Netflix DATA Analysis

In [1]:

```
import pandas as pd
```

In [2]:

```
data=pd.read_csv("C:\\Users\\MAMTA\\Downloads\\Netflix_Data_analysis_project\\netflix_titles.csv"
```

In [3]:

```
data
```

Out[3]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Doc
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	I TV
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	September 24, 2021	2021	TV-MA	1 Season	I T
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	September 24, 2021	2021	TV-MA	1 Season	
4	s5	TV Show	Kota Factory	NaN	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	September 24, 2021	2021	TV-MA	2 Seasons	I R S
...	...	...	...	...	...	...	...	...	...	...	
8802	s8803	Movie	Zodiac	David Fincher	Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...	United States	November 20, 2019	2007	R	158 min	C
8803	s8804	TV Show	Zombie Dumb	NaN	NaN	NaN	July 1, 2019	2018	TV-Y7	2 Seasons	
8804	s8805	Movie	Zombieland	Ruben Fleischer	Jesse Eisenberg, Woody Harrelson, Emma Stone, ...	United States	November 1, 2019	2009	R	88 min	Ho
8805	s8806	Movie	Zoom	Peter Hewitt	Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...	United States	January 11, 2020	2006	PG	88 min	Far

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	
8806	s8807	Movie	Zubaan	Mozez Singh	Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...	India	March 2, 2019	2015	TV-14	111 min	In Mo

8807 rows × 12 columns

```
In [ ]:
```

Getting Some Basic Information about Dataset

```
In [4]: data.head()        # to show first 5 records from dataset
```

Out[4]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	list
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documen
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Interna TV Show Drama Mys
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	September 24, 2021	2021	TV-MA	1 Season	Crir S Interna TV Show
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	September 24, 2021	2021	TV-MA	1 Season	Docus Real
4	s5	TV Show	Kota Factory	NaN	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	September 24, 2021	2021	TV-MA	2 Seasons	Interna TV S Roman Shows,

```
In [5]: data.tail()            # to show last 5 records from dataset
```

Out[5]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	
8802	s8803	Movie	Zodiac	David Fincher	Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...	United States	November 20, 2019	2007	R	158 min	Cu
8803	s8804	TV Show	Zombie Dumb	NaN	NaN	NaN	July 1, 2019	2018	TV-Y7	2 Seasons	K S (
8804	s8805	Movie	Zombieland	Ruben Fleischer	Jesse Eisenberg, Woody Harrelson, Emma Stone, ...	United States	November 1, 2019	2009	R	88 min	C
8805	s8806	Movie	Zoom	Peter Hewitt	Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...	United States	January 11, 2020	2006	PG	88 min	C (
8806	s8807	Movie	Zubaan	Mozez Singh	Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...	India	March 2, 2019	2015	TV-14	111 min	Inte

In [6]:

```
data.shape          # this attribute will show the shape of dataframe
```

Out[6]:

```
(8807, 12)
```

In [7]:

```
data.size           # this attribute will show the total elements present in the dataframe
```

Out[7]:

```
105684
```

In [8]:

```
data.columns        # this will show the columns names of the dataset
```

Out[8]:

```
Index(['show_id', 'type', 'title', 'director', 'cast', 'country', 'date_added',
       'release_year', 'rating', 'duration', 'listed_in', 'description'],
      dtype='object')
```

In [9]:

```
data.info()      #to show information about dataframe like indexes,columns,datatype of each columr
```

```
<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
```

In [10]:

```
data.dtypes   # to return data types of each column in the dataframe
```

Out[10]:

```
show_id         object
type            object
title           object
director        object
cast            object
country         object
date_added      object
release_year     int64
rating          object
duration        object
listed_in       object
description     object
dtype: object
```

In [ ]:

In [ ]:

Task 1. Is there are any duplicate records?if yes,then removes those records.

In [11]:

```
data[data.duplicated()]
```

Out[11]:

show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description

In [ ]:

In [ ]:

Task 2. Is there any null values present in dataframe?Show null-values with heat map.

