

1. Import Libraries

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

2. Load Dataset

```
df = pd.read_csv("Netflix Dataset.csv")
```

3. Dataset overview

```
df.shape
(7789, 11)

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

df.isna().sum()

Show_Id          0
Category         0
Title            0
Director        2388
Cast             718
Country          507
Release_Date     10
Rating            7
Duration          0
Type              0
Description        0
dtype: int64

df.dropna(inplace=True)

df.isna().sum()

Show_Id          0
Category         0
```

```

Title          0
Director       0
Cast           0
Country         0
Release_Date   0
Rating          0
Duration        0
Type            0
Description     0
dtype: int64

df.shape

(4811, 11)

df.describe()

      Show_Id Category      Title          Director      Cast
\count      4811        4811      4811                  4811        4811
unique      4809          2      4809                  3614        4689
top          s684      Movie  Backfire  Raúl Campos, Jan Suter  Samuel West
freq          2        4675          2                      18          10

      Country      Release_Date Rating Duration \
count      4811          4811      4811      4811
unique      544          1291      14      195
top          United States January 1, 2020  TV-MA      93 min
freq          1655          100      1668      121

      Type \
count      4811
unique      324
top          Dramas, International Movies
freq          306

      Description
count          4811
unique          4804
top          When Elastigirl gets recruited for a high-prof...
freq              2

df.head(5)

      Show_Id Category      Title          Director \
1          s2      Movie  07:19  Jorge Michel Grau
2          s3      Movie  23:59      Gilbert Chan

```

```

3      s4    Movie     9      Shane Acker
4      s5    Movie    21      Robert Luketic
5      s6  TV Show    46      Serdar Akar

                                         Cast          Country \
1 Demián Bichir, Héctor Bonilla, Oscar Serrano, ...      Mexico
2 Tedd Chan, Stella Chung, Henley Hii, Lawrence ...      Singapore
3 Elijah Wood, John C. Reilly, Jennifer Connolly... United States
4 Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar... United States
5 Erdal Beşikçioğlu, Yasemin Allen, Melis Birkan... Turkey

                                         Release_Date Rating Duration \
1 December 23, 2016   TV-MA    93 min
2 December 20, 2018      R    78 min
3 November 16, 2017  PG-13    80 min
4 January 1, 2020   PG-13   123 min
5       July 1, 2017   TV-MA  1 Season

                                         Type \
1           Dramas, International Movies
2           Horror Movies, International Movies
3 Action & Adventure, Independent Movies, Sci-Fi...
4                   Dramas
5 International TV Shows, TV Dramas, TV Mysteries

                                         Description
1 After a devastating earthquake hits Mexico Cit...
2 When an army recruit is found dead, his fellow...
3 In a postapocalyptic world, rag-doll robots hi...
4 A brilliant group of students become card-coun...
5 A genetics professor experiments with a treatm...

cols=['Show_Id', 'Category', 'Title', 'Director', 'Cast', 'Country',
      'Release_Date', 'Rating', 'Duration', 'Type', 'Description']

for col in cols:
    print(df[col].value_counts())
    print("----"*5)

Show_Id
s684      2
s6621      2
s9         1
s10         1
s7733      1
..
s7779      1
s7781      1
s7782      1
s7783      1

```

```
s7      1
Name: count, Length: 4809, dtype: int64
-----
Category
Movie      4675
TV Show    136
Name: count, dtype: int64
-----
Title
Backfire      2
The Lost Okoroshi  2
706           1
1920          1
You're My Boss  1
...
Zombieland     1
Zoo            1
Zoom           1
Zozo           1
122            1
Name: count, Length: 4809, dtype: int64
-----
Director
Raúl Campos, Jan Suter    18
Marcus Raboy               15
Jay Karas                  14
Cathy Garcia-Molina        13
Youssef Chahine             12
...
Liu Kuang-hui               1
Kenneth Gyang                1
Abu Bakr Shawky             1
Paul Greengrass              1
John Suits                  1
Name: count, Length: 3614, dtype: int64
-----
Cast
Samuel West
10
Jeff Dunham
7
Kevin Hart
6
Jim Gaffigan
5
Bill Burr
5
...
..
```

