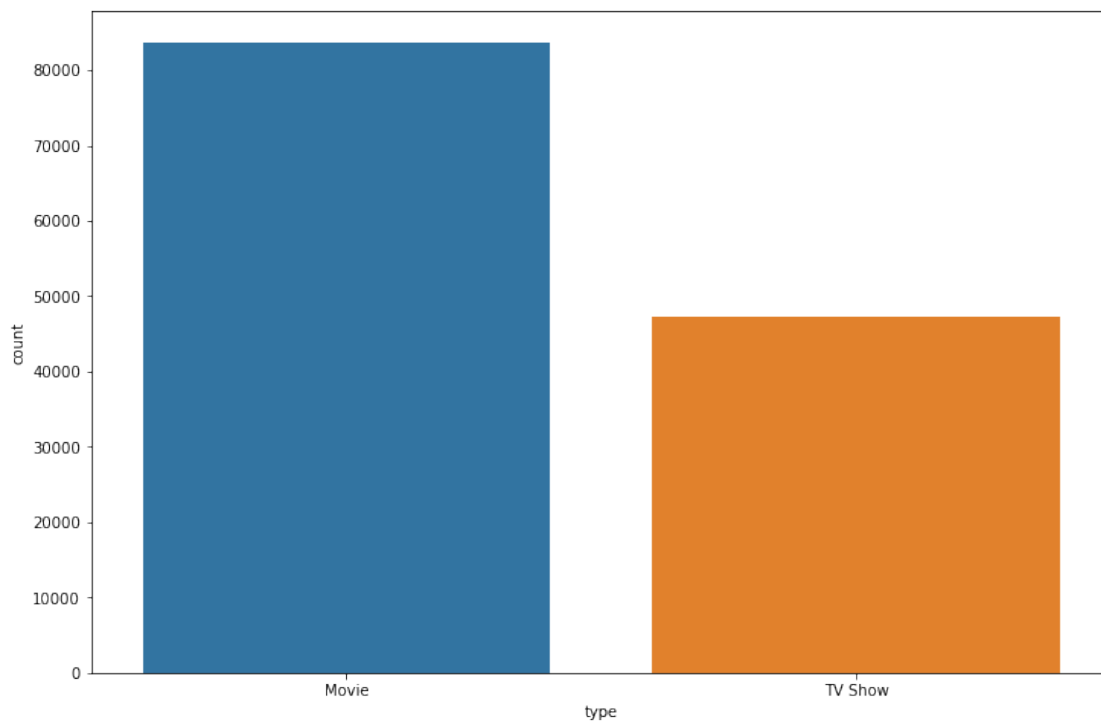
```

plt.figure(figsize=(12,8))
Type=sns.countplot(x=df['type'].dropna())

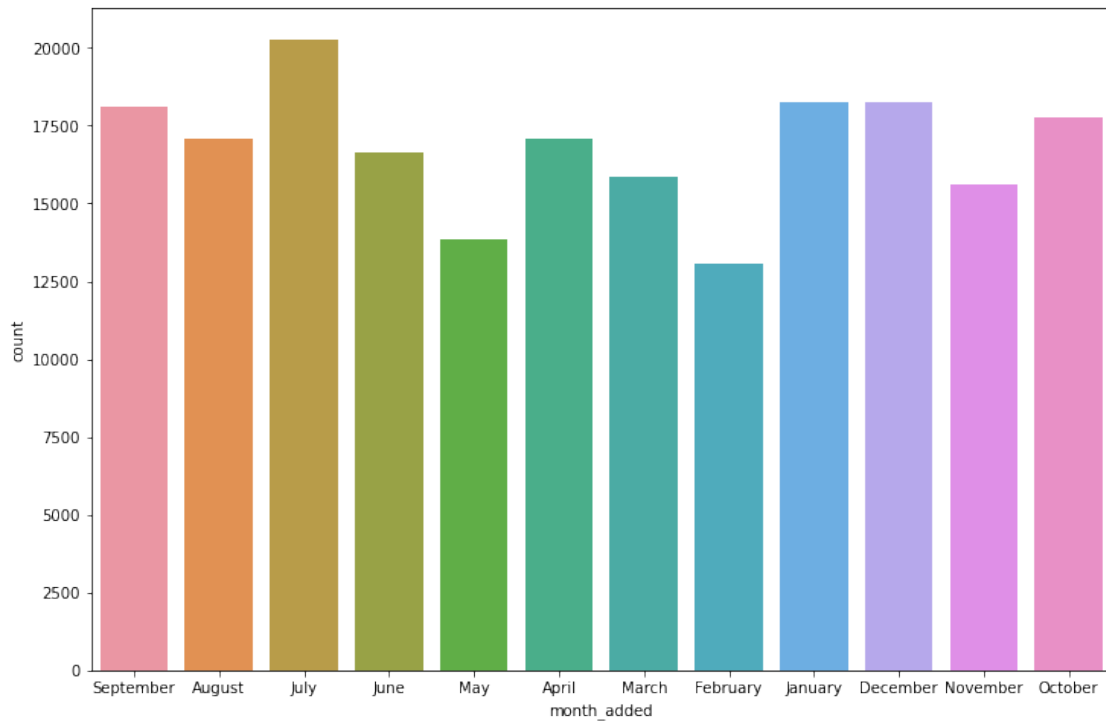
```



```
df_2015 = df[df['release_year']>=2015]
plt.figure(figsize=(12,8))
Type=sns.countplot(x=df_2015['type'].dropna())
```

