NETFLIX Reccomendation system

Importing libraries

In [3]:

```
import numpy as np
import pandas as pd
import seaborn as sns
from matplotlib import pyplot as plt
```

Reading dataset anad undersatnding the data

In [4]:

```
netflix = pd.read_csv("netflix_titles.csv")
```

In [5]:

```
netflix.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
```

In [8]:

```
netflix.describe()
```

Out[8]:

	release_year
count	8807.000000
mean	2014.180198
std	8.819312
min	1925.000000
25%	2013.000000
50%	2017.000000
75%	2019.000000
max	2021.000000

In [6]:

```
#Identifying the null values
netflix.isnull().sum()
```

Out[6]:

```
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 [7]:

```
# Replacing the null values
netflix.director.fillna(value="unknown", inplace = True)
netflix.director
```

Out[7]:

```
0       Kirsten Johnson
1               unknown
2       Julien Leclercq
3               unknown
4               unknown
             ...
8802      David Fincher
8803            unknown
8804    Ruben Fleischer
8805       Peter Hewitt
8806        Mozez Singh
Name: director, Length: 8807, dtype: object
```

In [8]:

```
netflix.cast.fillna(value = "unknown", inplace = True)
netflix.cast
```

Out[8]:

```
0                                                 unknown
1       Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...
2       Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...
3                                                 unknown
4       Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...
                              ...
8802    Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...
8803                                              unknown
8804    Jesse Eisenberg, Woody Harrelson, Emma Stone, ...
8805    Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...
8806    Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...
Name: cast, Length: 8807, dtype: object
```

In [9]:

```
netflix.country.fillna(value="unknown", inplace =True)
netflix.country
```

Out[9]:

```
0       United States
1        South Africa
2             unknown
3             unknown
4               India
            ...
8802    United States
8803          unknown
8804    United States
8805    United States
8806            India
Name: country, Length: 8807, dtype: object
```

In [10]:

```
netflix.date_added.fillna(value = "unknown", inplace = True)
netflix.date_added
```

Out[10]:

```
0       September 25, 2021
1       September 24, 2021
2       September 24, 2021
3       September 24, 2021
4       September 24, 2021
               ...
8802     November 20, 2019
8803          July 1, 2019
8804      November 1, 2019
8805      January 11, 2020
8806         March 2, 2019
Name: date_added, Length: 8807, dtype: object
```

In [11]:

```
netflix.isnull().sum()
```

Out[11]:

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

In [12]:

```
netflix.dropna(inplace = True)
```

In [13]:

```
netflix.isnull().sum()
```

Out[13]:

```
show_id         0
type            0
title           0
director        0
cast            0
country         0
date_added      0
release_year    0
rating          0
duration        0
listed_in       0
description     0
dtype: int64
```

In [14]:

```
netflix.type.value_counts().index
```

Out[14]:

```
Index(['Movie', 'TV Show'], dtype='object')
```

In [18]:

```
netflix.type.unique
```

Out[18]:

```
<bound method Series.unique of 0         Movie
1       TV Show
2       TV Show
3       TV Show
4       TV Show
         ...
8802      Movie
8803    TV Show
8804      Movie
8805      Movie
8806      Movie
Name: type, Length: 8800, dtype: object>
```

In [17]:

