# netflix-data-analysis-and-visual

October 25, 2024

## 1 Netflix Data: Cleaning, Analysis and Visualization

## 2 Introduction:

This project focused on cleaning, analyzing, and visualizing Netflix data using Python and SQL. Insights were derived by querying and structuring content by attributes like type and country. Data analysis revealed trends, patterns, and essential metrics within the Netflix dataset. For visualization, Python libraries such as pandas, matplotlib, and seaborn were employed, offering a detailed overview of Netflix's content distribution and statistics.

## 3 Importing Libraries:

[2]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import mysql.connector
import numpy as np

db = mysql.connector.connect(host = "localhost",
                             username = "root",
                             password = "1012",
                             database = "netflix")
cur = db.cursor()
```

## 4 Importing Dataset:

[3]:
```
data = pd.read_csv("D:\Data Analysis\unfied mentor internship/netflix1.csv")
data.head(10)
```

[3]:
```
  show_id show_type                         show_title           director  \
0      s1     Movie               Dick Johnson Is Dead    Kirsten Johnson
1      s3   TV Show                          Ganglands    Julien Leclercq
2      s6   TV Show                      Midnight Mass      Mike Flanagan
3     s14     Movie  Confessions of an Invisible Girl      Bruno Garotti
4      s8     Movie                            Sankofa       Haile Gerima
5      s9   TV Show     The Great British Baking Show    Andy Devonshire
```

```
6     s10     Movie                      The Starling       Theodore Melfi
7    s939     Movie   Motu Patlu in the Game of Zones          Suhas Kadav
8     s13     Movie                      Je Suis Karl  Christian Schwochow
9    s940     Movie          Motu Patlu in Wonderland          Suhas Kadav

          country  date_added  release_year rating   duration  \
0   United States   9/25/2021          2020  PG-13     90 min
1          France   9/24/2021          2021  TV-MA   1 Season
2   United States   9/24/2021          2021  TV-MA   1 Season
3          Brazil   9/22/2021          2021  TV-PG     91 min
4   United States   9/24/2021          1993  TV-MA    125 min
5  United Kingdom   9/24/2021          2021  TV-14  9 Seasons
6   United States   9/24/2021          2021  PG-13    104 min
7           India  05-01-2021          2019  TV-Y7     87 min
8         Germany   9/23/2021          2021  TV-MA    127 min
9           India  05-01-2021          2013  TV-Y7     76 min

                                           listed_in
0                                      Documentaries
1  Crime TV Shows, International TV Shows, TV Act…
2                  TV Dramas, TV Horror, TV Mysteries
3                  Children & Family Movies, Comedies
4   Dramas, Independent Movies, International Movies
5                        British TV Shows, Reality TV
6                                    Comedies, Dramas
7  Children & Family Movies, Comedies, Music & Mu…
8                        Dramas, International Movies
9          Children & Family Movies, Music & Musicals
```

## 5 About Dataset

[4]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8790 entries, 0 to 8789
Data columns (total 10 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   show_id       8790 non-null   object
 1   show_type     8790 non-null   object
 2   show_title    8790 non-null   object
 3   director      8790 non-null   object
 4   country       8790 non-null   object
 5   date_added    8790 non-null   object
 6   release_year  8790 non-null   int64
 7   rating        8790 non-null   object
 8   duration      8790 non-null   object
 9   listed_in     8790 non-null   object
dtypes: int64(1), object(9)
memory usage: 686.8+ KB
```

## 6 Count the Number of Movies and TV Shows.

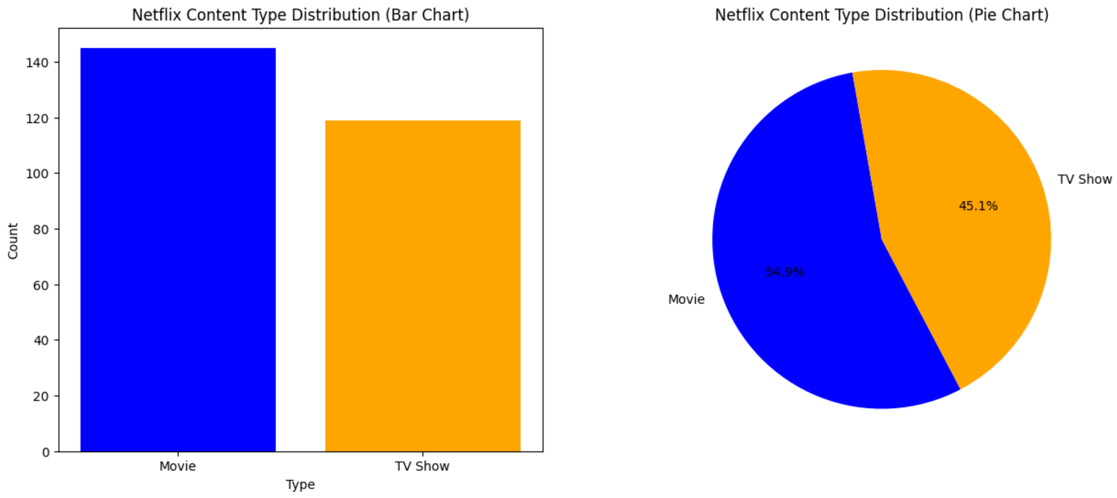
[5]:
```
query = """SELECT show_type, COUNT(*) AS count
FROM netflix1
GROUP BY Show_type"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Type","Count"])
df
```

[5]:
```
      Type  Count
0    Movie    145
1  TV Show    119
```

[6]:
```
fig, axes = plt.subplots(nrows=1, ncols=2, figsize=(15, 6))

# Bar Chart
colors = ['blue', 'orange',]
axes[0].bar(df['Type'], df['Count'], color=colors)
axes[0].set_xlabel('Type')
axes[0].set_ylabel('Count')
axes[0].set_title('Netflix Content Type Distribution (Bar Chart)')

# Pie Chart
colors = ['blue', 'orange']  # Customize colors as needed
explode = (0.1, 0)  # Explode the first slice
axes[1].pie(df['Count'], labels=df['Type'], colors=colors, autopct='%1.1f%%',␣
 ↪startangle=100)
axes[1].set_title('Netflix Content Type Distribution (Pie Chart)')
plt.show()
```



## 7 Finding the Most Common Genre Combinations.

[7]:

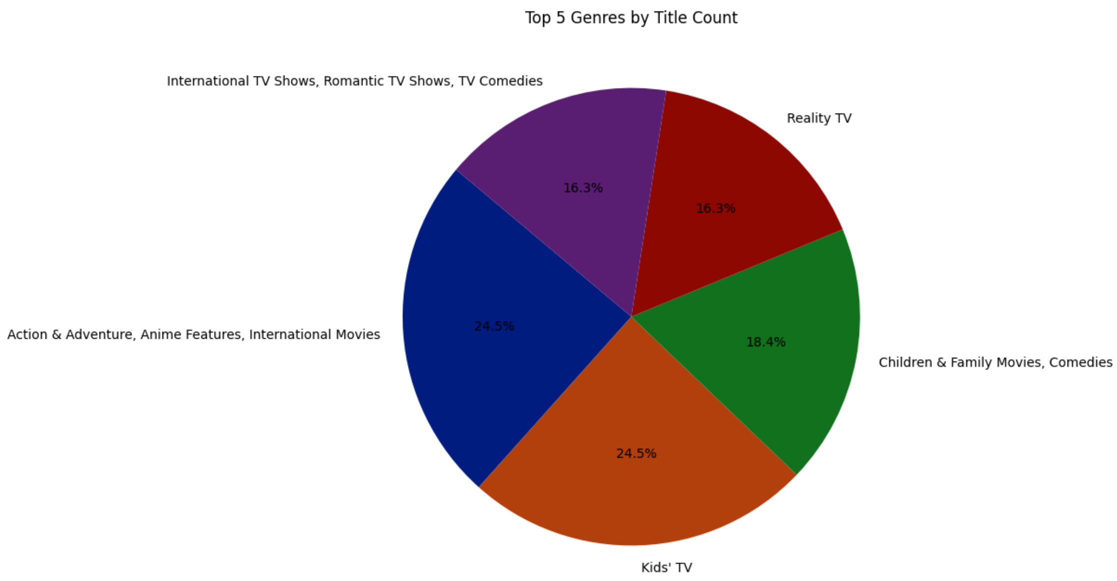
```
query = """SELECT listed_in, COUNT(*) AS genre_count
FROM netflix1
GROUP BY listed_in
ORDER BY genre_count DESC
LIMIT 5"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Categories","Genre"])
df
```

[7]:

```
                                          Categories  Genre
0  Action & Adventure, Anime Features, Internatio…     12
1                                            Kids' TV     12
2                   Children & Family Movies, Comedies      9
3                                          Reality TV      8
4  International TV Shows, Romantic TV Shows, TV …      8
```

[8]:

```
query = """SELECT listed_in, COUNT(*) AS genre_count
FROM netflix1
GROUP BY listed_in
ORDER BY genre_count DESC
LIMIT 5"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Categories","Genre"])
colors = sns.color_palette("dark", len(df))  # Choose a color palette
plt.figure(figsize=(8, 8))
plt.pie(df['Genre'], labels=df['Categories'], colors=colors, autopct='%1.1f%%',␣
 ↪startangle=140)
plt.title('Top 5 Genres by Title Count')
plt.show()
```



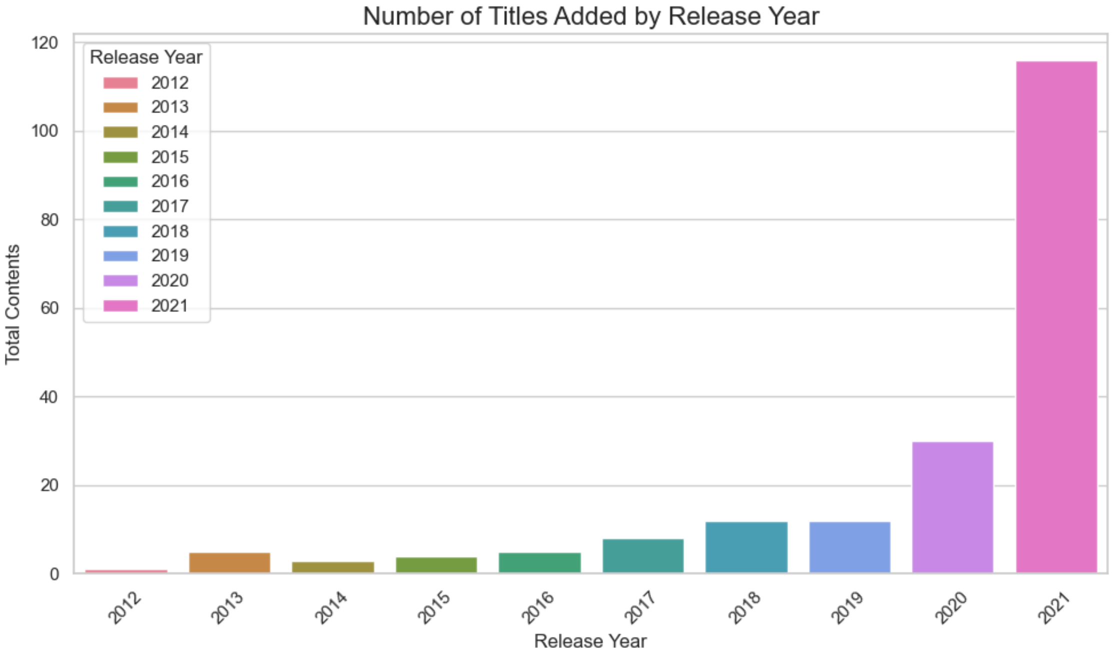
## 8 Top 10 years having most numbers of content.

[9]:
```
query = """SELECT release_year, COUNT(*) AS titles_added
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Total Contents"])
df
```

[9]:
```
   Release Year  Total Contents
0          2021             116
1          2020              30
2          2019              12
3          2018              12
4          2017               8
5          2016               5
6          2015               4
7          2014               3
```

```
8          2013                 5
9          2012                 1
```

[10]:
```
query = """SELECT release_year, COUNT(*) AS titles_added
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Total Contents"])
df = pd.DataFrame(data, columns=["Release Year", "Total Contents"])
sns.set(style="whitegrid")
palette = sns.color_palette("husl", len(df))
plt.figure(figsize=(10, 6))
bar_plot = sns.barplot(x="Release Year", y="Total Contents", hue='Release␣
 ↪Year', data=df, palette=palette)
plt.title("Number of Titles Added by Release Year", fontsize=16)
plt.xlabel("Release Year", fontsize=12)
plt.ylabel("Total Contents", fontsize=12)
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



# 9 Finding the Top 10 Directors with the Most Titles.

[11]:

```
query = """SELECT director, COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY director
ORDER BY title_count DESC
LIMIT 9 OFFSET 1"""            # becouse top rank holds "Not Given"
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Director Name","Count"])
df
```

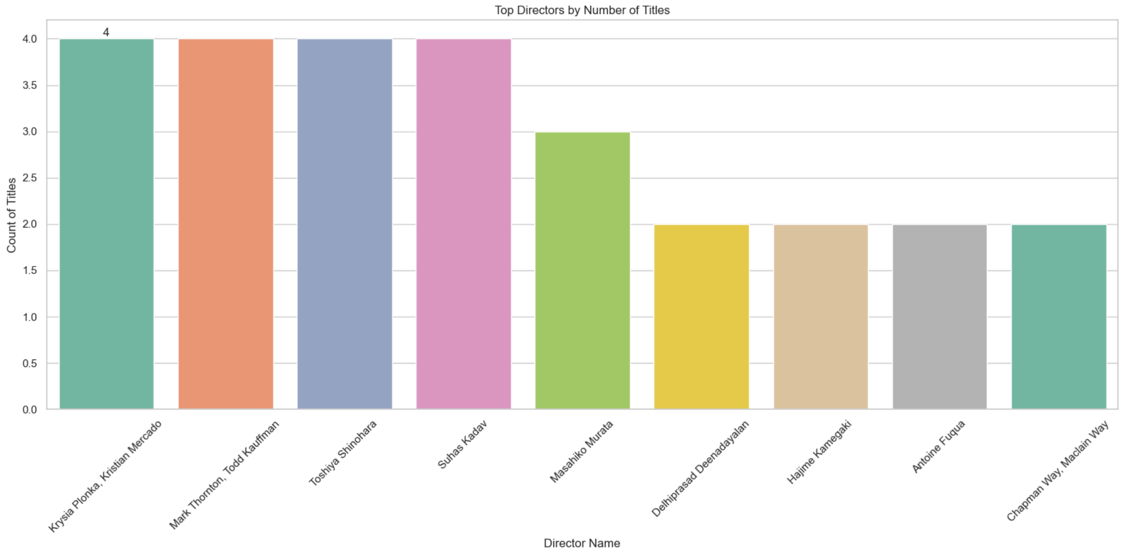
[11]:

```
                         Director Name  Count
0  Krysia Plonka, Kristian Mercado      4
1     Mark Thornton, Todd Kauffman      4
2               Toshiya Shinohara      4
3                     Suhas Kadav      4
4                 Masahiko Murata      3
5         Delhiprasad Deenadayalan      2
6                 Hajime Kamegaki      2
7                   Antoine Fuqua      2
8         Chapman Way, Maclain Way      2
```

[12]:

```
query = """SELECT director, COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY director
ORDER BY title_count DESC
LIMIT 9 OFFSET 1"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns=["Director Name", "Count"])
df = df.sort_values(by="Count", ascending=False)
color_palette = sns.color_palette("Set2", len(df))
plt.figure(figsize=(16, 8))
ax = sns.barplot(x="Director Name", y="Count", data=df, palette=color_palette,␣
 ↪hue="Director Name", dodge=False, legend=False)
ax.bar_label(ax.containers[0])
plt.xticks(rotation=45)
plt.title("Top Directors by Number of Titles")
plt.xlabel("Director Name")
plt.ylabel("Count of Titles")
plt.tight_layout()

plt.show()
```



## 10 Geting the Longest Movies in Terms of Duration.

[13]:
```
query = """SELECT show_title, duration
FROM netflix1
WHERE show_type = 'Movie'
ORDER BY CAST(SUBSTRING_INDEX(duration, ' ', 1) AS UNSIGNED) DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Titles","Duration"])
df
```

[13]:
```
                     Titles Duration
0  Headspace: Unwind Your Mind  273 min
1  Once Upon a Time in America  229 min
2                King of Boys  182 min
3                       Jeans  166 min
4             Avvai Shanmughi  161 min
5        The Guns of Navarone  156 min
6               Cold Mountain  154 min
7              Minsara Kanavu  147 min
8        Omo Ghetto: the Saga  147 min
9      Tughlaq Durbar (Telugu)  145 min
```

## 11 Getting Yearly releases of Movies and TV Shows on Netflix.

[14]:

```
query = """SELECT
  COUNT(CASE WHEN show_type = 'Movie' THEN 1 END) AS movie_count,
  COUNT(CASE WHEN show_type = 'TV Show' THEN 1 END) AS tv_show_count,
  release_year
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Movies","TV Shows","Release Year"])
df
```

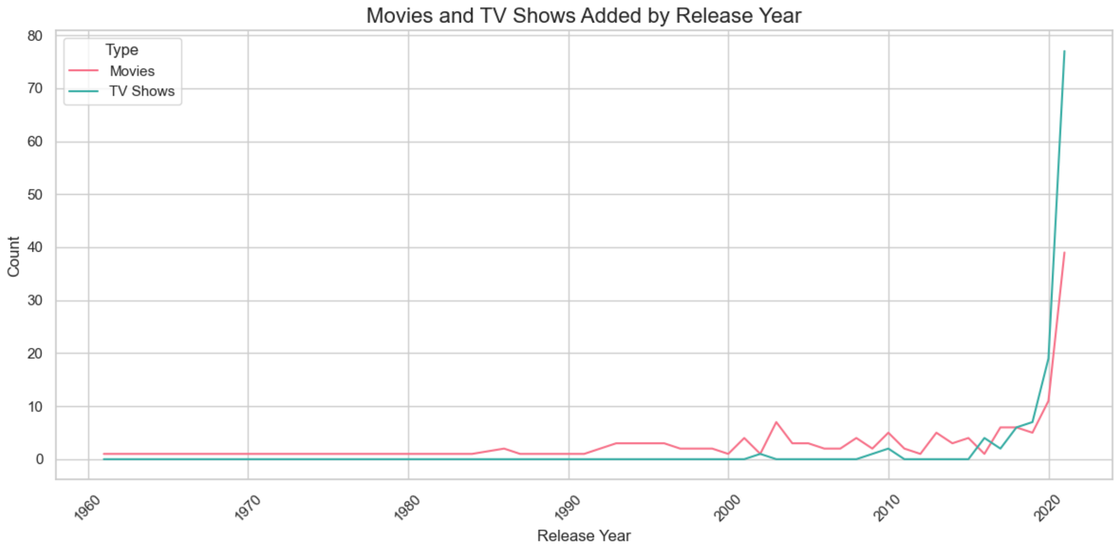
[14]:

```
    Movies  TV Shows  Release Year
0        1         0          1961
1        1         0          1975
2        1         0          1978
3        1         0          1980
4        1         0          1982
5        1         0          1983
6        1         0          1984
7        2         0          1986
8        1         0          1987
9        1         0          1989
10       1         0          1990
11       1         0          1991
12       3         0          1993
13       3         0          1994
14       3         0          1996
15       2         0          1997
16       2         0          1998
17       2         0          1999
18       1         0          2000
19       4         0          2001
20       1         1          2002
21       7         0          2003
22       3         0          2004
23       3         0          2005
24       2         0          2006
25       2         0          2007
26       4         0          2008
27       2         1          2009
28       5         2          2010
29       2         0          2011
30       1         0          2012
31       5         0          2013
```

```
32       3       0       2014
33       4       0       2015
34       1       4       2016
35       6       2       2017
36       6       6       2018
37       5       7       2019
38      11      19       2020
39      39      77       2021
```

[15]:

```
query = """SELECT
  COUNT(CASE WHEN show_type = 'Movie' THEN 1 END) AS movie_count,
  COUNT(CASE WHEN show_type = 'TV Show' THEN 1 END) AS tv_show_count,
  release_year
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Movies","TV Shows","Release Year"])
sns.set(style="whitegrid")
palette = sns.color_palette("husl", 2)
plt.figure(figsize=(12, 6))
sns.lineplot(data=df, x="Release Year", y="Movies", label="Movies",␣
 ↪color=palette[0])
sns.lineplot(data=df, x="Release Year", y="TV Shows", label="TV Shows",␣
 ↪color=palette[1])
plt.title("Movies and TV Shows Added by Release Year", fontsize=16)
plt.xlabel("Release Year", fontsize=12)
plt.ylabel("Count", fontsize=12)
plt.legend(title='Type')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



## 12 Top 10 countries with most content on Netflix.

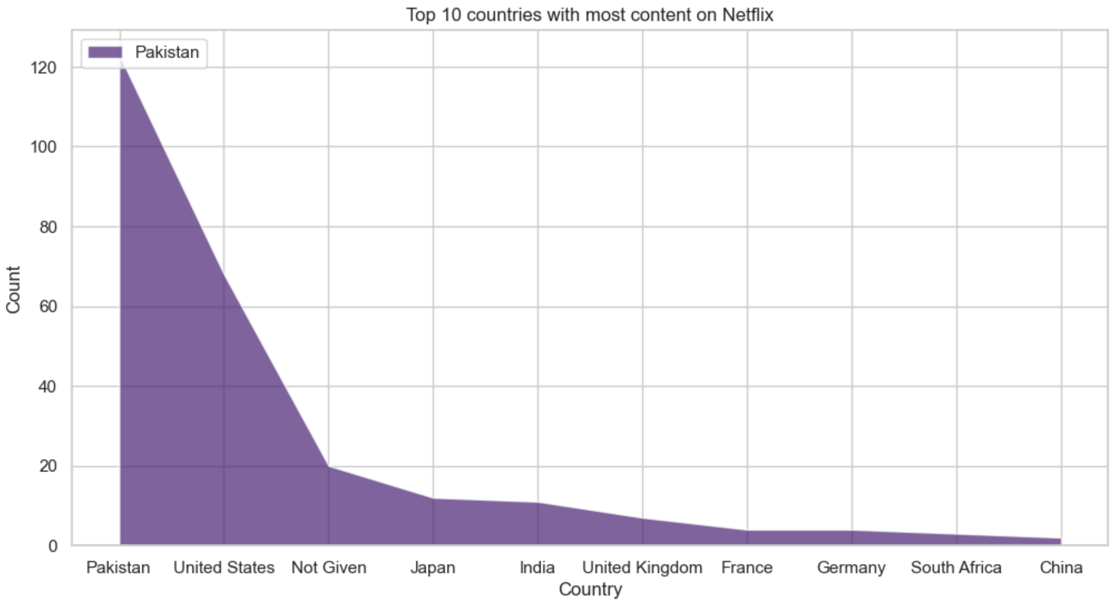
[16]:
```
query = """SELECT country, COUNT(*) AS count
FROM netflix1
WHERE country IS NOT NULL
GROUP BY country
ORDER BY count DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Count"])
df
```

[16]:
```
          Country  Count
0        Pakistan    123
1   United States     68
2       Not Given     20
3           Japan     12
4           India     11
5  United Kingdom      7
6          France      4
7         Germany      4
8    South Africa      3
9           China      2
```

[17]:
```
query = """SELECT country, COUNT(*) AS count
FROM netflix1
WHERE country IS NOT NULL
```

```
GROUP BY country
ORDER BY count DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Count"])
colors = sns.color_palette("viridis", len(df))  # Choose a color palette

# Create the area chart
plt.figure(figsize=(12, 6))
plt.stackplot(df['Country'], df['Count'], labels=df['Country'], colors=colors,␣
  ↪alpha=0.7)
plt.xlabel('Country')
plt.ylabel('Count')
plt.title('Top 10 countries with most content on Netflix')
plt.legend(loc='upper left')
plt.show()
```



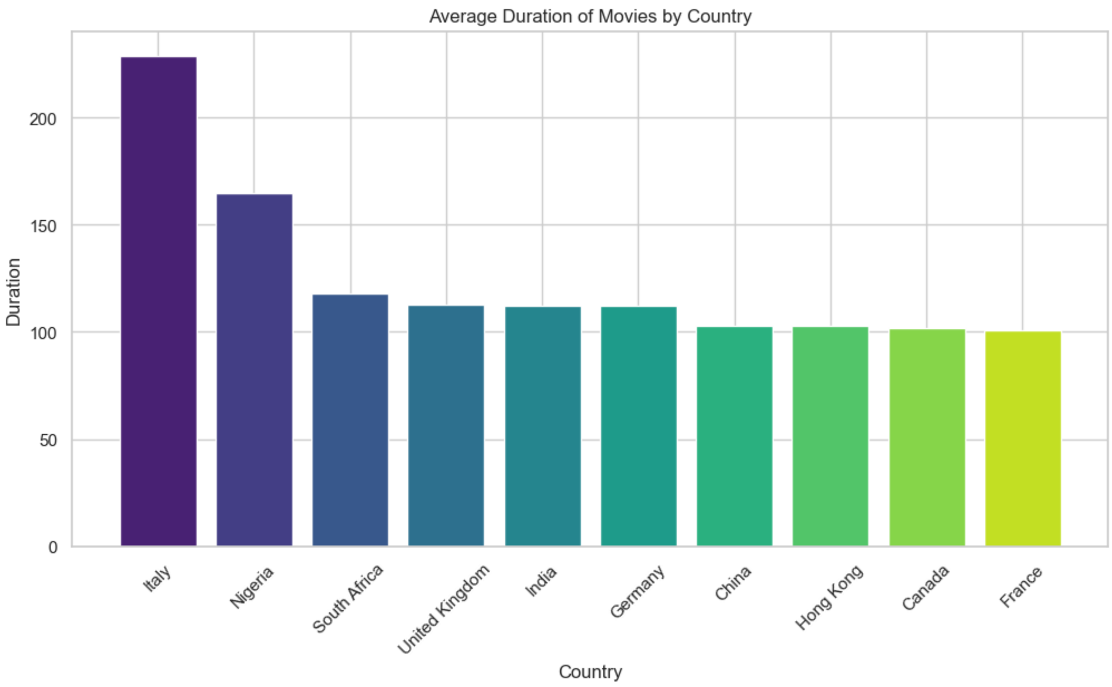
## 13 Calculating the Average Duration of Movies by Country.

[18]:
```
query = """SELECT country, round(AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
  ↪UNSIGNED)),0) AS avg_duration
FROM netflix1
WHERE show_type = 'Movie' AND country IS NOT NULL
GROUP BY country
ORDER BY avg_duration DESC
```

```
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Duration"])
df
```

```
[18]:           Country Duration
      0           Italy      229
      1         Nigeria      165
      2    South Africa      118
      3  United Kingdom      113
      4           India      112
      5         Germany      112
      6           China      103
      7       Hong Kong      103
      8          Canada      102
      9          France      101
```

```
[19]: query = """SELECT country, round(AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
       ↪UNSIGNED)),0) AS avg_duration
      FROM netflix1
      WHERE show_type = 'Movie' AND country IS NOT NULL
      GROUP BY country
      ORDER BY avg_duration DESC
      LIMIT 10"""
      cur.execute(query)
      data = cur.fetchall()
      df = pd.DataFrame(data, columns = ["Country","Duration"])
      colors = sns.color_palette("viridis", len(df))
      plt.figure(figsize=(12, 6))
      plt.bar(df['Country'], df['Duration'], color=colors)
      plt.xlabel('Country')
      plt.ylabel('Duration')
      plt.title('Average Duration of Movies by Country')
      plt.xticks(rotation=45)
      plt.show()
```



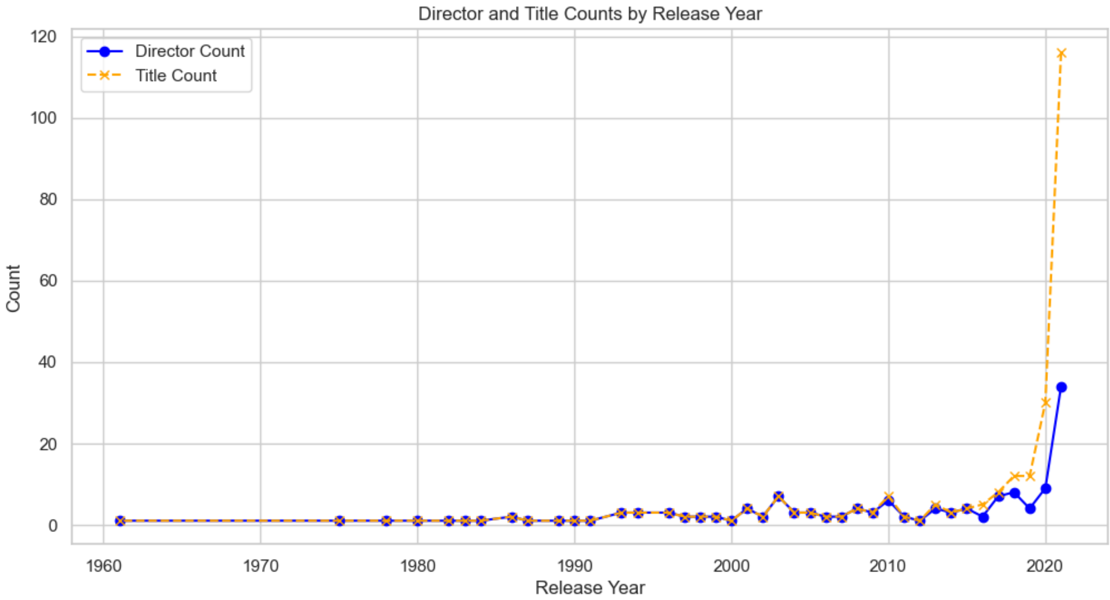
## 14 Listing Titles Released Each Year with Their Count of Directors.

[20]:
```
query = """SELECT release_year, COUNT(DISTINCT director) AS director_count,␣
  ↪COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY release_year
ORDER BY release_year DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Director Count","Title␣
  ↪Count"])
df
```

[20]:
```
   Release Year  Director Count  Title Count
0          2021              34          116
1          2020               9           30
2          2019               4           12
3          2018               8           12
4          2017               7            8
5          2016               2            5
6          2015               4            4
```

```
7     2014    3    3
8     2013    4    5
9     2012    1    1
10    2011    2    2
11    2010    6    7
12    2009    3    3
13    2008    4    4
14    2007    2    2
15    2006    2    2
16    2005    3    3
17    2004    3    3
18    2003    7    7
19    2002    2    2
20    2001    4    4
21    2000    1    1
22    1999    2    2
23    1998    2    2
24    1997    2    2
25    1996    3    3
26    1994    3    3
27    1993    3    3
28    1991    1    1
29    1990    1    1
30    1989    1    1
31    1987    1    1
32    1986    2    2
33    1984    1    1
34    1983    1    1
35    1982    1    1
36    1980    1    1
37    1978    1    1
38    1975    1    1
39    1961    1    1
```

[21]:
```
query = """SELECT release_year, COUNT(DISTINCT director) AS director_count, COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY release_year
ORDER BY release_year DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Director Count","Title Count"])
plt.figure(figsize=(12, 6))
plt.plot(df['Release Year'], df['Director Count'], label='Director Count', marker='o', linestyle='-', color='blue')
plt.plot(df['Release Year'], df['Title Count'], label='Title Count',␣
 ↪marker='x', linestyle='--', color='orange')
plt.xlabel('Release Year')
plt.ylabel('Count')
plt.title('Director and Title Counts by Release Year')
plt.legend()
plt.grid(True)
plt.show()
```



## 15 Identifying the Rating Distribution Over Time.

[22]:

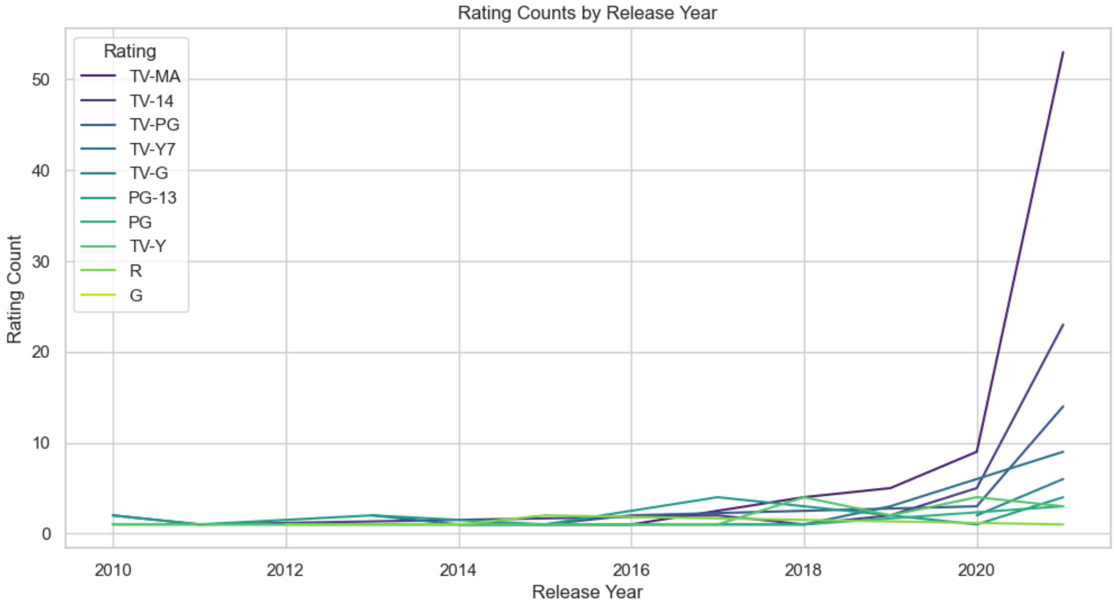
```
query = """SELECT release_year, rating, COUNT(*) AS rating_count
FROM netflix1
WHERE rating IS NOT NULL
GROUP BY release_year, rating
ORDER BY release_year DESC, rating_count DESC
LIMIT 50"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Rating","Rating Count"])
df
```

[22]:

```
   Release Year Rating  Rating Count
0          2021  TV-MA            53
1          2021  TV-14            23
2          2021  TV-PG            14
```

```
3           2021  TV-Y7             9
4           2021   TV-G             6
5           2021  PG-13             4
6           2021     PG             3
7           2021   TV-Y             3
8           2021      R             1
9           2020  TV-MA             9
10          2020  TV-Y7             6
11          2020  TV-14             5
12          2020   TV-Y             4
13          2020  TV-PG             3
14          2020   TV-G             2
15          2020  PG-13             1
16          2019  TV-MA             5
17          2019  TV-Y7             3
18          2019   TV-Y             2
19          2019  TV-14             2
20          2018   TV-Y             4
21          2018  TV-MA             4
22          2018  TV-14             1
23          2018     PG             1
24          2018      G             1
25          2018  TV-Y7             1
26          2017  PG-13             4
27          2017  TV-14             2
28          2017   TV-Y             1
29          2017  TV-Y7             1
30          2016  TV-PG             2
31          2016   TV-Y             1
32          2016  TV-Y7             1
33          2016  TV-MA             1
34          2015      R             2
35          2015  TV-PG             1
36          2015  PG-13             1
37          2014  TV-MA             1
38          2014  TV-Y7             1
39          2014      R             1
40          2013  PG-13             2
41          2013  TV-Y7             2
42          2013   TV-Y             1
43          2012      R             1
44          2011  TV-14             1
45          2011  PG-13             1
46          2010  TV-14             2
47          2010  PG-13             2
48          2010   TV-Y             1
49          2010     PG             1
```

```
[23]: query = """SELECT release_year, rating, COUNT(*) AS rating_count
      FROM netflix1
      WHERE rating IS NOT NULL
      GROUP BY release_year, rating
      ORDER BY release_year DESC, rating_count DESC
      LIMIT 50"""
      cur.execute(query)
      data = cur.fetchall()
      df = pd.DataFrame(data, columns = ["Release Year","Rating","Rating Count"])
      color_palette = sns.color_palette("viridis", len(df['Rating'].unique()))
      plt.figure(figsize=(12, 6))
      sns.lineplot(x='Release Year', y='Rating Count', hue='Rating', data=df,␣
        ↪palette=color_palette)
      plt.xlabel('Release Year')
      plt.ylabel('Rating Count')
      plt.title('Rating Counts by Release Year')
      plt.legend(title='Rating')
      plt.grid(True)
      plt.show()
```



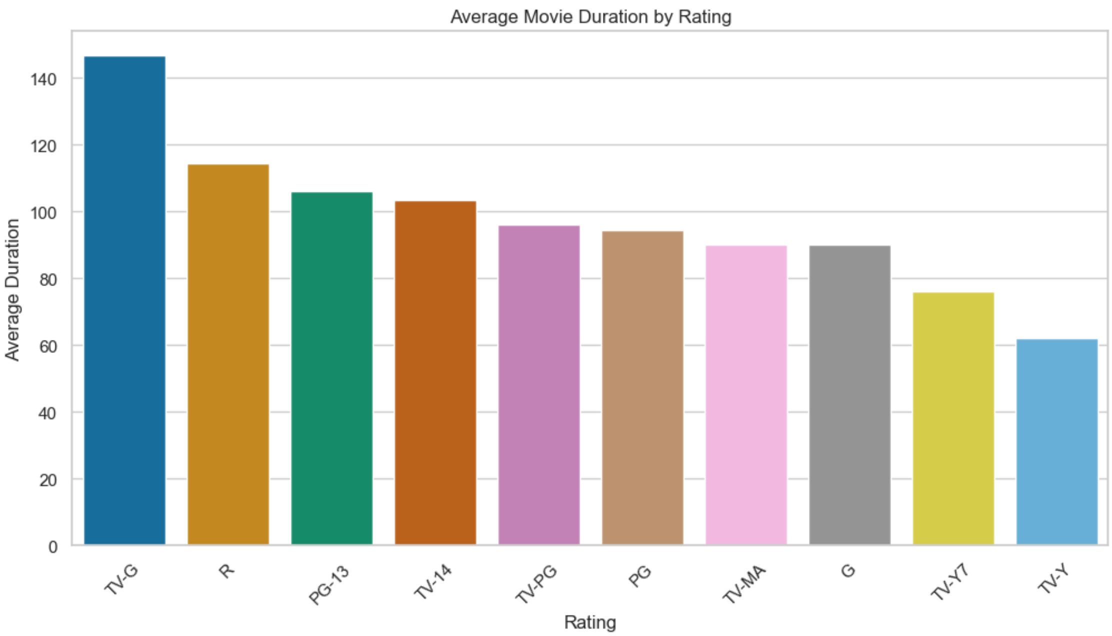
## 16 Average Duration of Movies by Rating.

```
[24]: query = """SELECT rating, AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
        ↪UNSIGNED)) AS average_duration
      FROM netflix1
      WHERE show_type = 'Movie' AND duration IS NOT NULL
```

```
GROUP BY rating
ORDER BY average_duration DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Rating","Avrage Duration"])
df
```

```
[24]:   Rating  Avrage Duration
      0   TV-G         146.6667
      1      R         114.5909
      2  PG-13         106.2143
      3  TV-14         103.4091
      4  TV-PG          96.0000
      5     PG          94.6429
      6  TV-MA          90.1481
      7      G          90.0000
      8  TV-Y7          76.2500
      9   TV-Y          62.2000
```

```
[25]: query = """SELECT rating, AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
        ↪UNSIGNED)) AS average_duration
      FROM netflix1
      WHERE show_type = 'Movie' AND duration IS NOT NULL
      GROUP BY rating
      ORDER BY average_duration DESC"""
      cur.execute(query)
      data = cur.fetchall()
      df = pd.DataFrame(data, columns = ["Rating","Avrage Duration"])
      colors = sns.color_palette("colorblind", len(df))
      plt.figure(figsize=(12, 6))
      sns.barplot(x="Rating", y="Avrage Duration",  hue='Rating', data=df,␣
        ↪palette=colors)
      plt.xlabel("Rating")
      plt.ylabel("Average Duration")
      plt.title("Average Movie Duration by Rating")
      plt.xticks(rotation=45)
      plt.show()
```



## 17 Analysis of Content Distribution by Country and Rating.

[26]:

```
query = """SELECT
    country,
    COUNT(*) AS total_titles,
    MAX(rating) AS most_common_rating,
    round(AVG(release_year),0) AS avg_release_year
FROM
    netflix1
WHERE
    country IS NOT NULL AND rating IS NOT NULL AND release_year IS NOT NULL
GROUP BY
    country
ORDER BY
    total_titles DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Countries","Total Titles","Most Comman␣
  ↪Rating","Average Release Year"])
df
```

[26]:

```
       Countries  Total Titles Most Comman Rating Average Release Year
0       Pakistan           123              TV-Y7                 2020
1  United States            68               TV-Y                 2007
2      Not Given            20              TV-Y7                 2019
```

```
3            Japan           12         TV-PG         2006
4            India           11         TV-Y7         2011
5   United Kingdom            7         TV-14         2003
6           France            4         TV-MA         2017
7          Germany            4         TV-MA         2014
8     South Africa            3         TV-MA         2016
9            China            2         TV-14         2011
10         Nigeria            2         TV-MA         2019
11          Brazil            1         TV-PG         2021
12           Spain            1         TV-MA         2019
13     Philippines            1         TV-MA         2020
14       Australia            1            PG         2001
15       Argentina            1         TV-MA         2014
16          Canada            1         TV-14         2018
17       Hong Kong            1         TV-MA         2010
18           Italy            1             R         1984
```

# 18 SUMMARY

[27]:

```
query = """SELECT
    show_type AS content_type,
    COUNT(*) AS total_titles,
    AVG(CASE WHEN show_type = 'Movie' AND duration IS NOT NULL THEN␣
  ↪CAST(SUBSTRING_INDEX(duration, ' ', 1) AS UNSIGNED) ELSE NULL END) AS␣
  ↪avg_duration,
    MIN(release_year) AS earliest_release_year,
    MAX(release_year) AS latest_release_year
FROM netflix1
WHERE show_type IS NOT NULL
GROUP BY show_type"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Content", "Total Titles", "Average␣
  ↪Duration", "Earliest Year Release", "Latest Release Year"])
df
```

[27]:

```
   Content  Total Titles Average Duration  Earliest Year Release  \
0    Movie           145          99.4483                   1961
1  TV Show           119             None                   2002

   Latest Release Year
0                 2021
1                 2021
```

## 19 Conclusion

This project involved a structured approach to data cleaning, analysis, and visualization. Missing values were efficiently handled, and duplicates were removed to ensure accuracy. Key insights were extracted using SQL queries, summarizing patterns in content type, country, and release trends. With Python, libraries like pandas, matplotlib, and seaborn enabled comprehensive data exploration and visual representation. Analysis revealed popular genres, leading countries, and patterns in content distribution, while exploring viewer preferences uncovered relationships between release years and popularity. Engaging visuals, including charts, graphs, and heatmaps, effectively communicated these findings, delivering actionable insights to support strategic decision-making in content production. This workflow showcased proficiency in data cleaning, SQL querying, and Python visualization.

## 20 Presented By Aditya Prakash.

## 21 Thank You.