```
#Import libraries

import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt


data = pd.DataFrame(pd.read_csv('https://d2beiqkhq929f0.cloudfront.net/public_assets/assets/000/000/940/original/netflix.csv')
data.head()
```

	show_id	type	title	director	cast	country	date_added	release_ye
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	20
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	20
					Sami Bouajila, Tracy			

```
# plt.figure(figsize=(12,6))
# df[df["type"]=="Movie"]["listed_in"].value_counts()[:10].plot(kind="barh",color="black")
# plt.title("Top 10 Genres of Movies",size=18)
```

Find out the missing or NaN values in the dataset

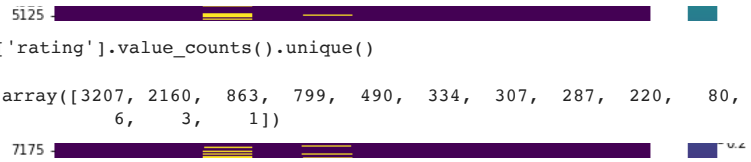
```
data.isnull().sum() #checking for null values
```

```
show_id            0
type               0
title              0
director        2634
cast             825
country          831
date_added        10
release_year       0
rating             4
duration           3
listed_in          0
description        0
dtype: int64
```

```
plt.figure(figsize=(10,8))
sns.heatmap(data.isnull(),cmap = 'viridis')
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fb4221a8e20>
```

1. As we can see, a lot of records in the data doesn't have values for **Director, Cast and Country** fields
2. Since we are interested in increasing the revenue of Netflix, our main objective is to figure out which all shows and movies performed the best.
3. We will firstly look at the distribution of how many tv shows and movies are present in netflix. Later on, we will specifically start analysing more details about the ones that fetched the best reviews

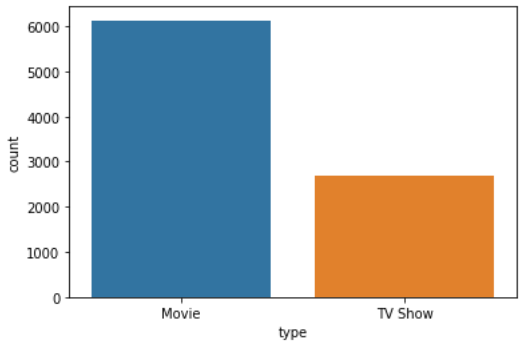



```
data['rating'].value_counts().unique()
```

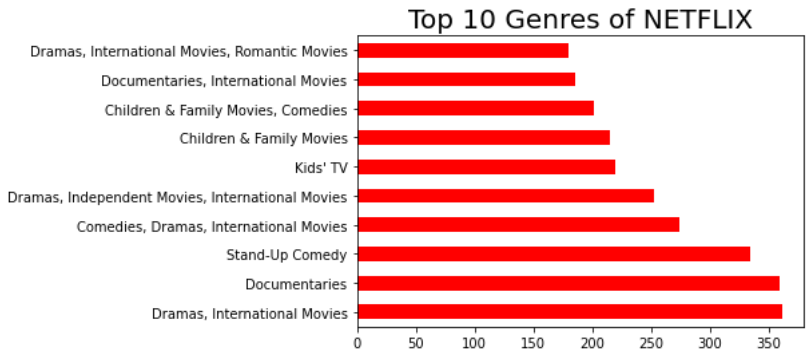
```
array([3207, 2160,  863,  799,  490,  334,  307,  287,  220,   80,   41,
          6,    3,    1])
```

```
sns.countplot(x= 'type', data=data)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fb421f7cf40>
```




```
# plt.figure(figsize=(22,10))
data["listed_in"].value_counts()[:10].plot(kind="barh", color="red")
plt.title("Top 10 Genres of NETFLIX",size=20);
```



1. We have a lot of movies compared to TV shows, hence we will split our data so that our analysis is not skewed
2. Before that, we need to clean/preprocess our data to get better insights

Movies

```
df = data.copy()
df = df[df['type'] == 'Movie']

df.head()
```

	show_id	type	title	director	cast	country	date_added	release
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	
6	s7	Movie	My Little Pony: A New Generation	Robert Cullen, José Luis Ucha	Vanessa Hudgens, Kimiko Glenn, James	NaN	September 24, 2021	

1. Since we don't have much values in the **Director** and **Cast** columns, we will drop them
2. However we cannot drop the countries as that is one of our primary attribute for this case study