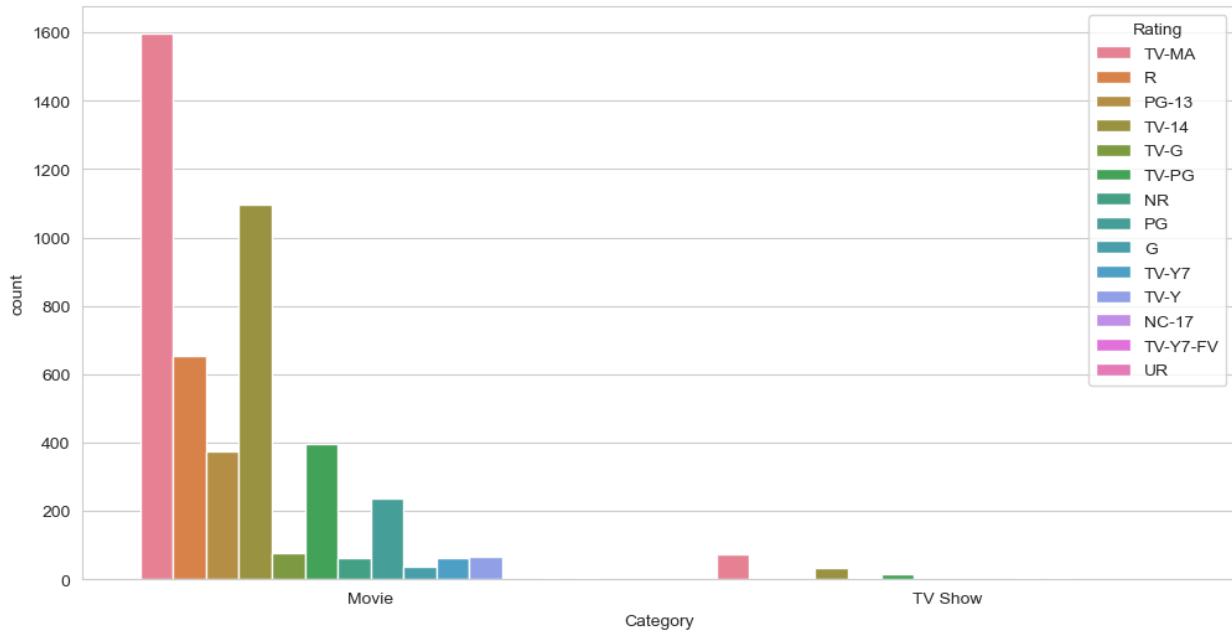
```
Jesse Eisenberg, Woody Harrelson, Emma Stone, Abigail Breslin, Amber Heard, Bill Murray, Derek Graf
1
Shashank Arora, Shweta Tripathi, Rahul Kumar, Gopal K. Singh, Yogesh Kurme, Prince Daniel
1
Tim Allen, Courteney Cox, Chevy Chase, Kate Mara, Ryan Newman, Michael Cassidy, Spencer Breslin, Rip Torn, Kevin Zegers
1
Imad Creidi, Antoinette Turk, Elias Gergi, Carmen Lebbos, Viktor Axelsson, Charbel Iskandar, Yasmine Awad
1
Adil Hussain, Mona Singh, K.K. Raina, Sanjay Mishra, Anil Rastogi, Ravi Jhankal, Kulbhushan Kharbanda, Ekavali Khanna, Mukesh Tiwari, Vinod Acharya    1
Name: count, Length: 4689, dtype: int64
-----
Country
United States          1655
India                  832
United Kingdom         174
Canada                 104
Egypt                  87
...
Switzerland, United Kingdom, United States          1
United Kingdom, Germany, United Arab Emirates, New Zealand 1
United Kingdom, Egypt, United States               1
United States, France, Canada, Belgium            1
United States, Belgium, Canada                   1
Name: count, Length: 544, dtype: int64
-----
Release_Date
January 1, 2020      100
November 1, 2019     70
March 1, 2018        67
December 31, 2019    64
October 1, 2018      61
...
October 25, 2015      1
April 2, 2020        1
July 24, 2017        1
February 25, 2018    1
August 14, 2019      1
Name: count, Length: 1291, dtype: int64
-----
Rating
TV-MA                1668
TV-14                1133
R                   654
```

```
TV-PG      413
PG-13      375
PG         238
TV-G        80
TV-Y        71
TV-Y7       69
NR          62
G           38
UR          5
TV-Y7-FV    3
NC-17       2
Name: count, dtype: int64
-----
Duration
93 min     121
94 min     120
90 min     114
95 min     111
97 min     108
...
253 min     1
190 min     1
17 min      1
203 min     1
191 min     1
Name: count, Length: 195, dtype: int64
-----
Type
Dramas, International Movies                  306
Stand-Up Comedy                               276
Comedies, Dramas, International Movies       237
Dramas, Independent Movies, International Movies 213
Children & Family Movies, Comedies            158
...
Crime TV Shows, TV Action & Adventure, TV Sci-Fi & Fantasy   1
Anime Series, International TV Shows, Spanish-Language TV Shows 1
LGBTQ Movies, Thrillers                         1
Action & Adventure, Sports Movies               1
Crime TV Shows, Romantic TV Shows, TV Dramas      1
Name: count, Length: 324, dtype: int64
-----
Description
When Elastigirl gets recruited for a high-profile crime-fighting
mission, Mr. Incredible takes on his toughest assignment ever: full-
time parenting.          2
When two would-be robbers accidentally kill a made man, they find
themselves on the run from the South Philly Italian mob.
2
A scheming matriarch plots to cut off her disabled stepson and his
```