In [12]:

```
data.isnull().sum()
```

Out[12]:

```
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
```

In [13]:

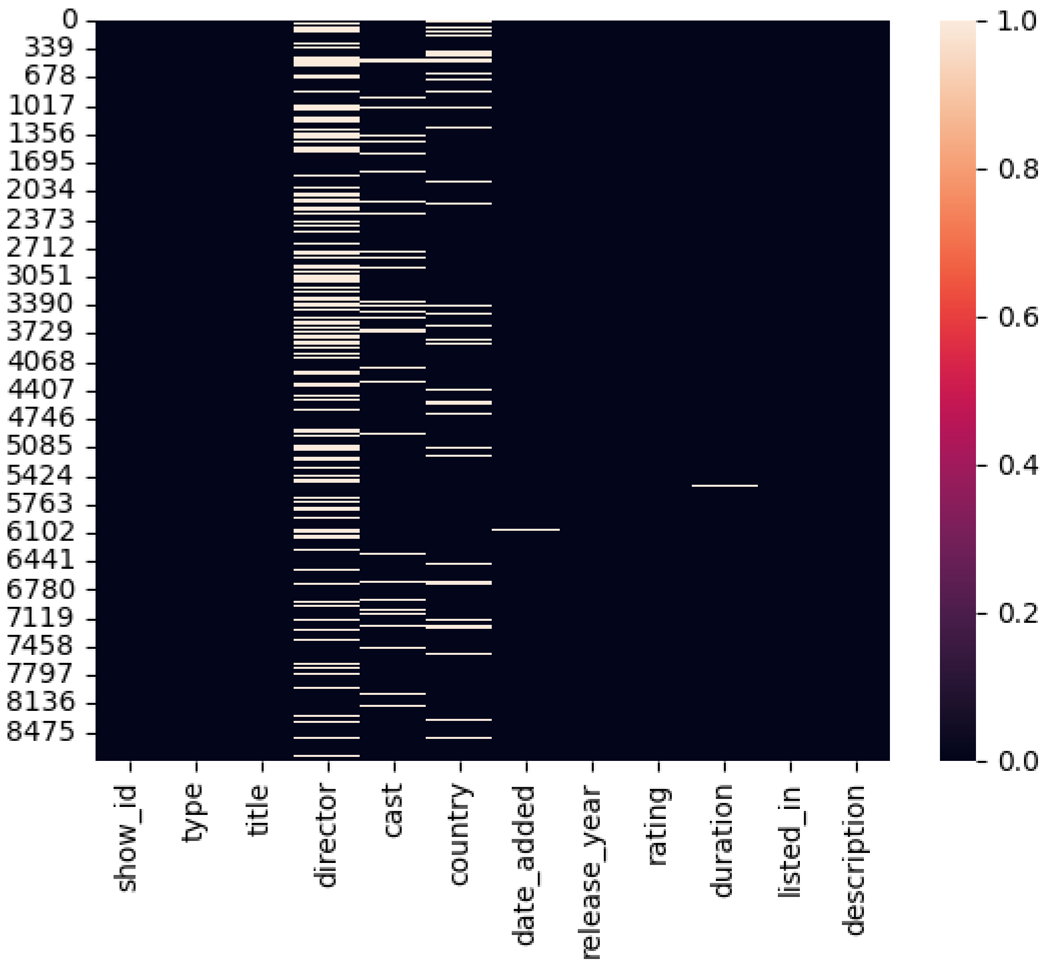
```
import seaborn as sns                        # importing seaborn library
```

In [14]:

```
sns.heatmap(data.isnull())
```

Out[14]:

```
<AxesSubplot: >
```



In [ ]:

```

```

Distribution of Content:

To begin the task of analyzing Netflix data, I’ll start by looking at the distribution of content ratings on Netflix:

In [15]:

```
data.head(2)
```

Out[15]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documenta
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Internatio TV Shows, Dramas, Myste

In [16]:

```
z=data.groupby(['rating']).size().reset_index(name='count')
```

In [17]:

```
z
```

Out[17]:

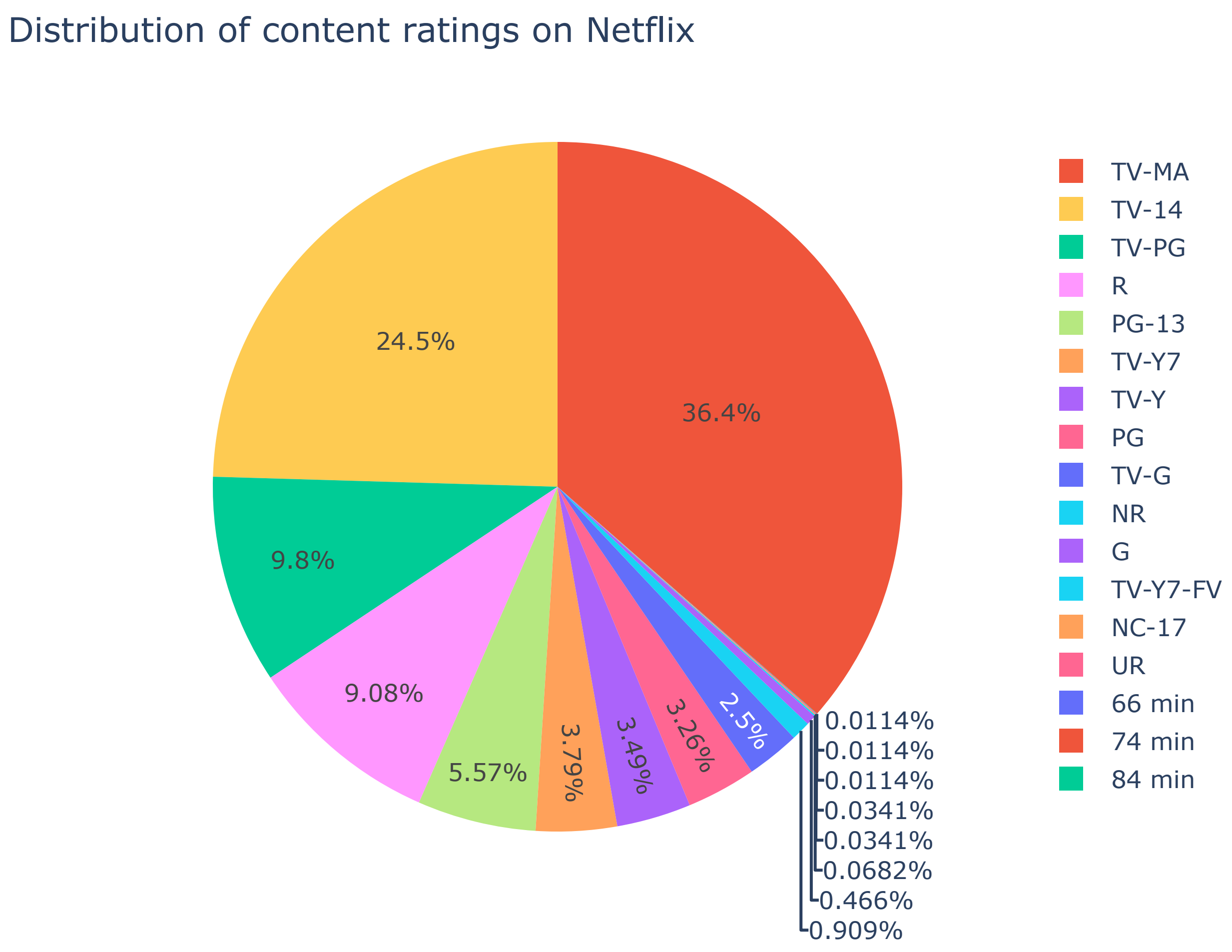
	rating	count
0	66 min	1
1	74 min	1
2	84 min	1
3	G	41
4	NC-17	3
5	NR	80
6	PG	287
7	PG-13	490
8	R	799
9	TV-14	2160
10	TV-G	220
11	TV-MA	3207
12	TV-PG	863
13	TV-Y	307
14	TV-Y7	334
15	TV-Y7-FV	6
16	UR	3

In [18]:

```
import plotly.express as px
```

In [19]:

```
px.pie(z,values='count',names='rating',title='Distribution of content ratings on Netflix',color=
```


Distribution of content ratings on Netflix

The graph above shows that the majority of content on Netflix is categorized as TV-MA, which means that most of the content available on Netflix is intended for viewing by mature and adult audiences.

```
In [ ]:
```