7	s8	Movie	Sankofa	Haile Gyalanmike		Burkina	September	

```
df.drop(['director', 'cast'], axis=1, inplace=True)
df.head()
```

	show_id	type	title	country	date_added	release_year	rating	duratio
0	s1	Movie	Dick Johnson Is Dead	United States	September 25, 2021	2020	PG-13	90 mi
6	s7	Movie	My Little Pony: A New Generation	NaN	September 24, 2021	2021	PG	91 mi
7	s8	Movie	Sankofa	United States, Ghana, Burkina Faso, United	September 24, 2021	1993	TV-MA	125 mi

```
df[df['country'].isnull()]
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_
6	s7	Movie	My Little Pony: A New Generation	NaN	September 24, 2021	2021	PG	91 min	Children & Family Mov
13	s14	Movie	Confessions of an Invisible Girl	NaN	September 22, 2021	2021	TV-PG	91 min	Children & Family Mov Comed
16	s17	Movie	Europe's Most Dangerous Man: Otto Skorzeny in ...	NaN	September 22, 2021	2020	TV-MA	67 min	Documentaries, Internatic Mov
18	s19	Movie	Intrusion	NaN	September 22, 2021	2021	TV-14	94 min	Thril
22	s23	Movie	Avvai Shanmughi	NaN	September 21, 2021	1996	TV-PG	161 min	Comedies, Internatic Mov
...	...	...	...	...	...	...	...	...	
8585	s8586	Movie	Three-Quarters Decent	NaN	June 20, 2019	2010	TV-14	96 min	Comedies, Dram International Mov
8602	s8603	Movie	Tom and Jerry: The Magic Ring	NaN	December 15, 2019	2001	TV-Y7	60 min	Children & Family Mov Comed
8622	s8623	Movie	Tremors 2: Aftershocks	NaN	January 1, 2020	1995	PG-13	100 min	Comedies, Horror Mov Sci-Fi & Fant
8718	s8719	Movie	Westside vs. the World	NaN	August 9, 2019	2019	TV-MA	96 min	Documentaries, Sp Mov
8759	s8760	Movie	World's Weirdest Homes	NaN	February 1, 2019	2015	TV-PG	49 min	Mov

440 rows × 10 columns

1. Assuming the data might have been collected with some sequence, we will probably start imputing with forward fill method instead of using mode or mean values to impute the data.

Note: **We can train a model just to impute the values, but that will consume a lot of our time hence parked for later improvements.**

```
df['country'] = df['country'].ffill(axis=0)
df[df['country'].isnull()]
```

show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description

```
# Let us now also check for null rated shows/movies

df[df['rating'].isnull()]
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_in
5989	s5990	Movie	13TH: A Conversation with Oprah Winfrey & Ava ...	United States	January 26, 2017	2017	NaN	37 min	Movies
7537	s7538	Movie	My Honor Was Loyalty	Italy	March 1, 2017	2015	NaN	115 min	Dramas

Since there are only 2 of them, we can manually fill there values from internet

```
ratings = ['TV-PG', 'TV-MA']

for id, rating in zip(df[df['rating'].isnull()].index, ratings):
  df['rating'].loc[id] = rating
```

```
/usr/local/lib/python3.8/dist-packages/pandas/core/indexing.py:1732: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-v
  self._setitem_single_block(indexer, value, name)
```

```
df[df['rating'].isnull()]
```

show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description

For records, where date was null, we will drop them since they are quite scarse and won't affect our analysis much.

We will look into the same later on by imputing the values manually as they are also not much in count

Let us verify again whether there is a null data or not

```
df = df[df['date_added'].notna()]
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 6131 entries, 0 to 8806
Data columns (total 10 columns):
 #   Column        Non-Null Count  Dtype 
---  ------        --------------  ----- 
 0   show_id       6131 non-null   object
 1   type          6131 non-null   object
 2   title         6131 non-null   object
 3   country       6131 non-null   object
 4   date_added    6131 non-null   object
 5   release_year  6131 non-null   int64 
 6   rating        6131 non-null   object
 7   duration      6128 non-null   object
 8   listed_in     6131 non-null   object
 9   description   6131 non-null   object
dtypes: int64(1), object(9)
memory usage: 526.9+ KB
```

As we can see, the country column holds multiple values of countries where the content was displayed. Assuming the first country will be the major source of the content we are going to use those for our further analysis

```
df['main_country'] = df['country'].apply(lambda x: x.split(',')[0])
df
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_in	
0	s1	Movie	Dick Johnson Is Dead	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As I en
6	s7	Movie	My Little Pony: A New Generation	United States	September 24, 2021	2021	PG	91 min	Children & Family Movies	Equ a br
7	s8	Movie	Sankofa	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	(G
9	s10	Movie	The Starling	United States	September 24, 2021	2021	PG-13	104 min	Comedies, Dramas	A
12	s13	Movie	Je Suis Karl	Germany, Czech Republic	September 23, 2021	2021	TV-MA	127 min	Dramas, International Movies	Afte is
...	...	...	...	...	...	...	...	...	...	
				United Arab					Dramas, International	R

Let us start our analysis for problem statement.

We will divide the data based on the top 10 main countries we found and group the data based on their genres and ratings.

Since we will have insights into what kind of content fetched most good reviews in which country based on top genres, we can promote the development of similar content in future