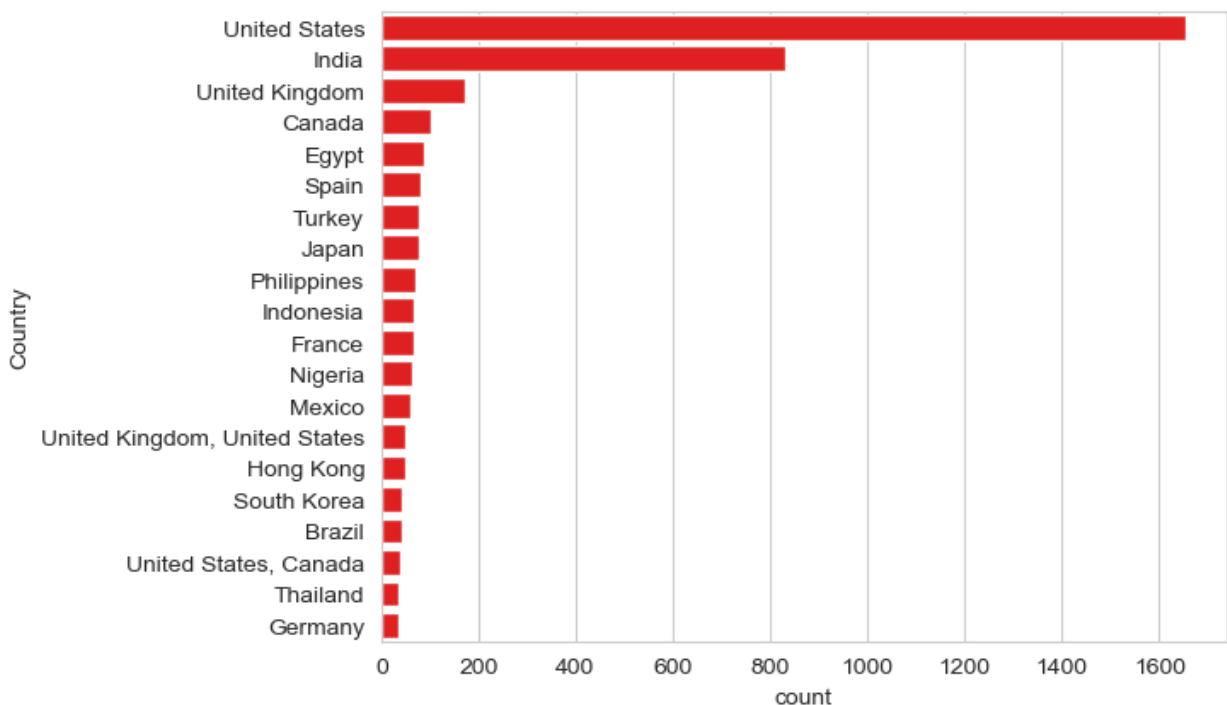
```
wife from the family fortune, creating a division within the clan.  
2  
When pretty new neighbor Seema falls for their shy roommate Sid,  
jealous womanizers Omi and Jai plot to break up the new lovebirds.  
2  
Secrets bubble to the surface after a sensual encounter and an  
unforeseen crime entangle two friends and a woman caught between them.  
2  
  
..  
Looking to survive in a world taken over by zombies, a dorky college  
student teams with an urban roughneck and a pair of grifter sisters.  
1  
A drug dealer starts having doubts about his trade as his brother, his  
client, and two rappers from the slums each battle their own secret  
addictions. 1  
Dragged from civilian life, a former superhero must train a new crop  
of youthful saviors when the military preps for an attack by a  
familiar villain. 1  
When Lebanon's Civil War deprives Zozo of his family, he's left with  
grief and little means as he escapes to Sweden in search of his  
grandparents. 1  
As a grisly virus rampages a city, a lone man stays locked inside his  
apartment, digitally cut off from seeking help and desperate to find a  
way out. 1  
Name: count, Length: 4804, dtype: int64  
-----
```

4.data visualization

```
plt.figure(figsize=(12,6))  
sns.countplot(x=df['Category'],hue=df['Rating'])  
<Axes: xlabel='Category', ylabel='count'>
```



```
top_cats = df['Country'].value_counts().head(20).index
sns.countplot(y='Country', data=df[df['Country'].isin(top_cats)],
order=top_cats,color='red')
plt.show()
```



```
df['Duration_num'] = df['Duration'].astype(str).str.extract('(\d+)').astype(float)
```

```

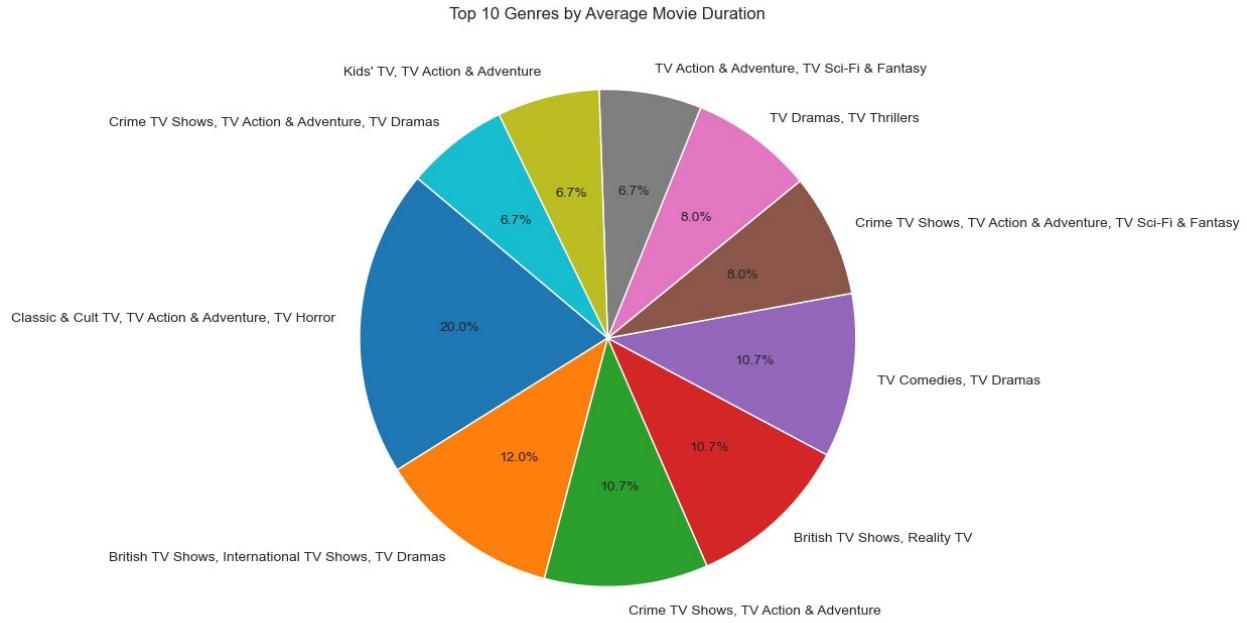
mean_duration = df.loc[df['Duration'].str.contains('min', na=False),
'Duration_num'].mean()
def convert_duration(x):
    if pd.isna(x):
        return np.nan
    x = str(x)
    if 'min' in x:
        return int(x.replace('min', '')).strip()
    elif 'Season' in x:
        # Extract the number before 'Season(s)' (default 1 if not
        present)
        n_seasons = int(''.join(filter(str.isdigit, x)) or 1)
        return n_seasons * mean_duration
    else:
        return np.nan
df['Duration_final'] = df['Duration'].apply(convert_duration)
df = df.dropna(subset=['Duration_final']).reset_index(drop=True)
print(df[['Duration', 'Duration_final']])

      Duration Duration_final
0      93 min      93.000000
1      78 min      78.000000
2      80 min      80.000000
3     123 min     123.000000
4     1 Season     102.396791
...
4806    ... ...
4807    88 min      88.000000
4807    94 min      94.000000
4808    88 min      88.000000
4809    99 min      99.000000
4810   111 min     111.000000

[4811 rows x 2 columns]

avg_duration = df.groupby('Type')['Duration_final'].mean()
top_n = 10
avg_duration = avg_duration.sort_values(ascending=False).head(top_n)
plt.figure(figsize=(8, 8))
plt.pie(avg_duration, labels=avg_duration.index, autopct='%.1f%%',
startangle=140)
plt.title(f'Top {top_n} Genres by Average Movie Duration')
plt.show()