Top 5 Directors and Actors on Netflix

1.Top 5 Directors on Netflix :

```
In [20]: data.head(2)
```

Out[20]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documentar
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Internatio TV Shows, Dramas, Myster

```
In [21]: data.director.fillna('no director specified',inplace=True)        #Handling null values present
```

In [22]:
```
data.director.isnull().sum()                                        # Checking for null values in
```

Out[22]:
```
0
```

In [23]:
```
filtered_directors=pd.DataFrame()
```

In [24]:
```
filtered_directors=data['director'].str.split(',',expand=True).stack()
```

In [25]:
```
filtered_directors
```

Out[25]:
```
0     0           Kirsten Johnson
1     0     no director specified
2     0           Julien Leclercq
3     0     no director specified
4     0     no director specified
                    ...
8802  0             David Fincher
8803  0     no director specified
8804  0           Ruben Fleischer
8805  0              Peter Hewitt
8806  0               Mozez Singh
Length: 9612, dtype: object
```

In [26]:
```
filtered_directors=filtered_directors.to_frame()
```

In [27]:
```
filtered_directors
```

Out[27]:

		0
0	**0**	Kirsten Johnson
1	**0**	no director specified
2	**0**	Julien Leclercq
3	**0**	no director specified
4	**0**	no director specified
...	**...**	...
8802	**0**	David Fincher
8803	**0**	no director specified
8804	**0**	Ruben Fleischer
8805	**0**	Peter Hewitt
8806	**0**	Mozez Singh

9612 rows × 1 columns

In [28]:
```
filtered_directors.columns=['Director']
```

In [29]:
```
filtered_directors
```

Out[29]:

		Director
0	**0**	Kirsten Johnson
1	**0**	no director specified
2	**0**	Julien Leclercq
3	**0**	no director specified
4	**0**	no director specified
...	**...**	...
8802	**0**	David Fincher
8803	**0**	no director specified
8804	**0**	Ruben Fleischer
8805	**0**	Peter Hewitt
8806	**0**	Mozez Singh

9612 rows × 1 columns

In [30]:
```
directors=filtered_directors.groupby(['Director']).size().reset_index(name='Total Content')
```

In [31]:
```
directors
```

Out[31]:

	Director	Total Content
0	Aaron Moorhead	2
1	Aaron Woolf	1
2	Abbas Alibhai Burmawalla	1
3	Abdullah Al Noor	1
4	Abhinav Shiv Tiwari	1
...	...	...
5116	Çagan Irmak	1
5117	Ísold Uggadóttir	1
5118	Óskar Thór Axelsson	1
5119	Ömer Faruk Sorak	2
5120	Şenol Sönmez	2

5121 rows × 2 columns

In [32]:
```
directors_top5=directors[directors.Director!='no director specified'].sort_values(by='Total Conte
```