```
# For ease of analysis, let's pick top 10 countries with maximum content produced

top_countries = df.groupby('main_country').count().sort_values('type', ascending=False)[:10]
top_countries
```

main_country	show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description
United States	2541	2541	2541	2541	2541	2541	2541	2538	2541	2541
India	998	998	998	998	998	998	998	998	998	998
United Kingdom	410	410	410	410	410	410	410	410	410	410
Canada	196	196	196	196	196	196	196	196	196	196
France	159	159	159	159	159	159	159	159	159	159
Spain	133	133	133	133	133	133	133	133	133	133
Nigeria	111	111	111	111	111	111	111	111	111	111
Egypt	106	106	106	106	106	106	106	106	106	106
Mexico	95	95	95	95	95	95	95	95	95	95
Japan	94	94	94	94	94	94	94	94	94	94

```
# For ease of analysis, let's pick top 10 genres with maximum content produced

top_genres = df.groupby('listed_in').count().sort_values('type', ascending=False)[:10]
top_genres
```

listed_in	show_id	type	title	country	date_added	release_year	rating	duration	descri
Dramas, International Movies	362	362	362	362	362	362	362	362	
Documentaries	359	359	359	359	359	359	359	359	
Stand-Up Comedy	334	334	334	334	334	334	334	334	
Comedies, Dramas, International Movies	274	274	274	274	274	274	274	274	
Dramas, Independent Movies, International Movies	252	252	252	252	252	252	252	252	
Children & Family Movies	215	215	215	215	215	215	215	215	
Children & Family Movies, Comedies	201	201	201	201	201	201	201	201	
Documentaries, International Movies	186	186	186	186	186	186	186	186	
Dramas, International Movies, Romantic Movies	180	180	180	180	180	180	180	180	
Comedies, International Movies	176	176	176	176	176	176	176	176	

```
# Filtering the data for top 10 genres

df = df[df['listed_in'].isin(list(top_genres.index))]

# Filtering the data for top 10 countries

df = df[df['main_country'].isin(list(top_countries.index))]


df
```

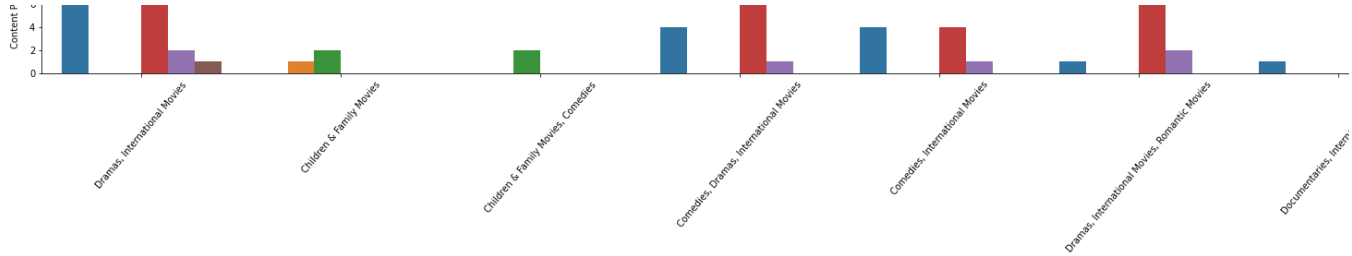
	show_id	type	title	country	date_added	release_year	rating	duration	listed_in	
0	s1	Movie	Dick Johnson Is Dead	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As e
6	s7	Movie	My Little Pony: A New Generation	United States	September 24, 2021	2021	PG	91 min	Children & Family Movies	Eq a b
7	s8	Movie	Sankofa	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	
30	s31	Movie	Ankahi Kahaniya	United States, India, France	September 17, 2021	2021	TV-14	111 min	Dramas, Independent Movies, International Movies	A arou
45	s46	Movie	My Heroes Were Cowboys	United States	September 16, 2021	2021	PG	23 min	Documentaries	Rol chi
...	...	...	...	...	...	...	...	...	...	
8793	s8794	Movie	Yours, Mine and Ours	United States	November 20, 2019	2005	PG	88 min	Children & Family Movies, Comedies	W
8794	s8795	Movie	اشتباك	Egypt, France	October 11, 2018	2016	TV-14	98 min	Dramas, Independent Movies, International Movies	Amic Eg
8798	s8799	Movie	Zed Plus	India	December 31, 2019	2014	TV-MA	131 min	Comedies, Dramas, International Movies	
8799	s8800	Movie	Zenda	India	February 15, 2018	2009	TV-14	120 min	Dramas, International Movies	lea
8805	s8806	Movie	Zoom	United States	January 11,	2006	PG	88 min	Children & Family	I

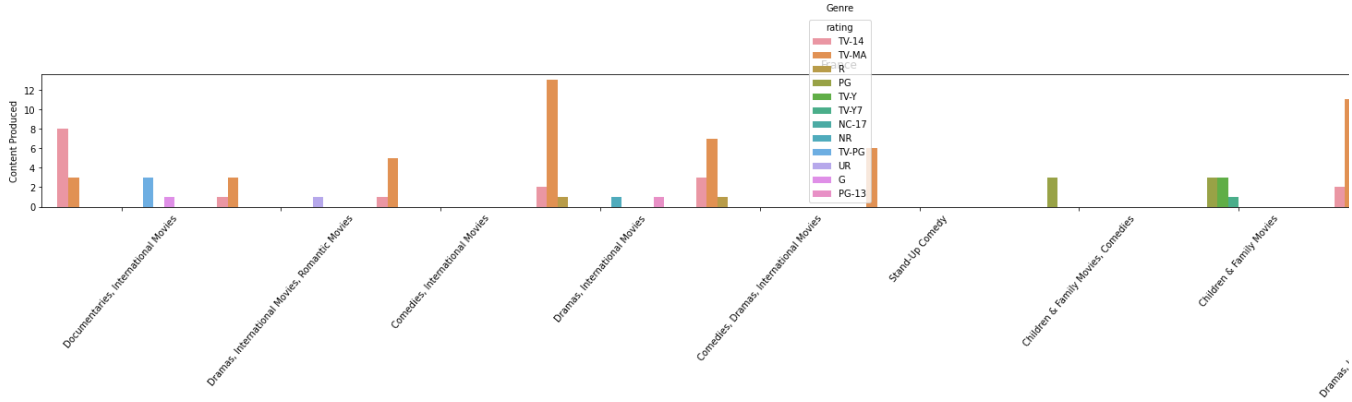
```
ratings=[]
for rate in df['rating'].unique():
  ratings.append(rate)