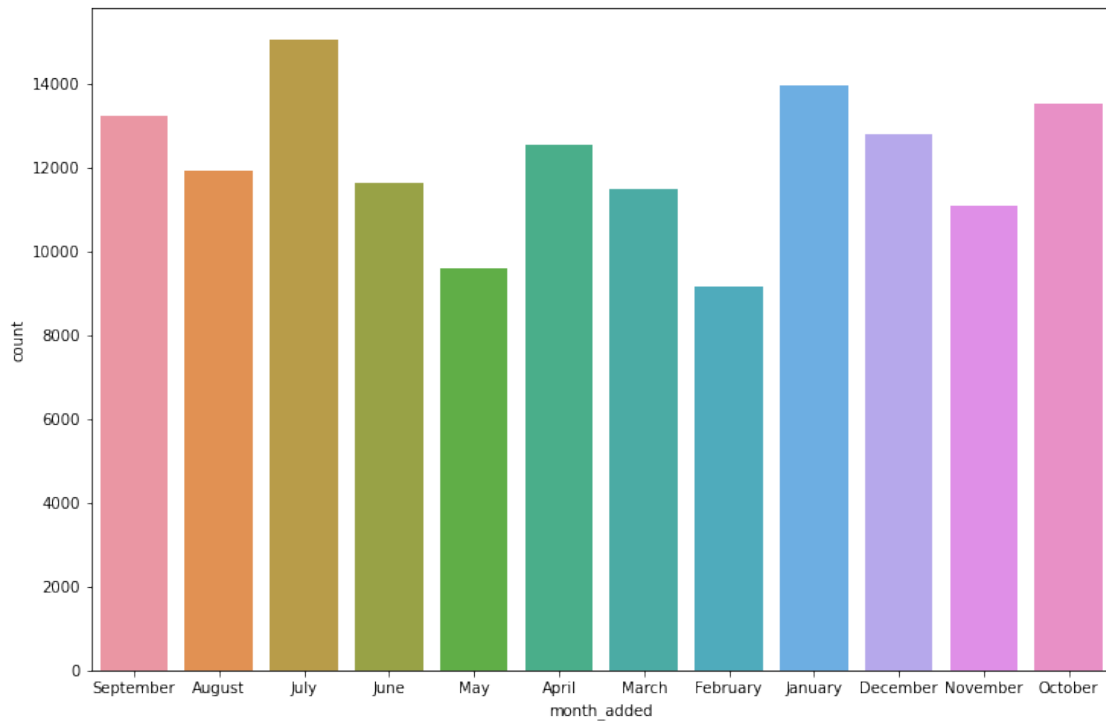


```
plt.figure(figsize=(12,8))
relaese_month_count =sns.countplot(data=df, x=df['month_added'])
```

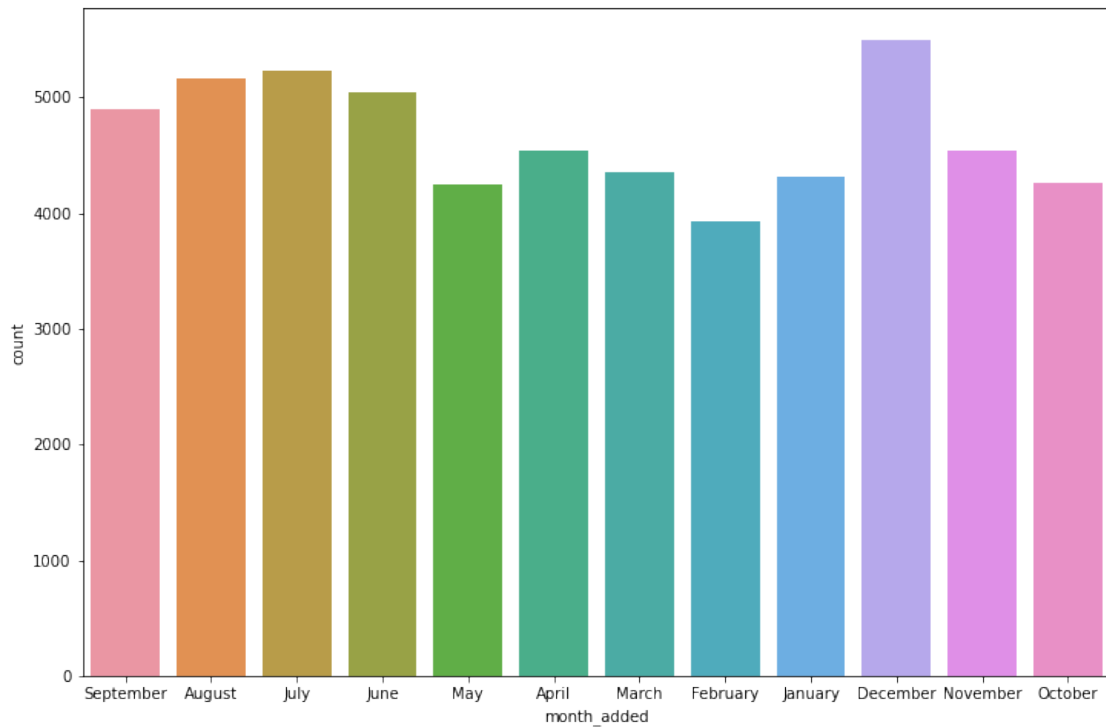
```
plt.figure(figsize=(12,8))
relaese_month_count =sns.countplot(df[df['type']=='Movie']
['month_added'].dropna())
```

```
C:\Users\rahul.kumar\Anaconda3\lib\site-packages\seaborn\
_decorators.py:36: FutureWarning: Pass the following variable as a
keyword arg: x. From version 0.12, the only valid positional argument
will be `data`, and passing other arguments without an explicit
keyword will result in an error or misinterpretation.
  warnings.warn(
```

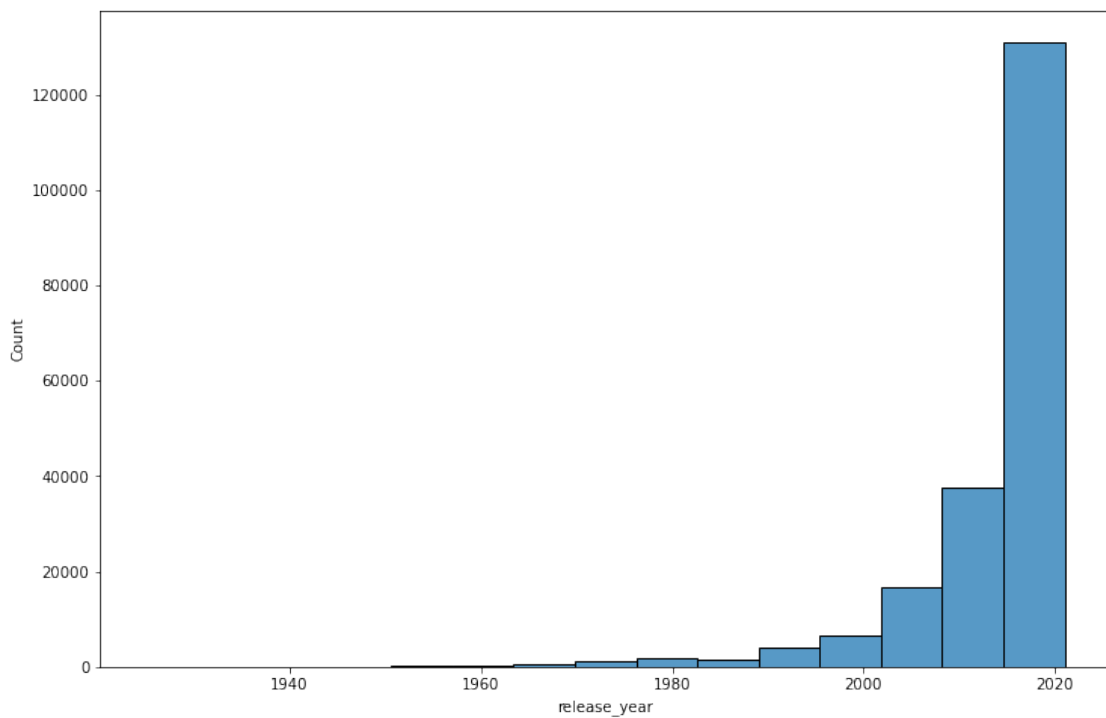


```
plt.figure(figsize=(12,8))
relaese_month_count =sns.countplot(df[df['type']=='TV Show']
['month_added'].dropna())
```