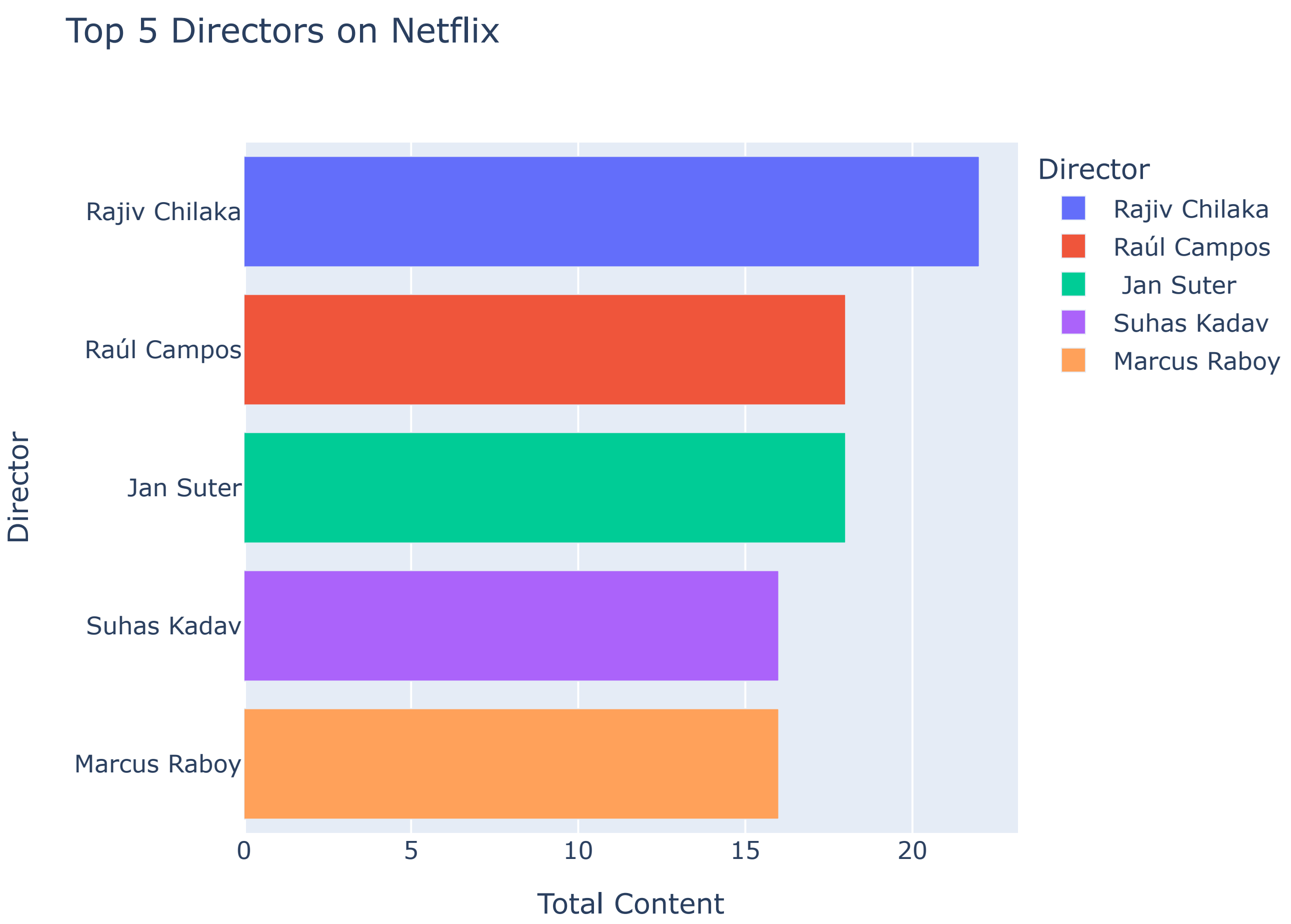
In [33]:
```
directors_top5
```

Out[33]:

	Director	Total Content
4020	Rajiv Chilaka	22
4067	Raúl Campos	18
261	Jan Suter	18
4651	Suhas Kadav	16
3235	Marcus Raboy	16

In [34]:

```
px.bar(directors_top5,x=directors_top5['Total Content'],y=directors_top5['Director'],title='Top 
       color='Director')
```



From the above graph it is derived that the top 5 directors on this platform are:

1.Rajiv Chilaka

2.Jan Suter

3.Raul Campos

4.Suhas Kadav

5.Marcus Raboy

In [ ]:

2.Top 5 Actors on Netflix:

In [35]:
```
data.head(2)
```

Out[35]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listec
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documenta
1	s2	TV Show	Blood & Water	no director specified	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Internatic TV Shows, Dramas, Myste

In [36]:
```
data.cast.isnull().sum()      # Checking for null values present in cast columns
```

Out[36]:
```
825
```

In [37]:
```
data.cast.fillna('no cast specified',inplace=True)   # handling null values
```

In [38]:
```
data.cast.isnull().sum()      #Again checking for null values
```

Out[38]:
```
0
```

In [39]:
```
filtered_cast=pd.DataFrame
```

In [40]:
```
filtered_cast=data.cast.str.split(',',expand=True).stack()
```

In [41]:
```
filtered_cast
```

Out[41]:
```
0     0         no cast specified
1     0                Ama Qamata
      1               Khosi Ngema
      2             Gail Mabalane
      3            Thabang Molaba
                         ...
8806  3          Manish Chaudhary
      4              Meghna Malik
      5             Malkeet Rauni
      6            Anita Shabdish
      7     Chittaranjan Tripathy
Length: 64951, dtype: object
```