countries = df['main_country'].unique()

listing = df['listed_in'].unique()

ratings, countries, listing
```

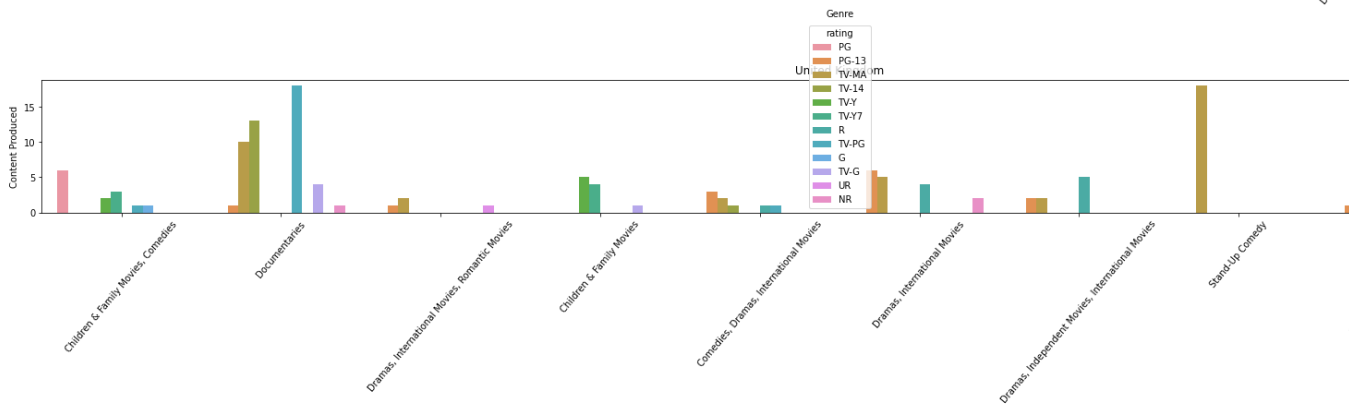
```
(['PG-13',
  'PG',
  'TV-MA',
  'TV-14',
  'TV-PG',
  'TV-Y',
  'TV-G',
  'TV-Y7',
  'R',
  'G',
  'NC-17',
  'NR',
  'TV-Y7-FV',
  'UR'],
 array(['United States', 'Japan', 'Nigeria', 'France', 'United Kingdom',
        'India', 'Mexico', 'Egypt', 'Canada', 'Spain'], dtype=object),
 array(['Documentaries', 'Children & Family Movies',
        'Dramas, Independent Movies, International Movies',
        'Dramas, International Movies',
        'Children & Family Movies, Comedies',
        'Comedies, Dramas, International Movies',
        'Documentaries, International Movies',
        'Dramas, International Movies, Romantic Movies',
        'Comedies, International Movies', 'Stand-Up Comedy'], dtype=object))
```

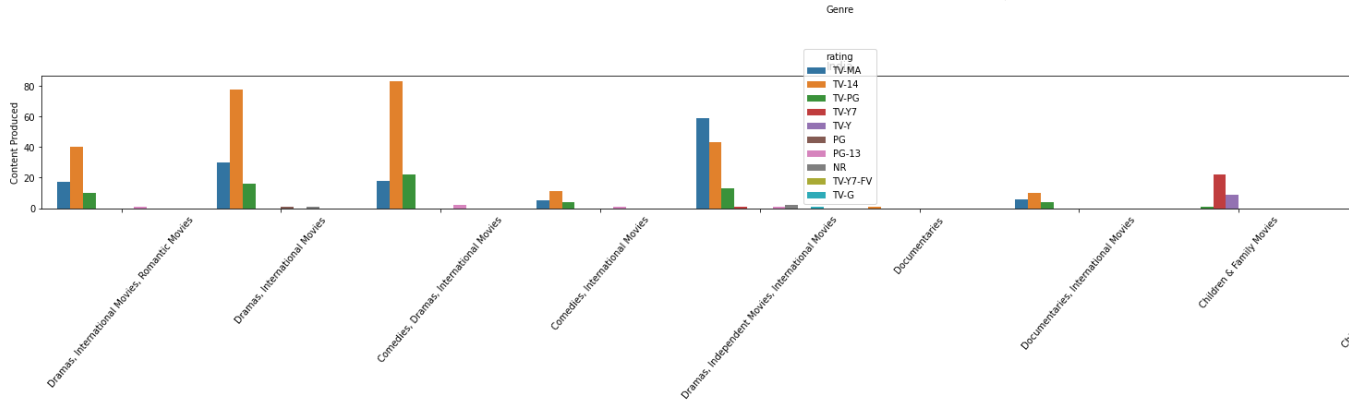
Top content based on genres and the top ratings within each in different countries is displayed below

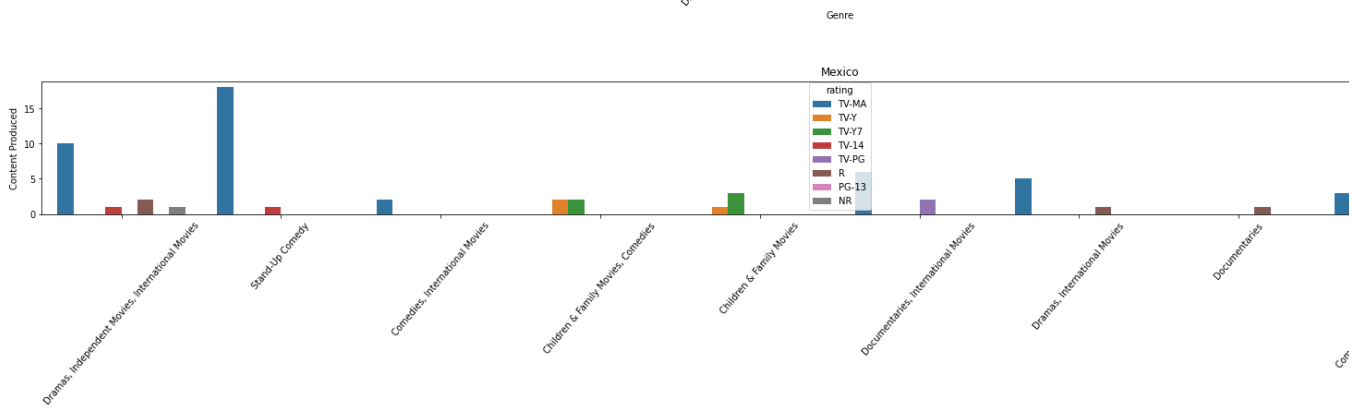
```
fig = plt.figure(
    figsize=(30,40)
    )