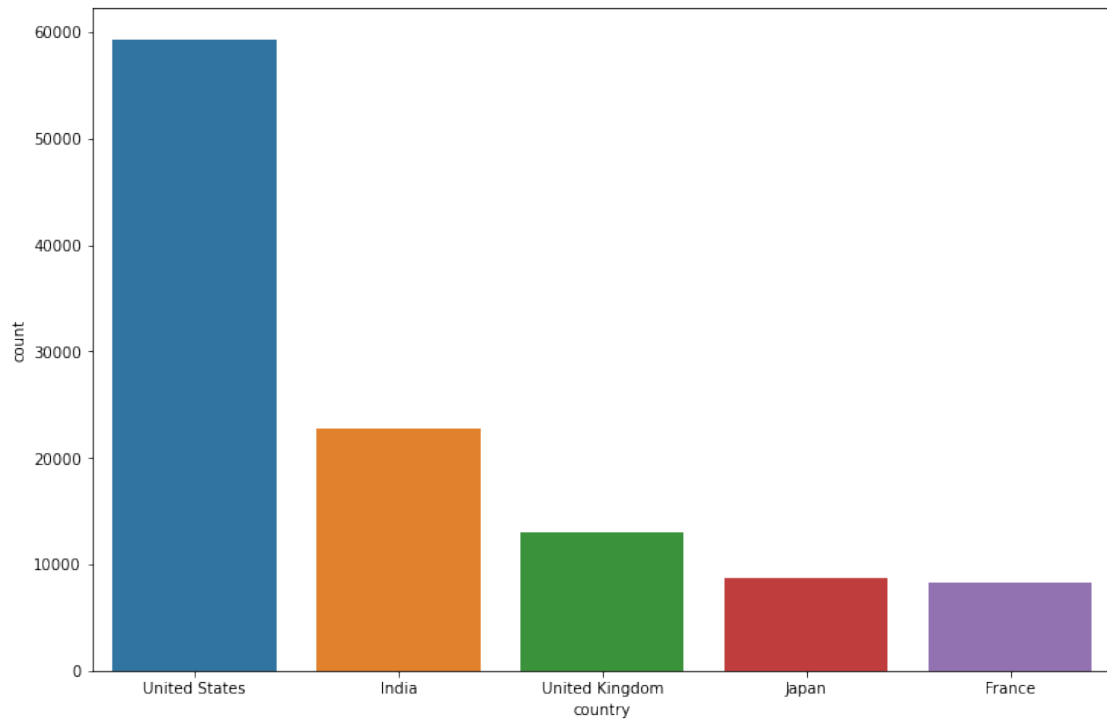
```
C:\Users\rahul.kumar\Anaconda3\lib\site-packages\seaborn\
_decorators.py:36: FutureWarning: Pass the following variable as a
keyword arg: x. From version 0.12, the only valid positional argument
will be `data`, and passing other arguments without an explicit
keyword will result in an error or misinterpretation.
  warnings.warn(
```



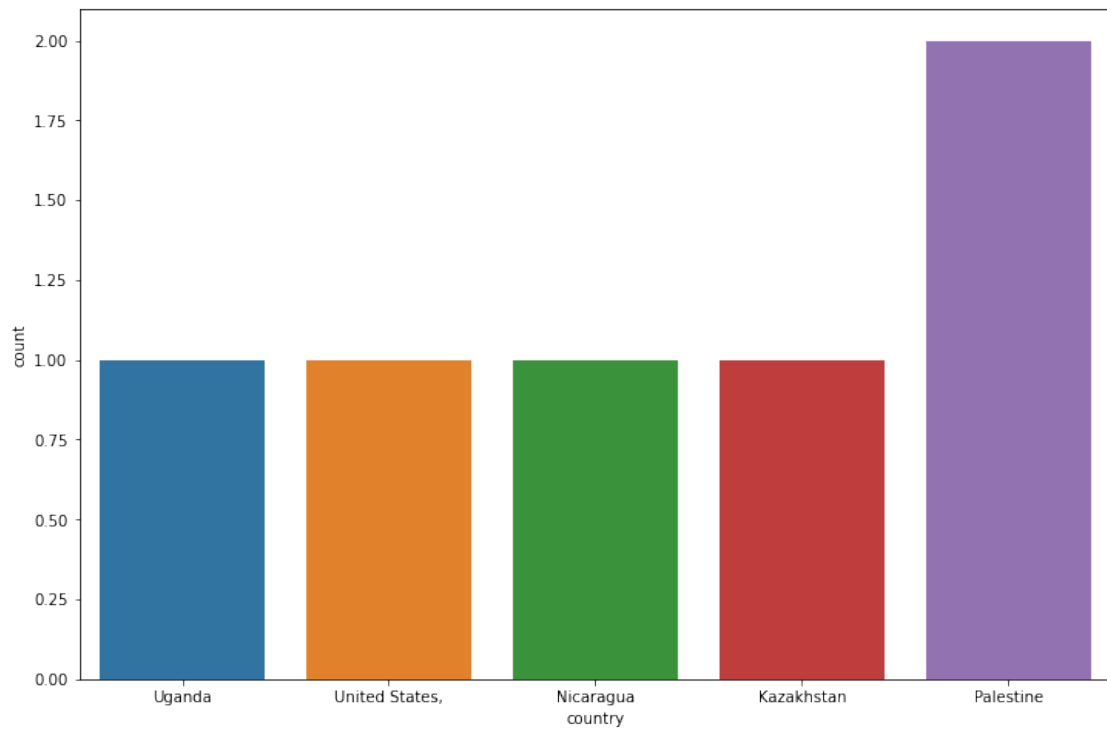
```
plt.figure(figsize=(12,8))
YearType=sns.histplot(df['release_year'].dropna(),bins=15)
```