```
netflix.type.value_counts()
```

Out[17]:

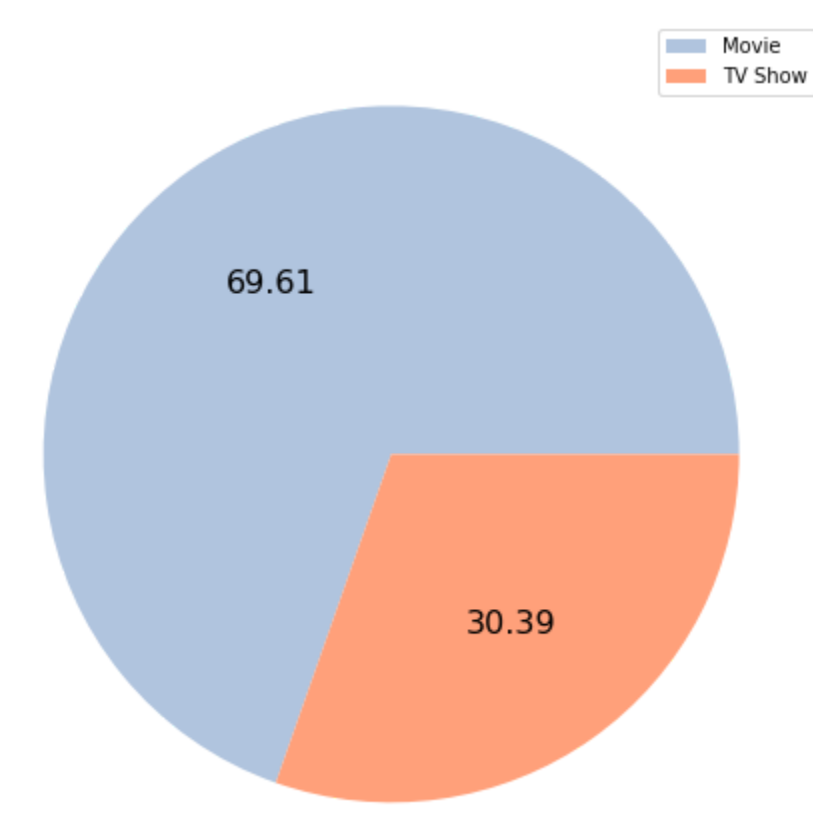
```
Movie      6126
TV Show    2674
Name: type, dtype: int64
```

Visualising the type

In [19]:

```
#visualizing the type
plt.figure(figsize=(10,8))

plt.pie(netflix.type.value_counts(),
        labels = netflix.type.value_counts().index,
        labeldistance = None, autopct="%.2f",
        textprops = {'fontsize': 16,},
        colors = ['lightsteelblue','lightsalmon' ] )
plt.legend()
plt.show()
```



Result: The number of movie content on netflix in 2.33 times the TV Shows.

Visualising the release year

In [21]:

```
last_decade = netflix[["type", "release_year"]]
last_decade = last_decade.rename(columns = {"release_year" : "Release Year"})
last_decade = last_decade[last_decade["Release Year"]>=2010]
last_decade
```

Out[21]:

	type	Release Year
0	Movie	2020
1	TV Show	2021
2	TV Show	2021
3	TV Show	2021
4	TV Show	2021
...	...	...
8798	Movie	2014
8800	TV Show	2012
8801	Movie	2015
8803	TV Show	2018
8806	Movie	2015

7465 rows × 2 columns

In [22]:

```
last_decade_df = last_decade.groupby("Release Year")["type"].size().reset_index()
last_decade_df = pd.DataFrame(last_decade_df)
last_decade_df
```

Out[22]:

	Release Year	type
0	2010	193
1	2011	185
2	2012	237
3	2013	287
4	2014	352
5	2015	557
6	2016	902
7	2017	1030
8	2018	1147
9	2019	1030
10	2020	953
11	2021	592

In [23]:

```
last_decade_df.rename(columns = {"type": "Total Content"}, inplace = True)
```

In [24]:

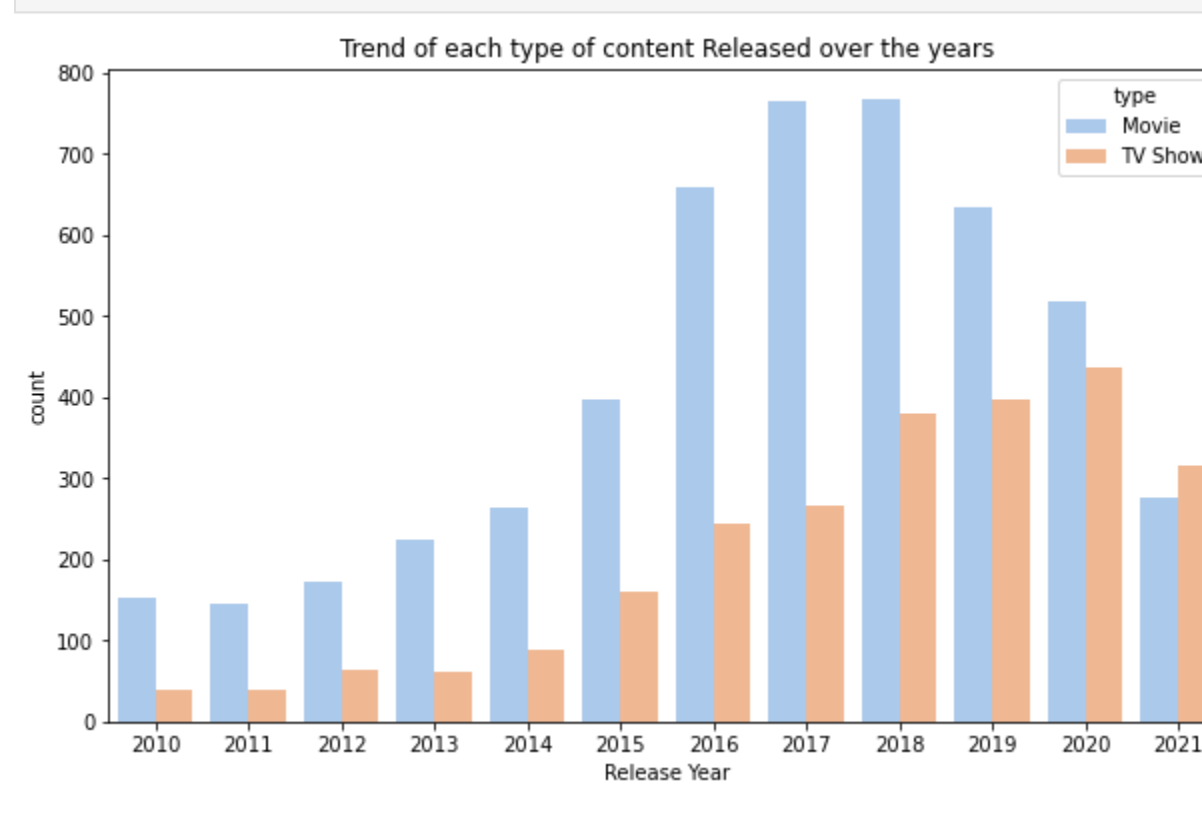
```
last_decade.groupby("Release Year")["type"].value_counts()
```

Out[24]:

```
Release Year  type
2010          Movie      153
              TV Show     40
2011          Movie      145
              TV Show     40
2012          Movie      173
              TV Show     64
2013          Movie      225
              TV Show     62
2014          Movie      264
              TV Show     88
2015          Movie      396
              TV Show    161
2016          Movie      658
              TV Show    244