for i, name in enumerate(countries):
  frame = df[df['main_country'] == str(name)]
  ax = fig.add_subplot(len(countries),1,i+1)
  topic = name
  sns.countplot(x='listed_in', data= frame[frame['listed_in'].isin(listing)], hue='rating')
  ax.set_title(topic)
  plt.subplots_adjust(left=0.1,
                      bottom=0.1,
                      right=0.9,
                      top=1.5,
                      wspace=0.5,
                      hspace=2.0)
  plt.xlabel('Genre')
  plt.xticks(rotation = 50)
  ax.set(ylabel='Content Produced')
```

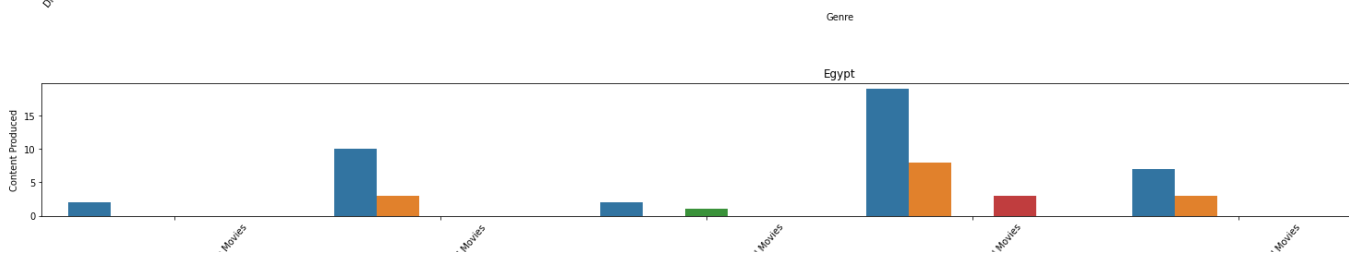

Content P
Dramas, International Movies
Children & Family Movies
Children & Family Movies, Comedies
Comedies, Dramas, International Movies
Comedies, International Movies
Dramas, International Movies, Romantic Movies
Documentaries, Intern


Genre
rating
TV-14
TV-MA
R
PG
TV-Y
TV-Y7
NC-17
NR
TV-PG
UR
G
PG-13
Content Produced
Documentaries, International Movies
Dramas, International Movies, Romantic Movies
Comedies, International Movies
Dramas, International Movies
Comedies, Dramas, International Movies
Stand-Up Comedy