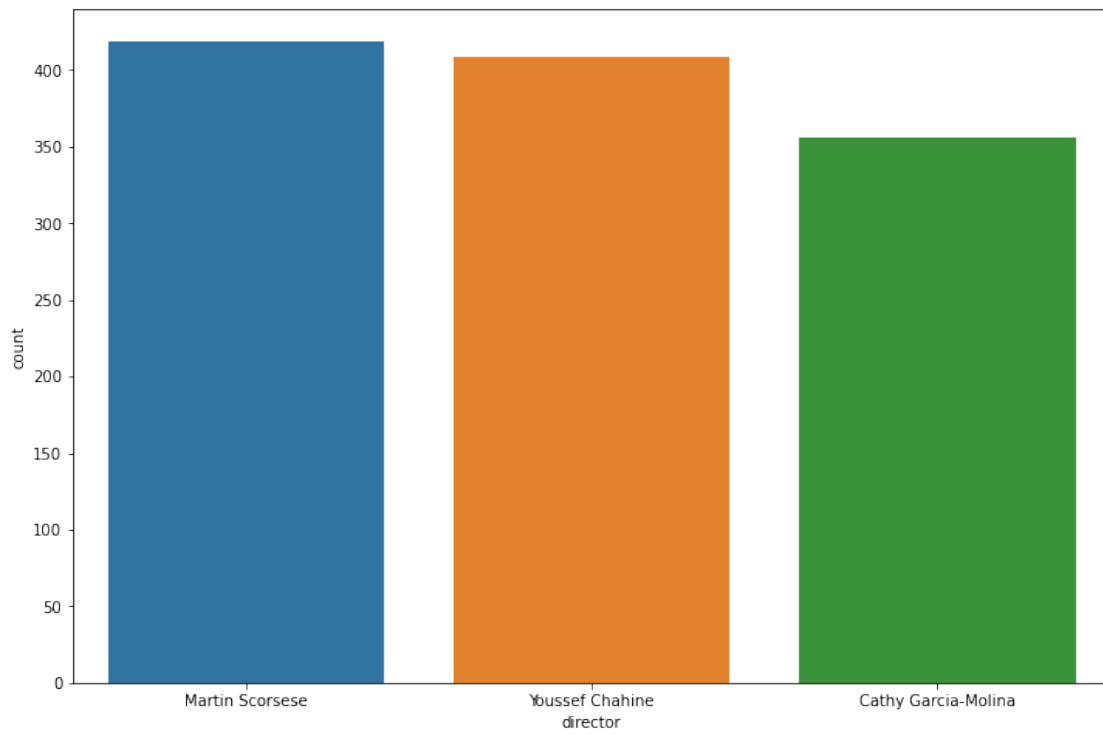
```
plt.figure(figsize=(12,8))
Country=sns.countplot(x=df['country'].dropna(),order=df.country.value_counts().iloc[:5].index)
```



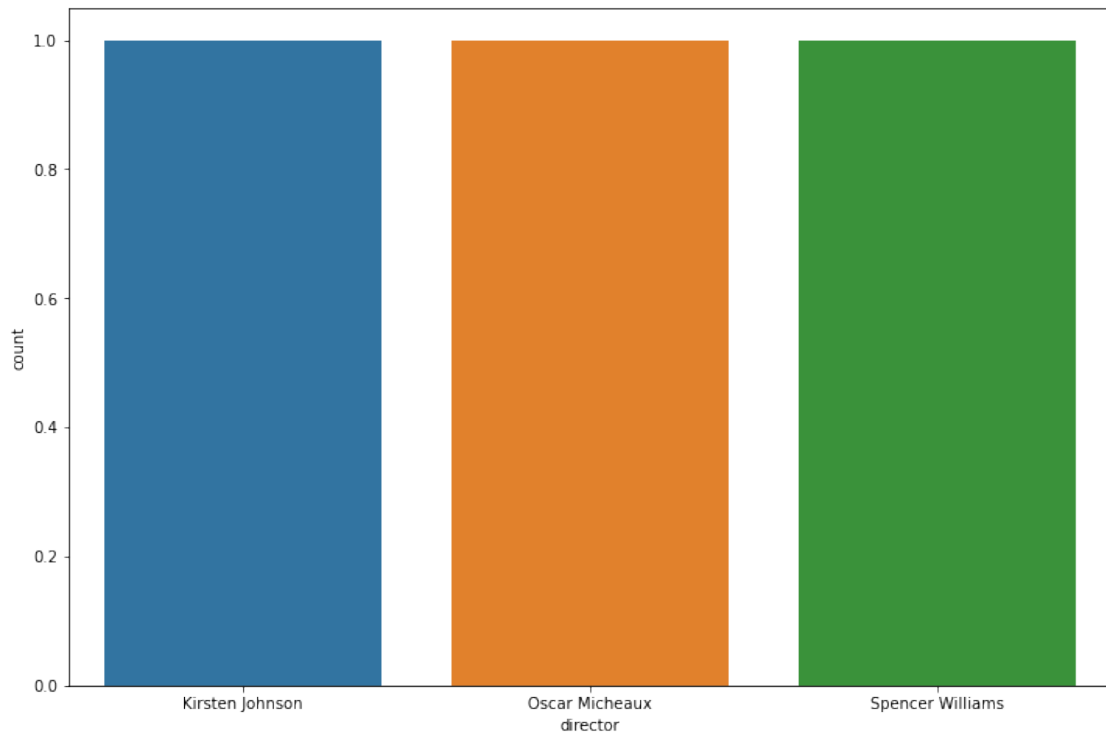
```
plt.figure(figsize=(12,8))  
Country=sns.countplot(x=df['country'].dropna(),order=df.country.value_  
counts().iloc[-1:-6:-1].index)
```



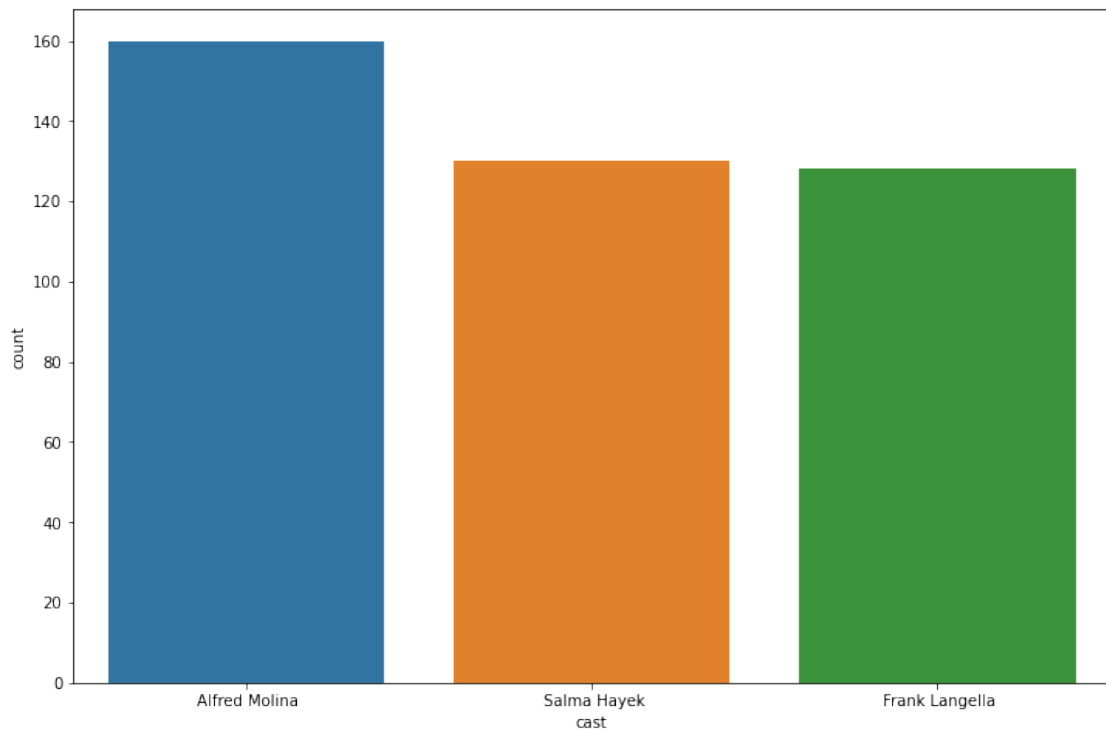
```
plt.figure(figsize=(12,8))
Director=sns.countplot(x=df['director'].dropna(),order=df.director.value_counts().iloc[:3].index)
```



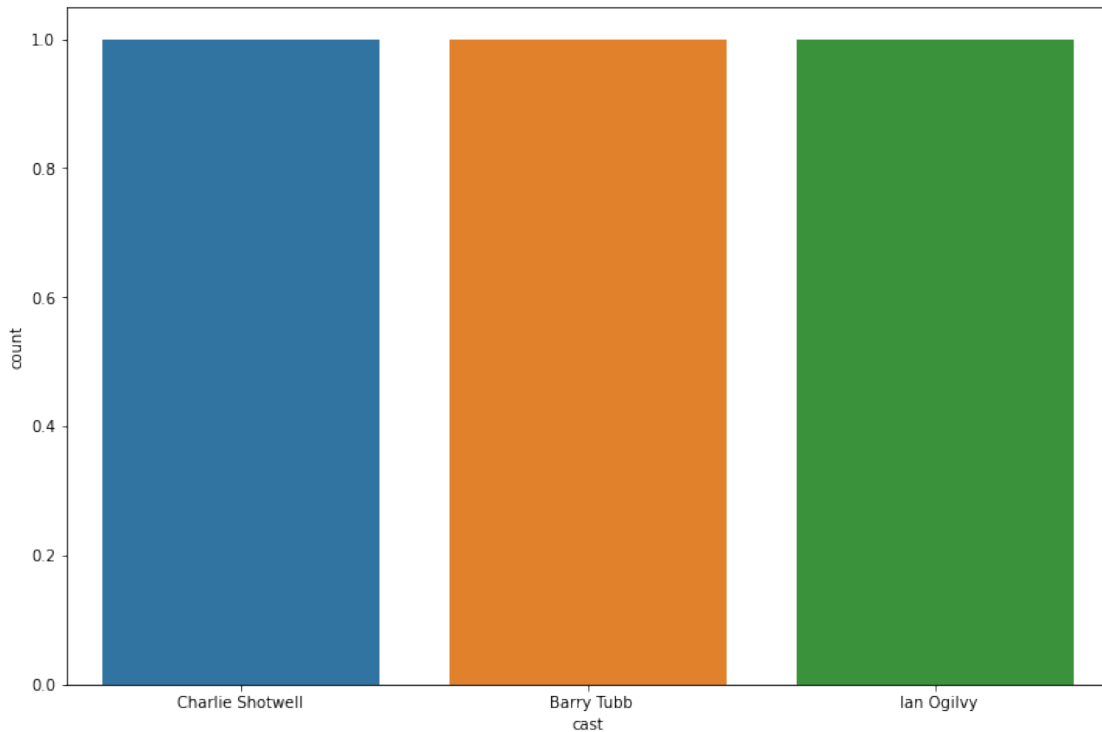
```
plt.figure(figsize=(12,8))
Director=sns.countplot(x=df['director'].dropna(),order=df.director.value_counts().iloc[-1:-4:-1].index)
```



```
plt.figure(figsize=(12,8))  
Cast=sns.countplot(x=df['cast'].dropna(),order=df.cast.value_counts().  
iloc[:3].index)
```



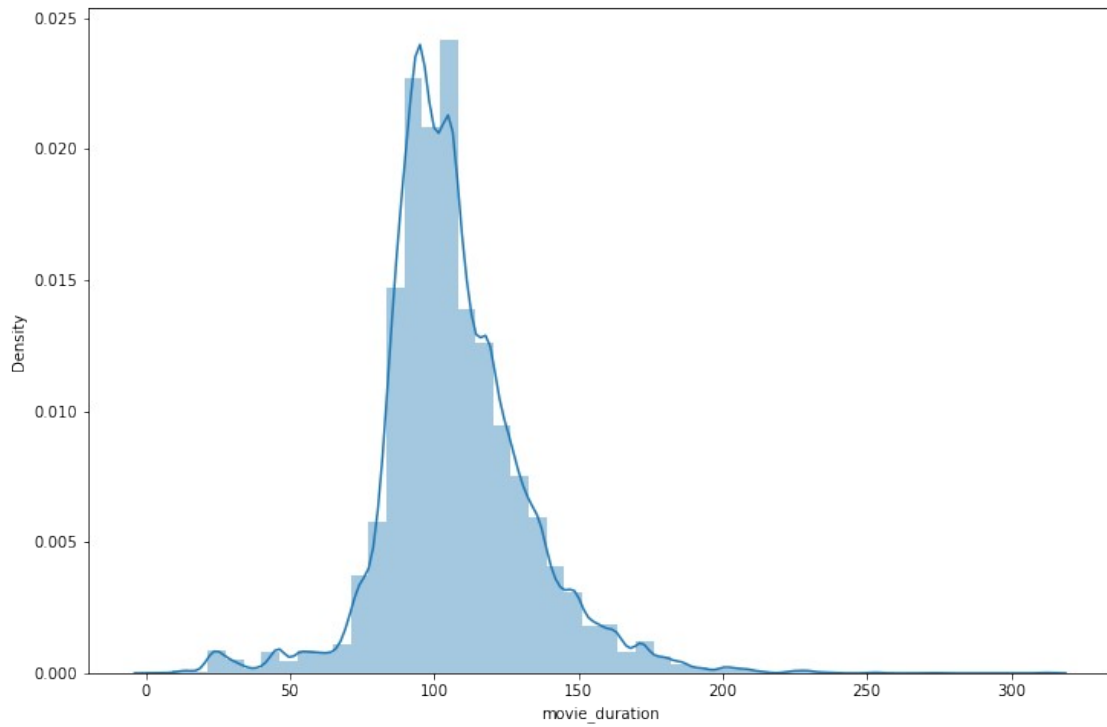
```
plt.figure(figsize=(12,8))
Cast=sns.countplot(x=df['cast'].dropna(),order=df.cast.value_counts().
iloc[-1:-4:-1].index)
```



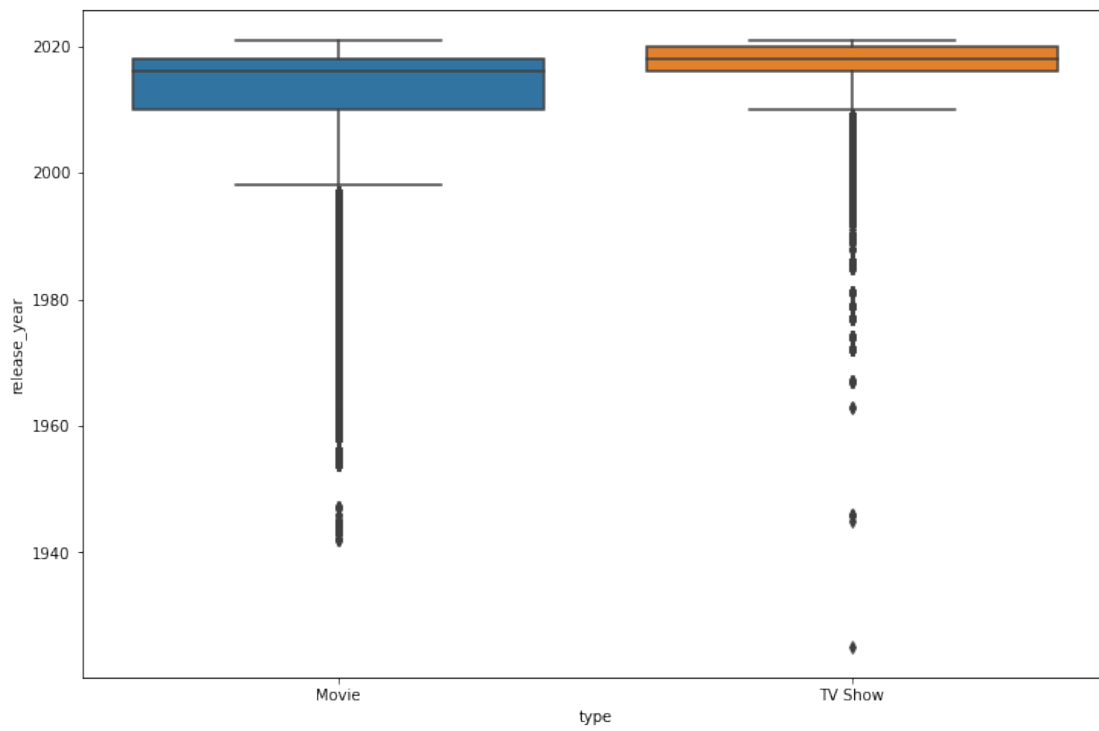
```
df['movie_duration']=df[df['type']=='Movie']['duration'].str.rsplit('
min').str[0]
```

```
plt.figure(figsize=(12,8))
Movie_duration=sns.distplot(df[df['type']=='Movie']
['movie_duration'].dropna())
```

C:\Users\rahul.kumar\Anaconda3\lib\site-packages\seaborn\
distributions.py:2619: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
warnings.warn(msg, FutureWarning)



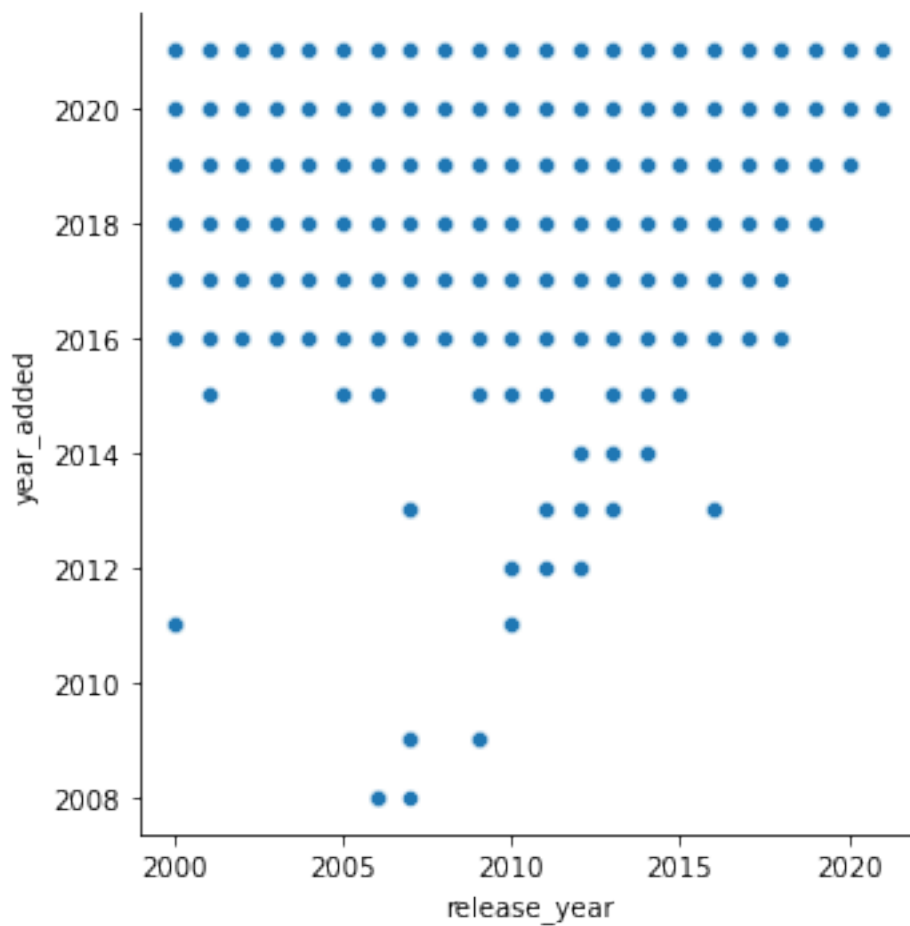
```
plt.figure(figsize=(12,8))
movies_tv_series = sns.boxplot(y=df['release_year'], x=df['type'])
```