2017          Movie      765
              TV Show    265
2018          Movie      767
              TV Show    380
2019          Movie      633
              TV Show    397
2020          Movie      517
              TV Show    436
2021          TV Show    315
              Movie      277
Name: type, dtype: int64
```

In [25]:

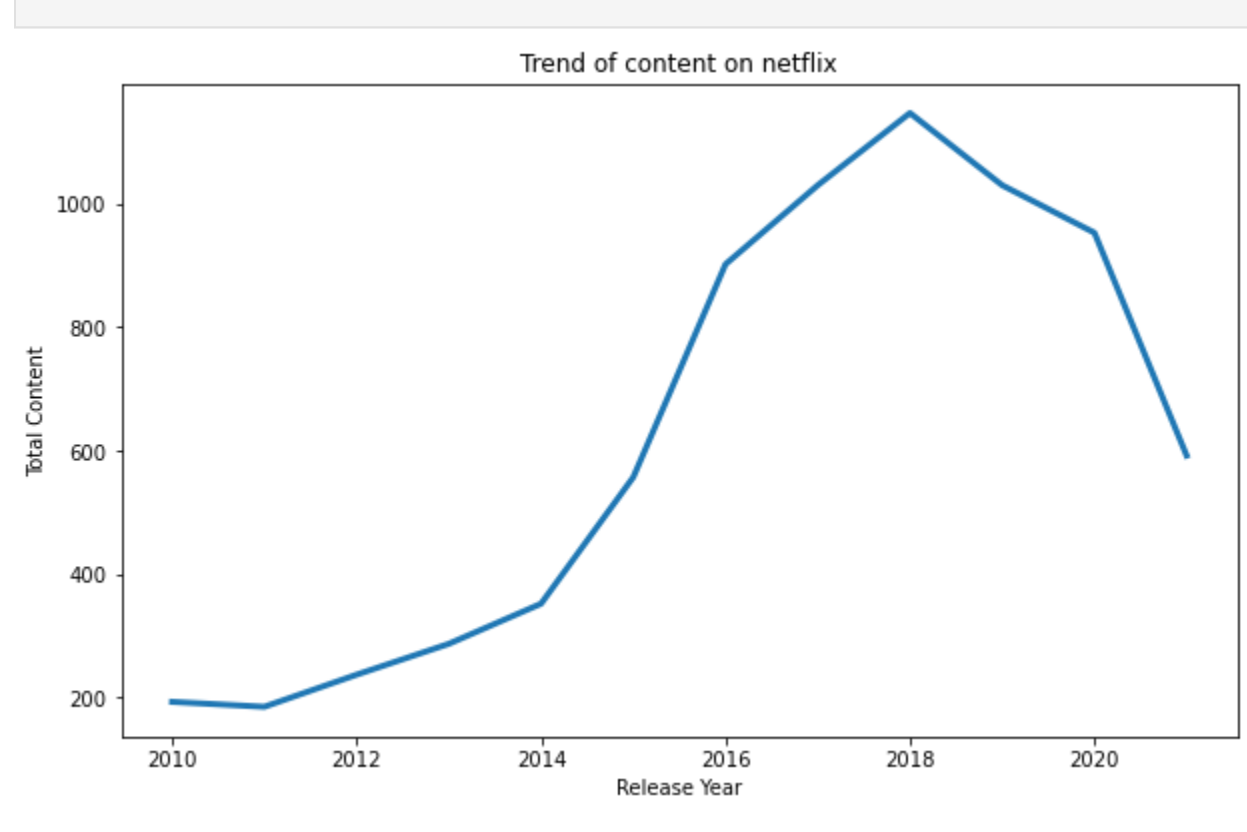
```
plt.figure(figsize = (10,6))
count_plot = sns.countplot(x = "Release Year", data = last_decade, hue="type",
             palette= "pastel")
count_plot.set(title = "Trend of each type of content Released over the years");
```



Visualising the content

In [26]:

```
plt.figure(figsize = (10,6))
plot_total_content= sns.lineplot(x= "Release Year", y = "Total Content", data = last_decade_df,
                                 linewidth = 3)
plot_total_content.set(xlabel = "Release Year", ylabel = "Total Content",
                       title = "Trend of content on netflix")
plt.show()
```



Result: It is seen that most content on netflix was released in year 2018, the amount of content is decreasing since then.

Visualisation for the countries

In [27]:

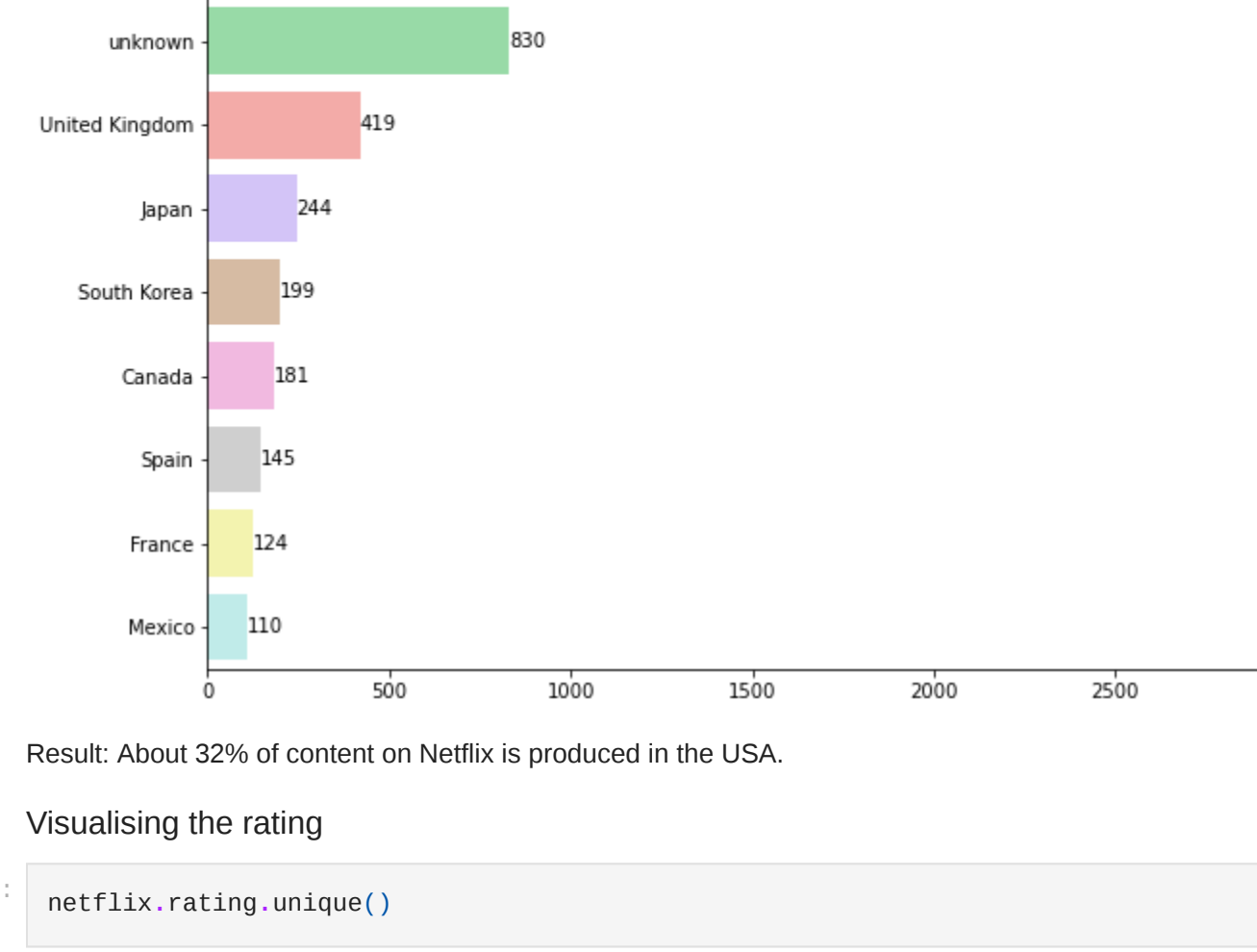
```
top_10_countries= netflix.country.value_counts().head(10)
top_10_countries = pd.DataFrame(top_10_countries)
top_10_countries
```

Out[27]:

	country
United States	2815
India	972
unknown	830
United Kingdom	419
Japan	244
South Korea	199
Canada	181
Spain	145
France	124
Mexico	110

In [28]:

```
plt.figure(figsize = (10,8))
country_plot = sns.barplot(x = netflix.country.value_counts()[:10].values,
                           y= netflix.country.value_counts()[:10].index,palette = "pastel")
for i in country_plot.containers:
    country_plot.bar_label(i);
```



Result: About 32% of content on Netflix is produced in the USA.

Visualising the rating

In [29]:

```
netflix.rating.unique()
```

Out[29]:

```
array(['PG-13', 'TV-MA', 'PG', 'TV-14', 'TV-PG', 'TV-Y', 'TV-Y7', 'R',
       'TV-G', 'G', 'NC-17', 'NR', 'TV-Y7-FV', 'UR'], dtype=object)
```

In [30]:

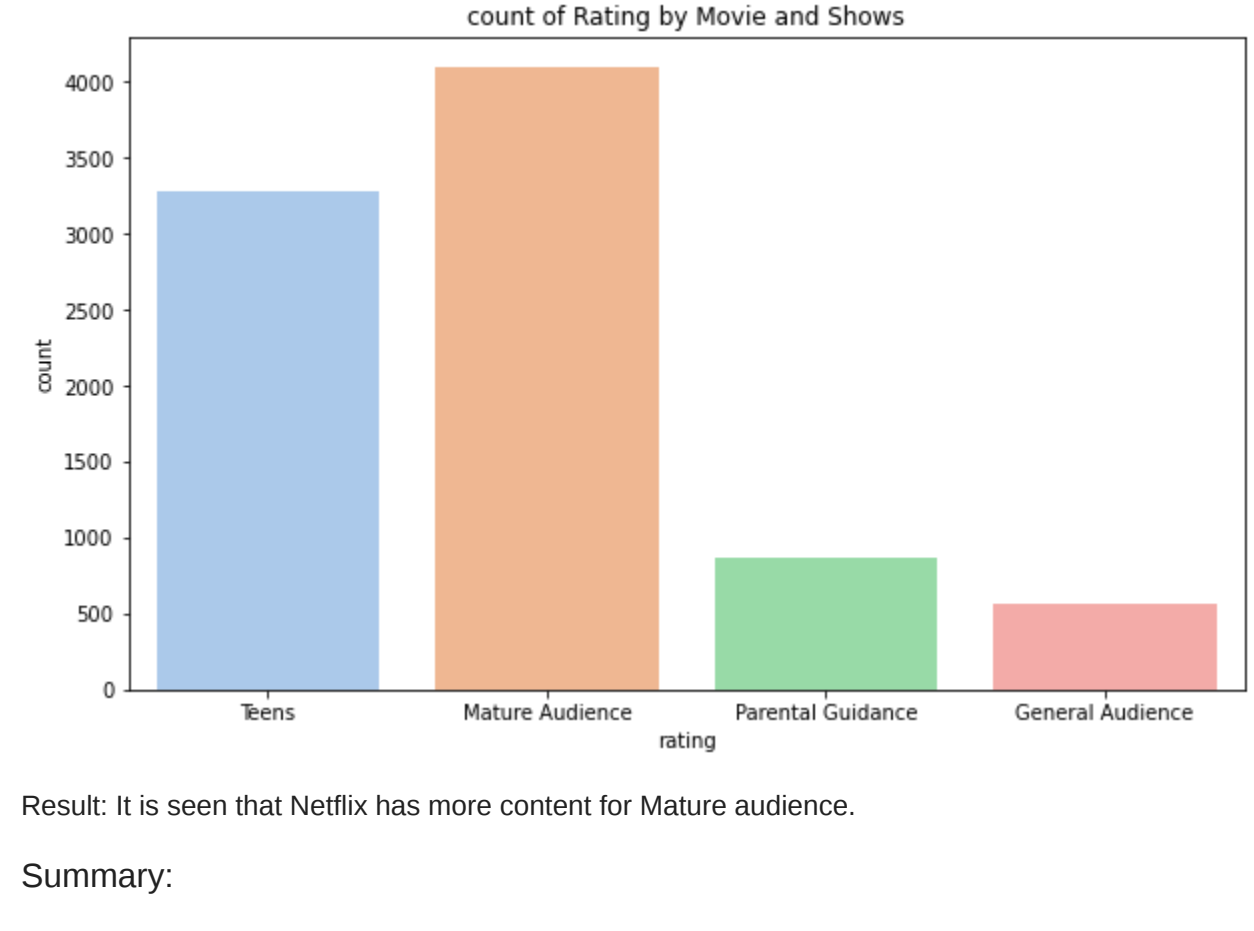
```
new_catgs = {
    'TV-PG': 'Parental Guidance',
    'TV-MA' : 'Mature Audience',
    'TV-Y7-FV': 'Teens',
    'TV-Y7': 'Teens',
    'TV-14': 'Teens',
    'R': 'Mature Audience',
    'TV-Y': 'General Audience',
    'NR': 'Mature Audience',
    'PG-13': 'Teens',
    'TV-G': 'General Audience',
    'PG': 'Teens',
    'G': 'General Audience',
    'UR': 'Mature Audience',
    'NC-17': 'Mature Audience'
}
netflix['rating']=netflix['rating'].replace(new_catgs)
netflix.head()
```

Out[30]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	unknown	United States	September 25, 2021	2020	Teens	90 min	Documentaries	As her father nears the end of his life, filmm...
1	s2	TV Show	Blood & Water	unknown	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	Mature Audience	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	After crossing paths at a party, a Cape Town t...
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	unknown	September 24, 2021	2021	Mature Audience	1 Season	Crime TV Shows, International TV Shows, TV Act...	To protect his family from a powerful drug lor...
3	s4	TV Show	Jailbirds New Orleans	unknown	unknown	unknown	September 24, 2021	2021	Mature Audience	1 Season	Docuseries, Reality TV	Feuds, flirtations and toilet talk go down amo...
4	s5	TV Show	Kota Factory	unknown	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	September 24, 2021	2021	Mature Audience	2 Seasons	International TV Shows, Romantic TV Shows, TV ...	In a city of coaching centers known to train I...

In [31]:

```
plt.figure(figsize= (10,6))
sns.countplot(x="rating", data=netflix, palette="pastel",)
plt.title("count of Rating by Movie and Shows");
```



Result: It is seen that Netflix has more content for Mature audience.

Summary:

- The number of movie content on netflix in 2.33 times the TV Shows.
- It is found that the more content was released during the year 2017 nd 2018.
- It is seen that most content on netflix was released in year 2018, the amount of content is decreasing since then.
- About 32% of content on Netflix is produced in the USA.
- It is seen that Netflix has more content for Mature audience.