Children & Family Movies, Comedies
Children & Family Movies

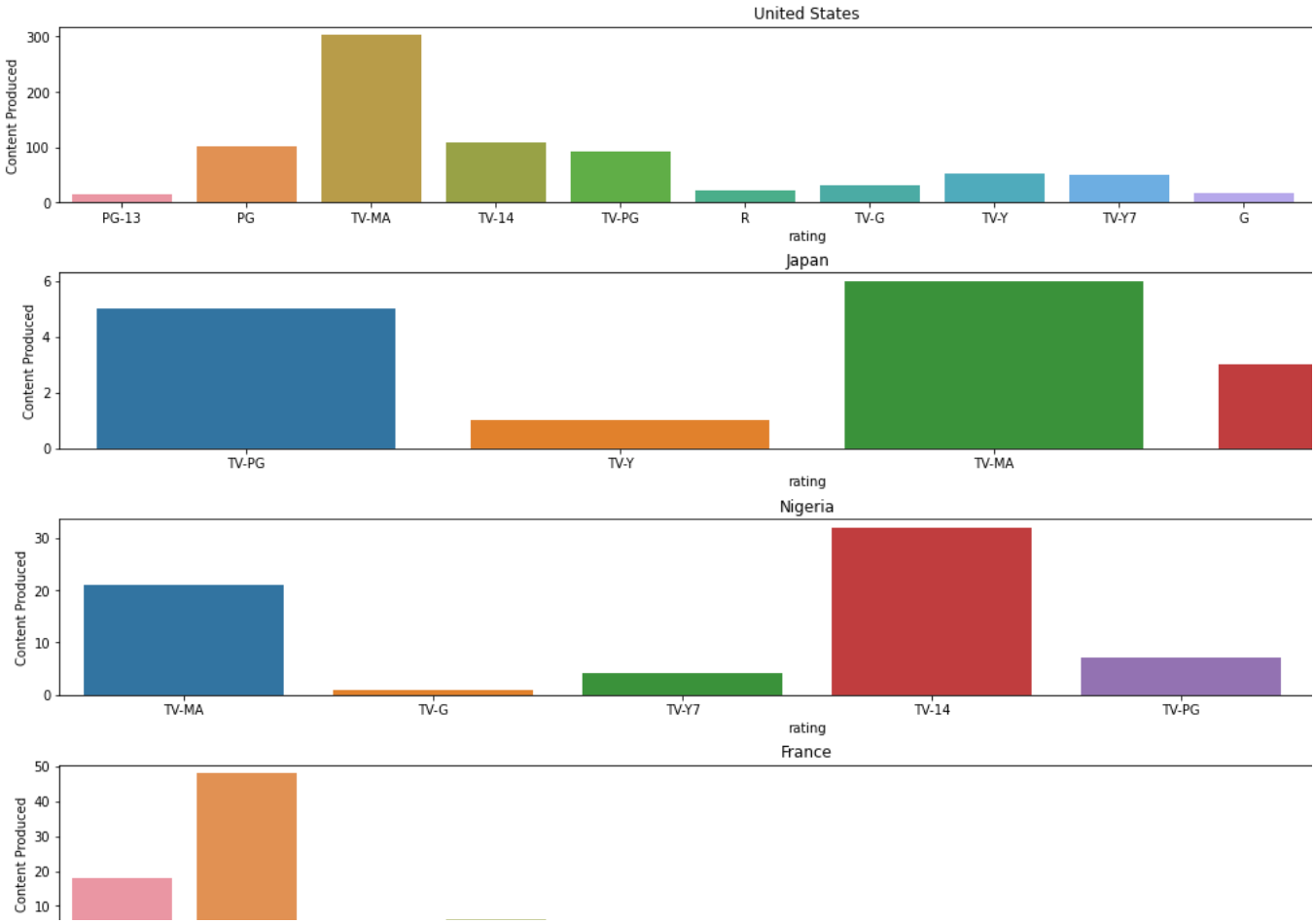

Genre
rating
PG
PG-13
TV-MA
TV-14
TV-Y
TV-Y7
R
TV-PG
G
TV-G
UR
NR
Content Produced
Children & Family Movies, Comedies
Documentaries
Dramas, International Movies, Romantic Movies
Children & Family Movies
Comedies, Dramas, International Movies
Dramas, International Movies
Dramas, Independent Movies, International Movies
Stand-Up Comedy


Genre
rating
TV-MA
TV-14
TV-PG
TV-Y7
TV-Y
PG
PG-13
NR
TV-Y7-FV
TV-G
Content Produced
Dramas, International Movies, Romantic Movies
Dramas, International Movies
Comedies, Dramas, International Movies
Comedies, International Movies
Dramas, Independent Movies, International Movies
Documentaries
Documentaries, International Movies
Children & Family Movies


Mexico
Genre
rating
TV-MA
TV-Y
TV-Y7
TV-14
TV-PG
R
PG-13
NR
Content Produced
Dramas, Independent Movies, International Movies
Stand-Up Comedy
Comedies, International Movies
Children & Family Movies, Comedies
Children & Family Movies
Documentaries, International Movies
Dramas, International Movies
Documentaries


Egypt
Content Produced

```
fig = plt.figure(
    figsize=(20,32)
    )

for i, name in enumerate(countries):
  frame = df[df['main_country'] == str(name)]
  ax = fig.add_subplot(len(countries),1,i+1)
  topic = name
  sns.countplot(x='rating', data= frame[frame['rating'].isin(ratings)])
  ax.set_title(topic)
  plt.subplots_adjust(left=0.1,
                      bottom=0.1,
                      right=0.9,
                      top=0.9,
                      wspace=0.4,
                      hspace=0.4)
  ax.set(ylabel='Content Produced')
```



From the above graph, we can clearly visualize what type of content and ratings are attracting the audience in top 10 countries.

Note: Top 10 genres were considered for displaying the above data

All the steps and analysis done for Movies is repeated for TV Shows as well and conclusions are drawn from them on a similar basis

TV Show

```
df = data.copy()
df = df[df['type'] == 'TV Show']

df.head()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Int Shows
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	September 24, 2021	2021	TV-MA	1 Season	Crim Int Sho
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	September 24, 2021	2021	TV-MA	1 Season	Docuserie
4	s5	TV Show	Kota Factory	NaN	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	September 24, 2021	2021	TV-MA	2 Seasons	Int Shows,
5	s6	TV	Midnight	Mike	Kate Siegel, Zach Gilford, Hamish	NaN	September 24,	2021	TV-MA	1 Season	TV Drama

```
df.drop(['director', 'cast'], axis=1, inplace=True)
df.head()
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_in
1	s2	TV Show	Blood & Water	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries
2	s3	TV Show	Ganglands	NaN	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV Act...

```
df[df['country'].isnull()]
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_i
2	s3	TV Show	Ganglands	NaN	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, International T Shows, TV Act
3	s4	TV Show	Jailbirds New Orleans	NaN	September 24, 2021	2021	TV-MA	1 Season	Docuseries, Reality T
5	s6	TV Show	Midnight Mass	NaN	September 24, 2021	2021	TV-MA	1 Season	TV Dramas, TV Horror, T Mysteri
10	s11	TV Show	Vendetta: Truth, Lies and The Mafia	NaN	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, Docuserie International TV S
11	s12	TV Show	Bangkok Breaking	NaN	September 23, 2021	2021	TV-MA	1 Season	Crime TV Shows, International T Shows, TV Act
...	...	...	...	...	...	...	...	...	
8679	s8680	TV Show	ViR: The Robot Boy	NaN	March 31, 2018	2013	TV-Y7	2 Seasons	Kids' T
8690	s8691	TV Show	Wake Up	NaN	March 31, 2018	2017	TV-14	2 Seasons	International TV Shows, T Drama
8783	s8784	TV Show	Yoko	NaN	June 23, 2018	2016	TV-Y	1 Season	Kids' T

```
df['country'] = df['country'].ffill(axis=0)
df[df['country'].isnull()]
```

show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description

```
df[df['rating'].isnull()]
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_in
6827	s6828	TV Show	Gargantia on the Verdurous Planet	Japan	December 1, 2016	2013	NaN	1 Season	Anime Series, International TV Shows
7312	s7313	TV	Little Lunch	Australia	February 1,	2015	NaN	1 Season	Kids' TV, TV Comedies

```
ratings = ['TV-14', 'TV-MA']

for id, rating in zip(df[df['rating'].isnull()].index, ratings):
  df['rating'].loc[id] = rating
```

```
/usr/local/lib/python3.8/dist-packages/pandas/core/indexing.py:1732: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-v
  self._setitem_single_block(indexer, value, name)
```

```
df[df['rating'].isna()]
```

show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description

```
df = df[df['date_added'].notna()]
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2666 entries, 1 to 8803
Data columns (total 10 columns):
 #   Column        Non-Null Count  Dtype 
---  ------        --------------  ----- 
 0   show_id       2666 non-null   object
 1   type          2666 non-null   object
 2   title         2666 non-null   object
 3   country       2666 non-null   object
 4   date_added    2666 non-null   object
 5   release_year  2666 non-null   int64 
 6   rating        2666 non-null   object
```

```
 7   duration      2666 non-null   object
 8   listed_in     2666 non-null   object
 9   description   2666 non-null   object
dtypes: int64(1), object(9)
memory usage: 229.1+ KB
```