```



```
top_country=df.groupby('Category')['Country']
top_country.value_counts()

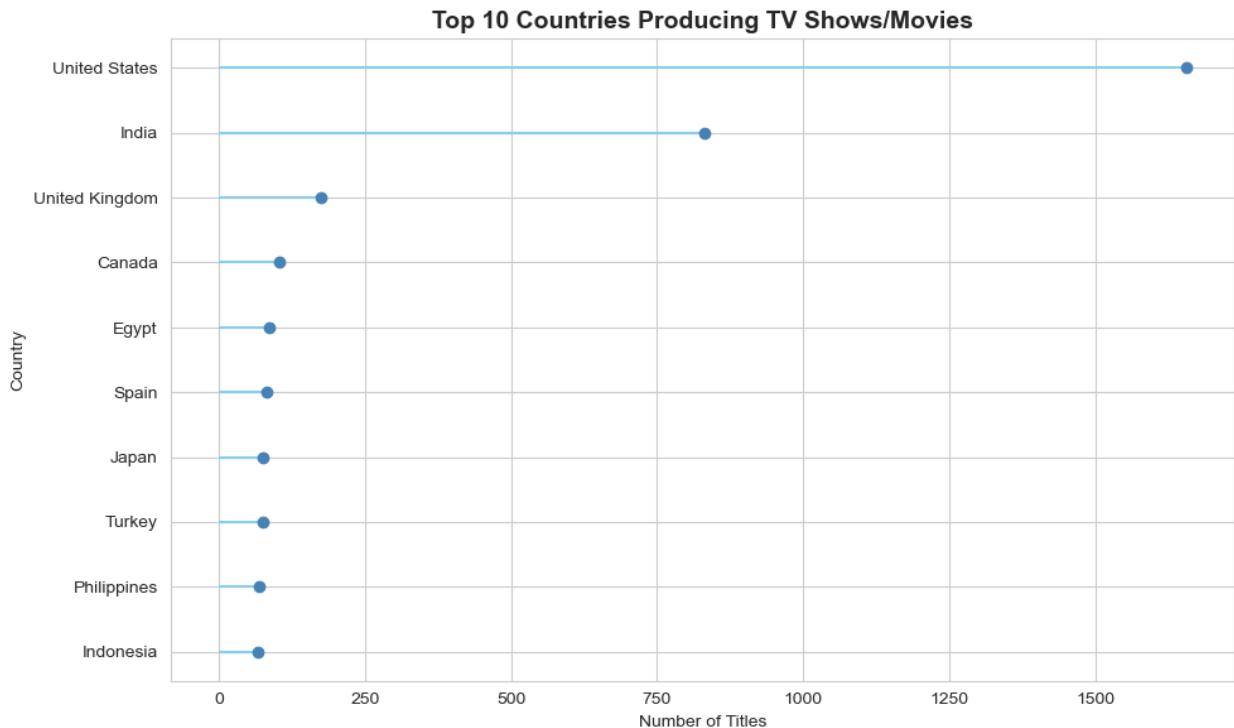
Category    Country
Movie      United States
1628
          India
827
          United Kingdom
155
          Canada
101
          Egypt
87

...
TV Show   United Kingdom, Germany, United States, France
1
          United Kingdom, Ireland, United States
1
          United Kingdom, United States, Spain, Germany, Greece,
Canada    1
          United States, Ireland
1
          United States, Israel, Italy, South Africa
1
Name: count, Length: 576, dtype: int64
```

```

country_count = df['Country'].value_counts().head(10).reset_index()
country_count.columns = ['Country', 'Count']
plt.figure(figsize=(10,6))
sns.set_style("whitegrid")
country_count = country_count.sort_values('Count')
plt.hlines(y=country_count['Country'], xmin=0,
xmax=country_count['Count'], color='skyblue')
plt.plot(country_count['Count'], country_count['Country'], "o",
color='steelblue')
plt.title("Top 10 Countries Producing TV Shows/Movies", fontsize=14,
weight='bold')
plt.xlabel("Number of Titles")
plt.ylabel("Country")
plt.tight_layout()
plt.show()

```

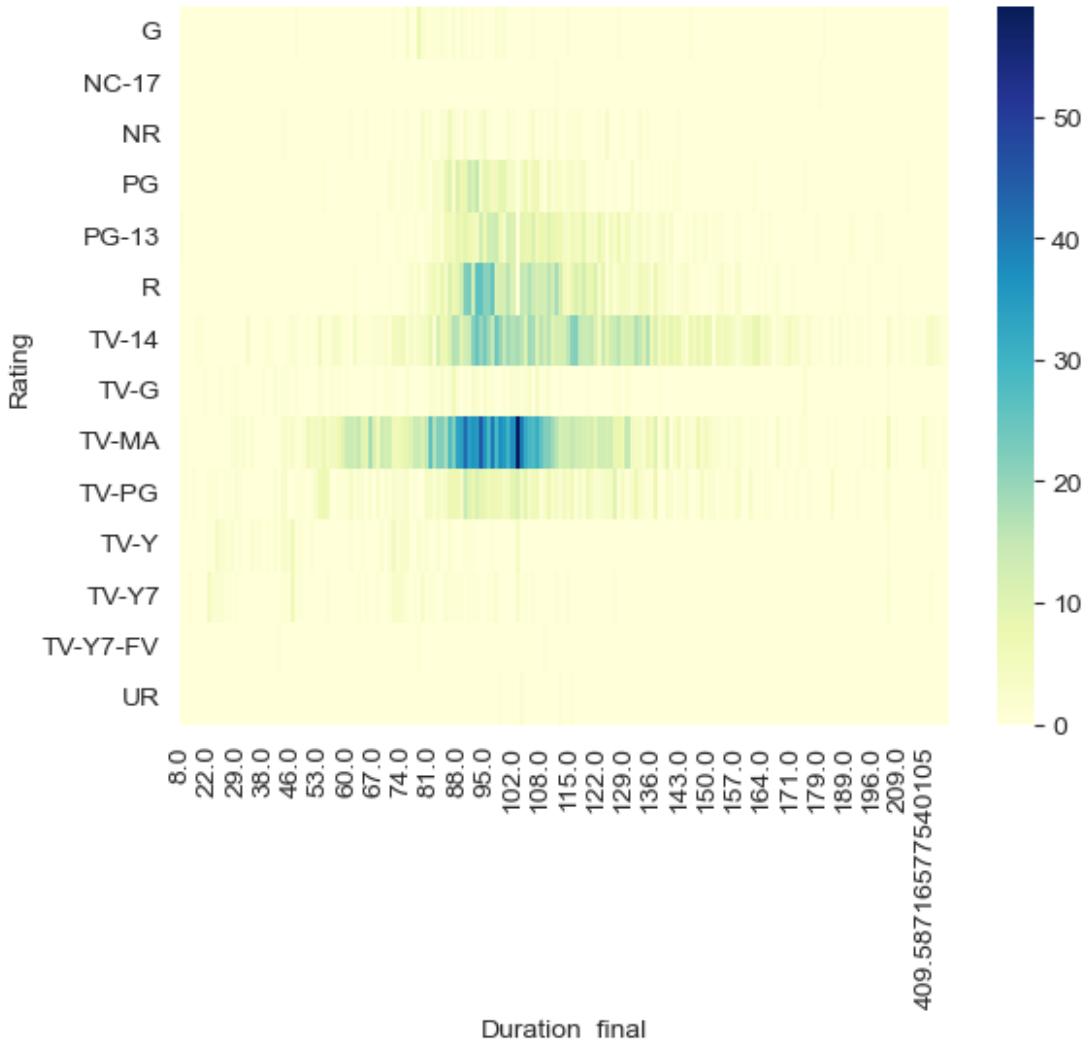


```

heat_data =
df.groupby(['Rating','Duration_final']).size().unstack(fill_value=0)
sns.heatmap(heat_data, cmap='YlGnBu')

<Axes: xlabel='Duration_final', ylabel='Rating'>