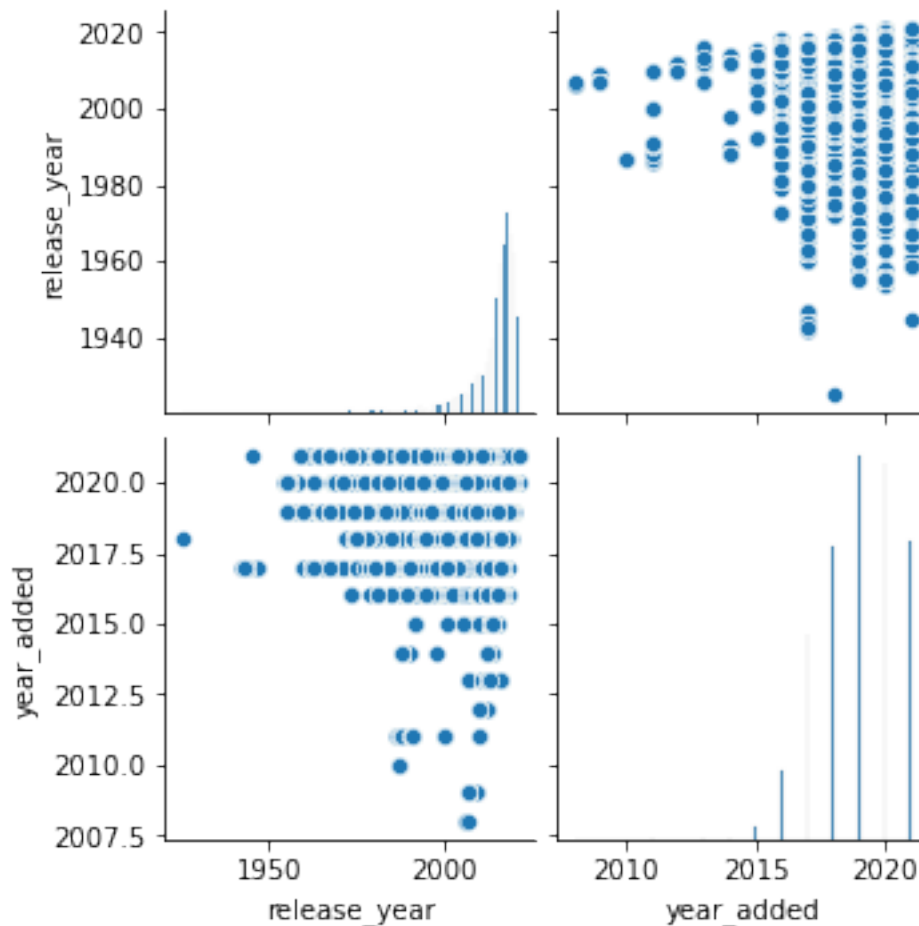
```
df_2000 = df[df['release_year']>=2000]
```



```
relation_date_added_release_year_after_2000=  
sns.relplot(x=df_2000['release_year'],y=df_2000['year_added'])
```



```
pair_plt=sns.pairplot(data=df)
```



5 : Missing Value & Outlier check (Treatment optional)

```
Toatl_Null = df.isna().sum().sum()
print(Toatl_Null)
```

121539

```
for i in range(df.shape[1]):
    print(df.keys()[i])
    print('No. of NaN :')
    print(df.iloc[:,i].isnull().sum())
```

```
print('.....')
print('.....')
```

```
show_id
No. of NaN :
0
```

```
.....
.....
```

type
No. of NaN :
0
.....
.....

title
No. of NaN :
0
.....
.....

director
No. of NaN :
50643
.....
.....

cast
No. of NaN :
2146
.....
.....

country
No. of NaN :
11897
.....
.....

date_added
No. of NaN :
158
.....
.....

release_year
No. of NaN :
0
.....
.....

rating
No. of NaN :
67
.....
.....

```

duration
No. of NaN :
3
.....
.....

listed_in
No. of NaN :
0
.....
.....

description
No. of NaN :
0
.....
.....

movie_duration
No. of NaN :
56151
.....
.....

month_added
No. of NaN :
158
.....
.....

day_added
No. of NaN :
158
.....
.....

year_added
No. of NaN :
158
.....
.....

for i in range(df.shape[1]):
    print(df.iloc[:,i].value_counts())

print('.....')
print()

```

s7165	700
s6985	504
s7516	468
s2554	416
s5306	378

...

s8174	1
s8176	1
s937	1
s3387	1
s1	1

Name: show_id, Length: 8807, dtype: int64

.....

.....

Movie	145843
TV Show	56148

Name: type, dtype: int64

.....

.....

Kahlil Gibran's The Prophet	700
Holidays	504
Movie 43	468
The Eddy	416
Narcos	378

...

Thackeray	1
The 2000s	1
Miniforce: Super Dino Power	1
Dancing with the Birds	1
Dick Johnson Is Dead	1

Name: title, Length: 8807, dtype: int64

.....

.....

Martin Scorsese	419
Youssef Chahine	409
Cathy Garcia-Molina	356
Steven Spielberg	355
Lars von Trier	336

...

Richard Maurice	1
Richard E. Norman	1
Spencer Williams	1
Oscar Micheaux	1
Kirsten Johnson	1

Name: director, Length: 4993, dtype: int64

.....

.....

Alfred Molina	160
Salma Hayek	130
Frank Langella	128
John Rhys-Davies	125
John Krasinski	121

...	
Greg Grunberg	1
Beatrice Rosen	1
Ian Ogilvy	1
Barry Tubb	1
Charlie Shotwell	1

Name: cast, Length: 39296, dtype: int64

.....

.....

United States	59349
India	22814
United Kingdom	12945
Japan	8679
France	8254

...	
Palestine	2
Kazakhstan	1
Nicaragua	1
United States,	1
Uganda	1

Name: country, Length: 127, dtype: int64

.....

.....

January 1, 2020	3730
November 1, 2019	2229
July 1, 2021	2219
October 1, 2017	1899
September 1, 2021	1756

...	
September 19, 2017	1
August 8, 2017	1
October 10, 2017	1
February 4, 2008	1
September 25, 2021	1

Name: date_added, Length: 1767, dtype: int64

.....

.....

2018	24414
2019	21931
2017	20516
2020	19679

2016 18465

...

1947 8

1946 6

1942 6

1943 5

1925 1

Name: release_year, Length: 74, dtype: int64

.....
.....

TV-MA 73867

TV-14 43931

R 25860

PG-13 16246

TV-PG 14926

PG 10919

TV-Y7 6304

TV-Y 3665

TV-G 2779

NR 1573

G 1530

NC-17 149

TV-Y7-FV 86

UR 86

74 min 1

84 min 1

66 min 1

Name: rating, dtype: int64

.....
.....

1 Season 35035

2 Seasons 9559

3 Seasons 5084

94 min 4343

106 min 4040

...

3 min 4

5 min 3

11 min 2

8 min 2

9 min 2

Name: duration, Length: 220, dtype: int64

.....
.....

International Movies 27109

Dramas 19635

Comedies 13894

Action & Adventure 12216
Dramas 10140

...
Stand-Up Comedy 24
Romantic Movies 20
TV Sci-Fi & Fantasy 7
LGBTQ Movies 5
Sports Movies 3
Name: listed_in, Length: 73, dtype: int64

.....
.....
A troubled young girl and her mother find solace on a journey with a
subversive poet whose words captivate their hearts and imaginations.
700

Eight gleefully grim short tales set on Halloween, Mother's Day, St.
Patrick's Day and other holidays comprise this chilling horror
anthology. 504

An eye-popping cast stars in this sketch-comedy collage, the new
millennium's homage to classic anthology films like The Kentucky Fried
Movie. 468

The owner of a Paris jazz club gets tangled up with dangerous
criminals as he fights to protect his business, his band and his
teenage daughter. 416

The true story of Colombia's infamously violent and powerful drug
cartels fuels this gritty gangster drama series.
378

...
From public protests to viral movements, the aftermath of the R. Kelly
docuseries is explored in this special featuring journalists and
experts. 1

Comedic breakout Tiffany Haddish delivers a riotous stand-up ripe with
the unpretentious and filthy tales of her meteoric rise to stardom.
1

This documentary explores the challenging, transformative world of
high-intensity fitness programs through the eyes of the people who've
embraced them. 1

According to the research of two food scientists, the popularity of
processed foods has led to epidemic rates of obesity, diabetes and
other diseases. 1

As her father nears the end of his life, filmmaker Kirsten Johnson
stages his death in inventive and comical ways to help them both face
the inevitable. 1

Name: description, Length: 8775, dtype: int64

.....
.....
94 4343
106 4040


```
97      3624
95      3560
96      3484
```

```
...
20      4
5       3
9       2
8       2
11      2
```

Name: movie_duration, Length: 205, dtype: int64

```
.....
.....
```

```
July      20276
December  18266
January   18254
September 18119
October   17769
August    17086
April     17081
June      16659
March     15841
November  15595
May       13827
February  13060
```

Name: month_added, dtype: int64

```
.....
.....
```

```
Friday    58025
Thursday   33414
Wednesday 28934
Tuesday    23975
Saturday   19252
Sunday     19246
Monday     18987
```

Name: day_added, dtype: int64

```
.....
.....
```

```
2019.0    46970
2020.0    46025
2021.0    36516
2018.0    35784
2017.0    25209
2016.0     8569
2015.0     1560
2014.0       450
2011.0       438
2013.0       207
```

```

2012.0      36
2009.0      30
2010.0      20
2008.0      19
Name: year_added, dtype: int64
.....
.....

```

```
print(df.loc[:, 'rating'].value_counts())
```

```

TV-MA      73867
TV-14      43931
R          25860
PG-13      16246
TV-PG      14926
PG         10919
TV-Y7       6304
TV-Y        3665
TV-G        2779
NR          1573
G           1530
NC-17       149
TV-Y7-FV     86
UR           86
74 min       1
84 min       1
66 min       1

```

```
Name: rating, dtype: int64
```

```
'''In rating 74 min, 84 min & 66 min are not correct values'''
```

```
'In rating 74 min, 84 min & 66 min are not correct values'
```

6 : Insights based on Non-Graphical and Visual Analysis

```
# 6.1 : Comments on the range of attributes
```

```
'''
```

- 1. This dataset has covered data of Netflix for the past 100 years.*
- 2. Netflix is having contents from 170 countries.*
- 3. listed Movies/TV series has covered 39000+ casts and around 5000 directors.*

```
'''
```

```

'\n1. This dataset has covered data of Netflix for the past 100 years.\n
n2. Netflix is having contents from 170 countries.\n
n3. listed Movies/TV series has covered 39000+ casts and around 5000 directors.\n'

```

```
# 6.2 : Comments on the distribution of the variables and relationship between them
```

'''

1. In this dataset, maximum Movies are from 1998-2020
2. In this dataset, maximum TV Series are from 2010-2020
3. Maximum shows added in netflix platform after 2015

'''

'\n1. In this dataset, maximum Movies are from 1998-2020\n2. In this dataset, maximum TV Series are from 2010-2020\n3. Movies that are released after 2010, \n\n'

6.3 : Comments for each univariate and bivariate plot

'''

1. This dataset is having 70% Movies and 30% TV Shows.
2. International movies, Drama and Comedy are top genres.
3. With respect to show added in Netflix Platform, July & December are peak months.
4. USA, India & UK are top 3 contributors.
5. Mean Duration of Movie is around 100 min.
6. Most TV Shows are released/created after 2010

'''

'\n1. This dataset is having 70% Movies and 30% TV Shows.\n2. International movies, Drama and Comedy are top genres.\n3. With respect to show added in Netflix Platform, July & December are peak months.\n4. USA, India & UK are top 3 contributors.\n5. Mean Duration of Movie is around 100 min.\n6. Most TV Shows are released/created after 2010\n'

7 : Business Insights

'''

1. Tv Show are getting more popular from the past 10 years as it covers many local casts and cost of making is less as compared to movies.
2. Maximum movies duration is around 100 mins as most people don't prefer watch more than 3 hour movies.
3. U.S.A, India, U.K., Japan & France are top contributors as these countries are in top 10 economies of the world and also high perecntage of population.
4. Mostly TV Shows are added in Netfix Platform in December as chritmas week leave in most western countries.
5. After 2015, Maximum shows are added in Netflix as 00T platform got more popularity rom last 10 years.

'''

8 : Recommendations

'''

1. As we can see a transition of customers from Movies to TV Shows, So Netflix needs to aggressively add new upcoming TV Shows.
 2. To leverage more customer base, short movies needs to be included.
 3. Netflix needs to find a way to include China as it is world's 2nd largest economy and population.
 4. During November & December, need to launch discount to leverage more customers.
 5. Netflix needs to be prepared for more customer base by increasing server capacity for seamless service.
- '''