In [42]:
```
filtered_cast=filtered_cast.to_frame()
```

In [43]:
```
filtered_cast
```

Out[43]:

		0
0	0	no cast specified
1	0	Ama Qamata
	1	Khosi Ngema
	2	Gail Mabalane
	3	Thabang Molaba
...	...	...
8806	3	Manish Chaudhary
	4	Meghna Malik
	5	Malkeet Rauni
	6	Anita Shabdish
	7	Chittaranjan Tripathy

64951 rows × 1 columns

In [44]:
```
filtered_cast.columns=['Actor']
```

In [45]:
```
actors=filtered_cast.groupby(['Actor']).size().reset_index(name='Total Content')
```

In [46]:
```
actors
```

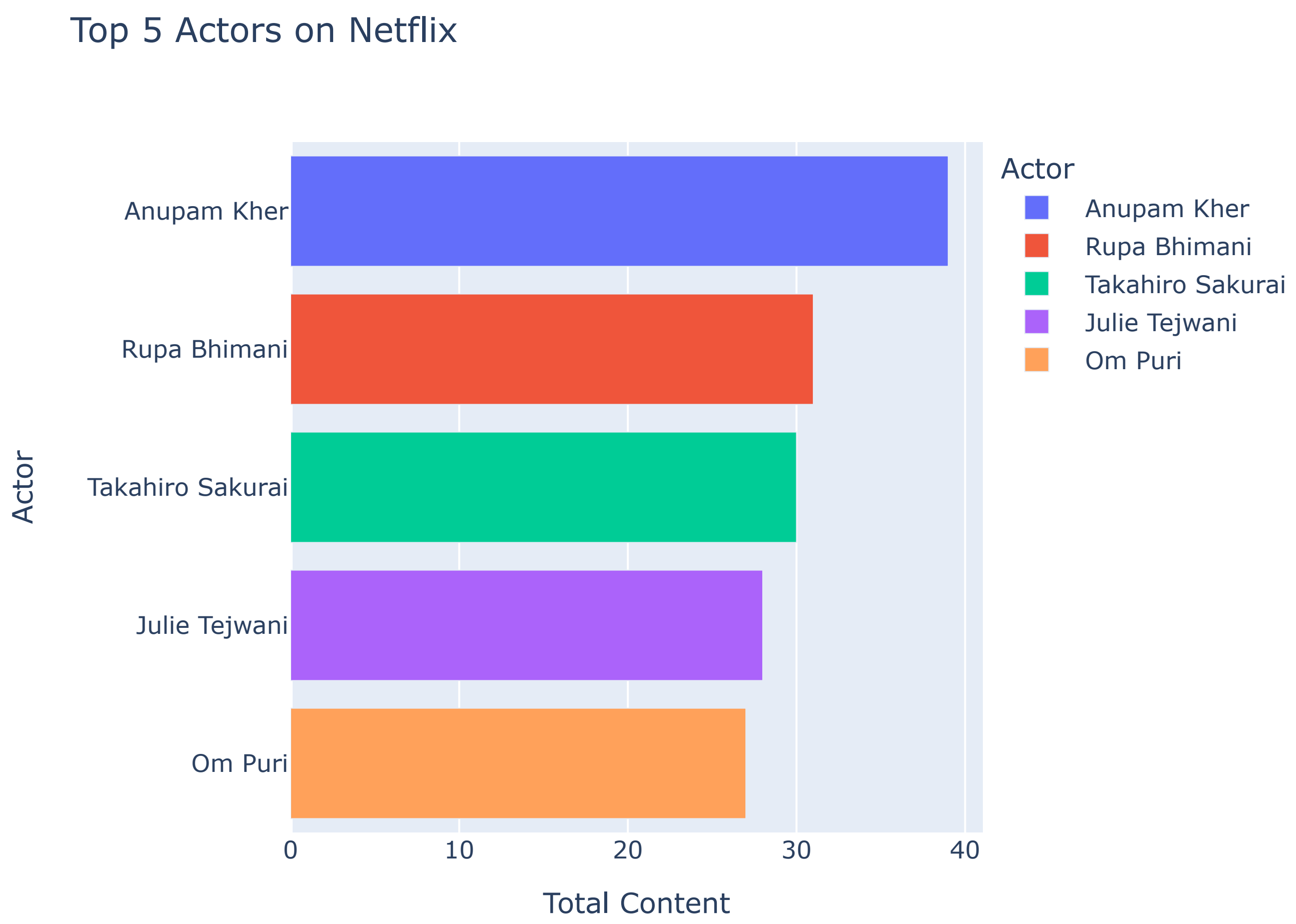
Out[46]:

	Actor	Total Content
0	Jr.	2
1	"Riley" Lakdhar Dridi	1
2	'Najite Dede	1
3	2 Chainz	1
4	2Mex	1
...	...	...
39292	İbrahim Büyükak	1
39293	İbrahim Çelikkol	1
39294	Şahin Irmak	1
39295	Şükrü Özyıldız	1
39296	Şopé Dìrísù	1

39297 rows × 2 columns

In [47]:
```
actors_top5=actors[actors.Actor!='no cast specified'].sort_values(by='Total Content',ascending=F
```

In [48]:
```
px.bar(actors_top5,x=actors_top5['Total Content'],y=actors_top5['Actor'],title='Top 5 Actors on
```



From the above plot, it is derived that the top 5 actors on Netflix are:

1.Anupam Kher

2.Rupa Bhimani

3.Takahiro Sakurai

4.Julie Tejwani

5.Om Puri

In [ ]:

In [ ]:

The trend of production over the years on Netflix :

In [49]:

```
data.head(2)
```

Out[49]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listec
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	no cast specified	United States	September 25, 2021	2020	PG-13	90 min	Documenta
1	s2	TV Show	Blood & Water	no director specified	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	Internatic TV Shows, Dramas, Myste

In [50]:
```python
data.rename(columns={'release_year':'Release Year','type':'Type'},inplace=True)
```

In [51]:
```python
data['Release Year'].unique()           # shows the all years present in the data
```

Out[51]:
```
array([2020, 2021, 1993, 2018, 1996, 1998, 1997, 2010, 2013, 2017, 1975,
       1978, 1983, 1987, 2012, 2001, 2014, 2002, 2003, 2004, 2011, 2008,
       2009, 2007, 2005, 2006, 1994, 2015, 2019, 2016, 1982, 1989, 1990,
       1991, 1999, 1986, 1992, 1984, 1980, 1961, 2000, 1995, 1985, 1976,
       1959, 1988, 1981, 1972, 1964, 1945, 1954, 1979, 1958, 1956, 1963,
       1970, 1973, 1925, 1974, 1960, 1966, 1971, 1962, 1969, 1977, 1967,
       1968, 1965, 1946, 1942, 1955, 1944, 1947, 1943], dtype=int64)
```

In [52]:
```python
df=data.groupby(['Type','Release Year']).size().reset_index(name='Total content')
```

In [53]:
```python
df
```

Out[53]:

	Type	Release Year	Total content
0	Movie	1942	2
1	Movie	1943	3
2	Movie	1944	3
3	Movie	1945	3
4	Movie	1946	1
...	...	...	...
114	TV Show	2017	265
115	TV Show	2018	380
116	TV Show	2019	397
117	TV Show	2020	436
118	TV Show	2021	315