```
df['main_country'] = df['country'].apply(lambda x: x.split(',')[0])
df
```

```
<ipython-input-33-3c9495461b4a>:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-v
  df['main_country'] = df['country'].apply(lambda x: x.split(',')[0])
```

	show_id	type	title	country	date_added	release_year	rating	duration	listed_in	
1	s2	TV Show	Blood & Water	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	Afte pa
2	s3	TV Show	Ganglands	South Africa	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV Act...	To pro
3	s4	TV Show	Jailbirds New Orleans	South Africa	September 24, 2021	2021	TV-MA	1 Season	Docuseries, Reality TV	Feuds
4	s5	TV Show	Kota Factory	India	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, Romantic TV Shows, TV ...	cent
5	s6	TV Show	Midnight Mass	India	September 24, 2021	2021	TV-MA	1 Season	TV Dramas, TV Horror, TV Mysteries	cha
...	...	...	...	...	...	...	...	...	...	...
8795	s8796	TV Show	Yu-Gi-Oh! Arc-V	Japan, Canada	May 1, 2018	2015	TV-Y7	2 Seasons	Anime Series, Kids' TV	Now
8796	s8797	TV Show	Yunus Emre	Turkey	January 17, 2017	2016	TV-PG	2 Seasons	International TV Shows, TV Dramas	inv
8797	s8798	TV Show	Zak Storm	United States, France, South Korea, Indonesia	September 13, 2018	2016	TV-Y7	3 Seasons	Kids' TV	Tee my
8800	s8801	TV Show	Zindagi Gulzar Hai	Pakistan	December 15, 2016	2012	TV-PG	1 Season	International TV Shows, Romantic TV Shows, TV ...	Strong

```
# For ease of analysis, let's pick top 10 countries with maximum content produced

top_countries = df.groupby('main_country').count().sort_values('type', ascending=False)[:10]
top_countries
```

main_country	show_id	type	title	country	date_added	release_year	rating	duration	listed_in	description
United States	990	990	990	990	990	990	990	990	990	990
United Kingdom	281	281	281	281	281	281	281	281	281	281
South Korea	194	194	194	194	194	194	194	194	194	194
Japan	194	194	194	194	194	194	194	194	194	194
India	101	101	101	101	101	101	101	101	101	101
Canada	99	99	99	99	99	99	99	99	99	99
Taiwan	80	80	80	80	80	80	80	80	80	80
France	79	79	79	79	79	79	79	79	79	79
Australia	65	65	65	65	65	65	65	65	65	65
Spain	60	60	60	60	60	60	60	60	60	60

```
# For ease of analysis, let's pick top 10 genres with maximum content produced

top_genres = df.groupby('listed_in').count().sort_values('type', ascending=False)[:10]
top_genres
```

listed_in	show_id	type	title	country	date_added	release_year	rating	duration
Kids' TV	219	219	219	219	219	219	219	219
International TV Shows, TV Dramas	121	121	121	121	121	121	121	121
Crime TV Shows, International TV Shows, TV Dramas	110	110	110	110	110	110	110	110
Kids' TV, TV Comedies	98	98	98	98	98	98	98	98
Reality TV	95	95	95	95	95	95	95	95
International TV Shows, Romantic TV Shows, TV Comedies	94	94	94	94	94	94	94	94
International TV Shows, Romantic TV Shows, TV Dramas	90	90	90	90	90	90	90	90
Anime Series, International TV Shows	88	88	88	88	88	88	88	88
Docuseries	84	84	84	84	84	84	84	84

```
# Filtering the data for top 10 genres

df = df[df['listed_in'].isin(list(top_genres.index))]

# Filtering the data for top 10 countries

df = df[df['main_country'].isin(list(top_countries.index))]


ratings=[]
for rate in df['rating'].unique():
  ratings.append(rate)

countries = df['main_country'].unique()

listing = df['listed_in'].unique()

ratings, countries, listing
```

```
     (['TV-MA', 'TV-Y7', 'TV-PG', 'TV-Y', 'TV-14', 'TV-G'],
      array(['India', 'Australia', 'United Kingdom', 'United States', 'Japan',
             'France', 'South Korea', 'Taiwan', 'Canada', 'Spain'], dtype=object),
      array(['International TV Shows, Romantic TV Shows, TV Comedies',
             'TV Comedies', "Kids' TV", 'Reality TV', "Kids' TV, TV Comedies",
             'International TV Shows, TV Dramas',
             'Anime Series, International TV Shows', 'Docuseries',
             'Crime TV Shows, International TV Shows, TV Dramas',
             'International TV Shows, Romantic TV Shows, TV Dramas'],
            dtype=object))
```

```
fig = plt.figure(
    figsize=(30,40)
    )

for i, name in enumerate(countries):
  frame = df[df['main_country'] == str(name)]
  ax = fig.add_subplot(len(countries),1,i+1)
  topic = name
  sns.countplot(x='listed_in', data= frame[frame['listed_in'].isin(listing)], hue='rating')
  ax.set_title(topic)
  plt.subplots_adjust(left=0.1,
                      bottom=0.1,
                      right=0.9,
                      top=1.5,
                      wspace=0.5,
                      hspace=2.0)
  plt.xlabel('Genre')
  plt.xticks(rotation = 50)
  ax.set(ylabel='Content Produced')
```