```



```

df['Release_Date'] = pd.to_datetime(df['Release_Date'], format='%B %d, %Y', errors='coerce')

# Extract year
df['Year'] = df['Release_Date'].dt.year

# Drop rows where Year couldn't be parsed
df = df.dropna(subset=['Year'])

# Group and count titles per year and type
yearly = df.groupby(['Year', 'Type']).size().reset_index(name='Count')

# Plot
plt.figure(figsize=(10,6))
sns.set_style("whitegrid")

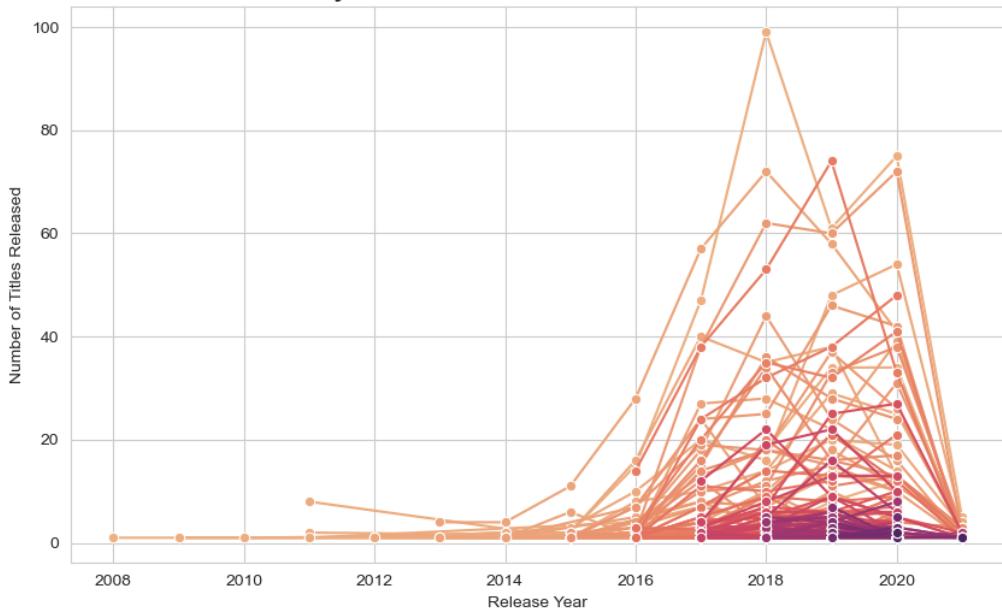
sns.lineplot(
    data=yearly,
    x='Year',
    y='Count',
    hue='Type'
)

```

```
x='Year',
y='Count',
hue='Type',
marker='o',
palette='flare'
)

plt.title("Yearly Trend of Movies vs TV Shows on Netflix",
fontsize=14, weight='bold')
plt.xlabel("Release Year")
plt.ylabel("Number of Titles Released")
plt.legend(
    title='Type',
    loc='upper center',      # Centered horizontally
    bbox_to_anchor=(0.5, -0.15), # Move below the plot
    ncol=2,                  # Two columns (Movies | TV Shows)
    frameon=False
)
plt.tight_layout()
plt.show()
```

Yearly Trend of Movies vs TV Shows on Netflix



- Dramas, Independent Movies, Thrillers
- Dramas, International Movies
- Horror Movies
- Cult Movies, Horror Movies
- Children & Family Movies, Dramas, Faith & Spirituality
- Dramas
- Dramas, Sports Movies
- Dramas, Thrillers
- Children & Family Movies, Comedies
- Comedies
- Documentaries
- Children & Family Movies, Comedies, Music & Musicals
- Children & Family Movies, Documentaries, Sports Movies
- Crime TV Shows, International TV Shows, TV Dramas
- Stand-Up Comedy
- Action & Adventure, Sci-Fi & Fantasy
- Children & Family Movies
- Children & Family Movies, Sci-Fi & Fantasy
- Documentaries, International Movies
- Documentaries, Sports Movies
- Movies
- Action & Adventure, Comedies
- Action & Adventure, Dramas, International Movies
- British TV Shows, Docuseries, International TV Shows
- Children & Family Movies, Comedies, Sports Movies
- Children & Family Movies, Music & Musicals
- Comedies, Dramas, Independent Movies
- Comedies, Dramas, International Movies
- Comedies, Dramas, LGBTQ Movies
- Comedies, Independent Movies
- Comedies, International Movies
- Comedies, Music & Musicals
- Documentaries, Music & Musicals
- Documentaries, Stand-Up Comedy
- Dramas, Independent Movies
- Dramas, Independent Movies, Romantic Movies
- Dramas, Independent Movies, Sci-Fi & Fantasy
- Dramas, International Movies, Thrillers
- Horror Movies, Independent Movies, Thrillers
- TV Horror, TV Mysteries, TV Thrillers
- Action & Adventure
- Action & Adventure, Anime Features, International Movies
- Action & Adventure, Anime Features, Sci-Fi & Fantasy

- Type**
- Action & Adventure, Comedies, Horror Movies
- Action & Adventure, Comedies, Sci-Fi & Fantasy
- Action & Adventure, Cult Movies, Sci-Fi & Fantasy
- Action & Adventure, Dramas
- Action & Adventure, Dramas, Faith & Spirituality
- Action & Adventure, Dramas, Sci-Fi & Fantasy
- Action & Adventure, Faith & Spirituality, Sci-Fi & Fantasy
- Action & Adventure, Horror Movies
- Action & Adventure, Horror Movies, Independent Movies
- Action & Adventure, Horror Movies, Sci-Fi & Fantasy
- Action & Adventure, International Movies, Sports Movies
- Anime Features, Children & Family Movies, International Movies
- Anime Features, International Movies, Romantic Movies
- Anime Series, International TV Shows, TV Horror
- British TV Shows, International TV Shows, Stand-Up Comedy & Talk Shows
- British TV Shows, Kids' TV
- Children & Family Movies, Comedies, Dramas
- Children & Family Movies, Comedies, Sci-Fi & Fantasy
- Children & Family Movies, Dramas, Independent Movies
- Children & Family Movies, Dramas, International Movies
- Children & Family Movies, Faith & Spirituality
- Classic Movies, Comedies, Cult Movies
- Comedies, Cult Movies
- Comedies, Cult Movies, Horror Movies
- Comedies, Cult Movies, International Movies
- Comedies, Documentaries
- Comedies, Faith & Spirituality, International Movies
- Crime TV Shows, Docuseries
- Cult Movies, Horror Movies, Independent Movies
- Cult Movies, Independent Movies, Thrillers
- Documentaries, Faith & Spirituality
- Documentaries, LGBTQ Movies
- Dramas, Faith & Spirituality, Independent Movies
- Dramas, Faith & Spirituality, International Movies
- Dramas, Independent Movies, Music & Musicals
- Dramas, Independent Movies, Sports Movies
- Dramas, International Movies, Sci-Fi & Fantasy
- Dramas, Music & Musicals, Sports Movies
- Dramas, Romantic Movies, Sci-Fi & Fantasy
- Dramas, Sci-Fi & Fantasy
- Dramas, Sci-Fi & Fantasy, Thrillers
- Horror Movies, Independent Movies, Sci-Fi & Fantasy
- Horror Movies, International Movies, Sci-Fi & Fantasy

```
sns.catplot(data=df, x='Rating', kind='count', hue='Type',  
            col='Country', col_wrap=3, height=3, aspect=1.2,  
            palette='crest')
```