119 rows × 3 columns

In [54]:
```python
df=df[df['Release Year']>=2010]
```

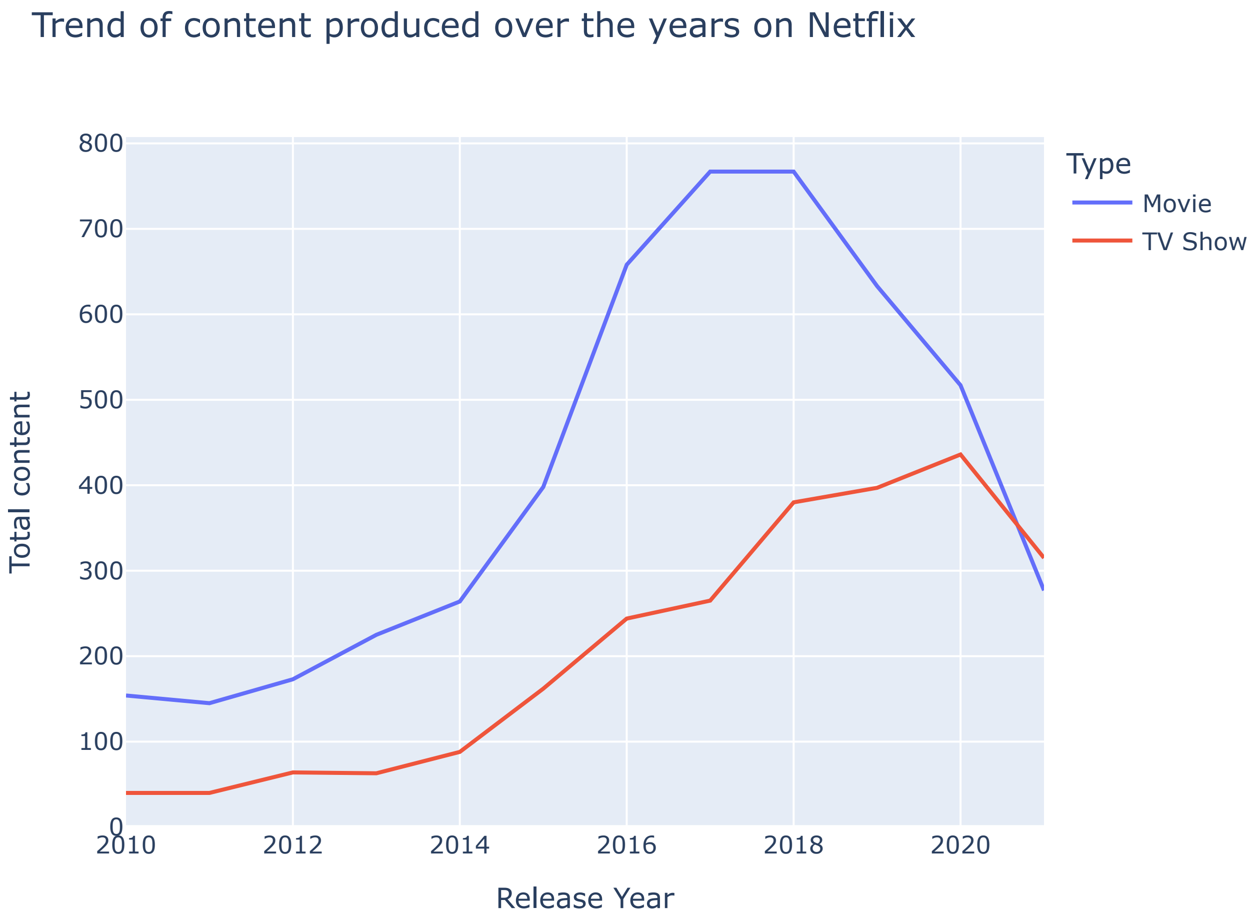
In [55]:
```python
df
```

Out[55]:

	Type	Release Year	Total content
61	Movie	2010	154
62	Movie	2011	145
63	Movie	2012	173
64	Movie	2013	225
65	Movie	2014	264
66	Movie	2015	398
67	Movie	2016	658
68	Movie	2017	767
69	Movie	2018	767
70	Movie	2019	633
71	Movie	2020	517
72	Movie	2021	277
107	TV Show	2010	40
108	TV Show	2011	40
109	TV Show	2012	64
110	TV Show	2013	63
111	TV Show	2014	88
112	TV Show	2015	162
113	TV Show	2016	244
114	TV Show	2017	265
115	TV Show	2018	380
116	TV Show	2019	397
117	TV Show	2020	436
118	TV Show	2021	315

In [56]:

```
px.line(df,x='Release Year',y='Total content',title='Trend of content produced over the years on
```



The above line graph shows that there has been a decline in the production of the content for movies since 2018

and for TV Shows since 2020

In [ ]: