

```
import pandas as pd
import numpy as np
netflix=pd.read_csv("/content/netflix.csv")
netflix
import seaborn as sns
import matplotlib.pyplot as plt
```

```
# Analysing weather the dataframe is having null values and duplicate values are there or not by using isnull, duplicated functions
# for preprocessing of data
```

```
# info and describe functions for analysis of data
netflix.isnull().sum()
netflix.dropna(inplace=True)
```

```
# finding null values
netflix.isnull().sum()
```

```
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
```

```
# finding duplicates
netflix.duplicated()
```

```
7      False
8      False
9      False
12     False
24     False
...
8881   False
8882   False
8884   False
8885   False
8886   False
Length: 5332, dtype: bool
```

```
# information
netflix.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 5332 entries, 7 to 8886
Data columns (total 12 columns):
#   Column                Non-Null Count  Dtype
---  -
0   show_id                5332 non-null  object
1   type                   5332 non-null  object
2   title                  5332 non-null  object
3   director               5332 non-null  object
4   cast                   5332 non-null  object
5   country                5332 non-null  object
6   date_added             5332 non-null  object
7   release_year           5332 non-null  int64
8   rating                 5332 non-null  object
9   duration               5332 non-null  object
10  listed_in              5332 non-null  object
11  description             5332 non-null  object
dtypes: int64(1), object(11)
memory usage: 541.5+ KB
```

```
netflix.describe()
```

	release_year
count	5332.000000
mean	2012.742123
std	9.625831
min	1942.000000
25%	2011.000000
50%	2016.000000
75%	2018.000000
max	2021.000000

```
# dropping not assigned values
netflix.nunique
netflix.dropna()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D...	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
8	s9	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	September 24, 2021	2021	TV-14	9 Seasons	British TV Shows, Reality TV	A talented batch of amateur bakers face off in...
9	s10	Movie	The Starling	Theodore Melfi	Melissa McCarthy, Chris O'Dowd, Kevin Kline, T...	United States	September 24, 2021	2021	PG-13	104 min	Comedies, Dramas	A woman adjusting to life after a loss contend...
12	s13	Movie	Je Suis Karl	Christian Schwochow	Luna Wedler, Jannis Niewöhner, Milan Peschel, ...	Germany, Czech Republic	September 23, 2021	2021	TV-MA	127 min	Dramas, International Movies	After most of her family is murdered in a terr...
24	s25	Movie	Jeans	S. Shankar	Prashanth, Aishwarya Rai Bachchan, Sri Lakshmi...	India	September 21, 2021	1998	TV-14	166 min	Comedies, International Movies, Romantic Movies	When the father of the man she loves insists t...
...	...	...	...	...	...	...	...	...	...	...	...	...
8801	s8802	Movie	Zinzana	Majid Al Ansari	Ali Suliman, Saleh Bakri, Yasa, Ali Al-Jabri, ...	United Arab Emirates, Jordan	March 9, 2016	2015	TV-MA	96 min	Dramas, International Movies, Thrillers	Recovering alcoholic Talal wakes up inside a s...
8802	s8803	Movie	Zodiac	David Fincher	Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...	United States	November 20, 2019	2007	R	158 min	Cult Movies, Dramas, Thrillers	A political cartoonist, a crime reporter and a...
8804	s8805	Movie	Zombieland	Ruben Fleischer	Jesse Eisenberg, Woody Harrelson, Emma Stone, ...	United States	November 1, 2019	2009	R	88 min	Comedies, Horror Movies	Looking to survive in a world taken over by zo...
8805	s8806	Movie	Zoom	Peter Hewitt	Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...	United States	January 11, 2020	2006	PG	88 min	Children & Family Movies, Comedies	Dragged from civilian life, a former superhero...
8806	s8807	Movie	Zubaan	Mozez Singh	Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...

5332 rows × 12 columns

```
#finding unique values
```

```
netflix.nunique()
```

```
show_id      5332
type          2
title        5332
director     3945
cast         5200
country       604
date_added   1453
release_year  72
rating        14
duration     198
listed_in    335
description   5321
dtype: int64
```

```
netflix.value_counts
```

```
<bound method DataFrame.value_counts of
7      s8      Movie      Sankofa      Haile Gerima
8      s9      TV Show  The Great British Baking Show  Andy Devonshire
9      s10     Movie      The Starling      Theodore Melfi
12     s13     Movie      Je Suis Karl      Christian Schwochow
24     s25     Movie      Jeans              S. Shankar
...     ...     ...      ...              ...
8801   s8802     Movie      Zinzana      Majid Al Ansari
8802   s8803     Movie      Zodiac      David Fincher
8804   s8805     Movie      Zombieland    Ruben Fleischer
8805   s8806     Movie      Zoom          Peter Hewitt
8806   s8807     Movie      Zubaan      Mozez Singh
```

```
cast \
7      Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D...
8      Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...
9      Melissa McCarthy, Chris O'Dowd, Kevin Kline, T...
12     Luna Wedler, Jannis Niewöhner, Milan Peschel, ...
24     Prashanth, Aishwarya Rai Bachchan, Sri Lakshmi...
...     ...
8801   Ali Suliman, Saleh Bakri, Yasa, Ali Al-Jabri, ...
8802   Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...
8804   Jesse Eisenberg, Woody Harrelson, Emma Stone, ...
8805   Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...
8806   Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...
```

```
country      date_added \
7      United States, Ghana, Burkina Faso, United Kin...  September 24, 2021
8      United Kingdom  September 24, 2021
9      United States  September 24, 2021
12     Germany, Czech Republic  September 23, 2021
24     India  September 21, 2021
...     ...
8801   United Arab Emirates, Jordan  March 9, 2016
8802   United States  November 20, 2019
8804   United States  November 1, 2019
8805   United States  January 11, 2020
8806   India  March 2, 2019
```

```
release_year rating  duration \
7      1993  TV-MA  125 min
8      2021  TV-14  9 Seasons
9      2021  PG-13  104 min
12     2021  TV-MA  127 min
24     1998  TV-14  166 min
...     ...     ...
8801   2015  TV-MA  96 min
8802   2007    R   158 min
8804   2009    R   88 min
8805   2006    PG   88 min
8806   2015  TV-14  111 min
```

```
listed_in \
7      Dramas, Independent Movies, International Movies
8      British TV Shows, Reality TV
9      Comedies, Dramas
12     Dramas, International Movies
24     Comedies, International Movies, Romantic Movies
```

```
netflix.shape
```

```
(5332, 12)
```

```
netflix[netflix['cast'].str.contains(",")]
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration		listed_in	description
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D...	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
8	s9	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	September 24, 2021	2021	TV-14	9 Seasons		British TV Shows, Reality TV	A talented batch of amateur bakers face off in...
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12	s13	Movie	Je Suis Karl	Christian Schwochow	Luna Wedler, Jannis Niewöhner, Milan Peschel, ...	Germany, Czech Republic	September 23, 2021	2021	TV-MA	127 min		Dramas, International Movies	After most of her family is murdered in a terr...
24	s25	Movie	Jeans	S. Shankar	Prashanth, Aishwarya Rai Bachchan, Sri Lakshmi...	India	September 21, 2021	1998	TV-14	166 min		Comedies, International Movies, Romantic Movies	When the father of the man she loves insists t...
...	...	...	...	...	...	...	...	...	...	...		...	...
8801	s8802	Movie	Zinzana	Majid Al Ansari	Ali Suliman, Saleh Bakri, Yasa, Ali Al-Jabri, ...	United Arab Emirates, Jordan	March 9, 2016	2015	TV-MA	96 min		Dramas, International Movies, Thrillers	Recovering alcoholic Talal wakes up inside a s...
8802	s8803	Movie	Zodiac	David Fincher	Mark Ruffalo, Jake Gyllenhaal, Robert Downey J...	United States	November 20, 2019	2007	R	158 min		Cult Movies, Dramas, Thrillers	A political cartoonist, a crime reporter and a...
8804	s8805	Movie	Zombieland	Ruben Fleischer	Jesse Eisenberg, Woody Harrelson, Emma Stone, ...	United States	November 1, 2019	2009	R	88 min		Comedies, Horror Movies	Looking to survive in a world taken over by zo...
8805	s8806	Movie	Zoom	Peter Hewitt	Tim Allen, Courteney Cox, Chevy Chase, Kate Ma...	United States	January 11, 2020	2006	PG	88 min		Children & Family Movies, Comedies	Dragged from civilian life, a former superhero...
8806	s8807	Movie	Zubaan	Mozez Singh	Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan...	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...

4764 rows × 12 columns

```
netflix['cast']=netflix['cast'].str.split(",")
```

```
netflix=netflix.explode('cast')
netflix
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration		listed_in	description
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Oyafunmike Ogunlano	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Alexandra Duah	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Nick Medley	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Mutabaruka	United States, Ghana, Burkina Faso, United Kin...	September 24, 2021	1993	TV-MA	125 min		Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
...	...	...	...	...	...	...	...	...	...	...		...	...
8806	s8807	Movie	Zubaan	Mozez Singh	Manish Chaudhary	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Meghna Malik	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Malkeet Rauni	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Anita Shabdish	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Chittaranjan Tripathy	India	March 2, 2019	2015	TV-14	111 min		Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...

42711 rows × 12 columns

```
netflix['country']=netflix['country'].str.split(",")
```

```
netflix=netflix.explode('country')
netflix
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	United States	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Ghana	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Burkina Faso	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	United Kingdom	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Germany	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
...	...	...	...	...	...	...	...	...	...	...	...	...
8806	s8807	Movie	Zubaan	Mozez Singh	Manish Chaudhary	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Meghna Malik	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Malkeet Rauni	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Anita Shabdish	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Chittaranjan Tripathy	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...

56420 rows × 12 columns

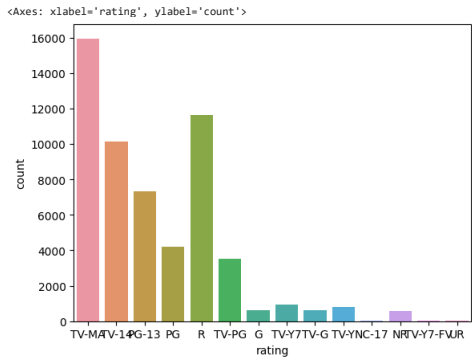
netflix

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	United States	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Ghana	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Burkina Faso	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	United Kingdom	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba	Germany	September 24, 2021	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a photo shoot in Ghana, an American model s...
...	...	...	...	...	...	...	...	...	...	...	...	...
8806	s8807	Movie	Zubaan	Mozez Singh	Manish Chaudhary	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Meghna Malik	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Malkeet Rauni	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Anita Shabdish	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...
8806	s8807	Movie	Zubaan	Mozez Singh	Chittaranjan Tripathy	India	March 2, 2019	2015	TV-14	111 min	Dramas, International Movies, Music & Musicals	A scrappy but poor boy worms his way into a ty...

56420 rows × 12 columns

```
# univariate analysis
netflix.columns
import seaborn as sns
import numpy as np
import matplotlib.pyplot as plt

sns.countplot(data=netflix,x='rating')
```



```
# in which year most pictures are released
netflix['date_added'].value_counts()
plt.figure(figsize=(15,17))
sns.countplot(data=netflix,x='release_year',order=netflix['release_year'].value_counts().index)
plt.xticks(rotation=90,fontSize=10)
```

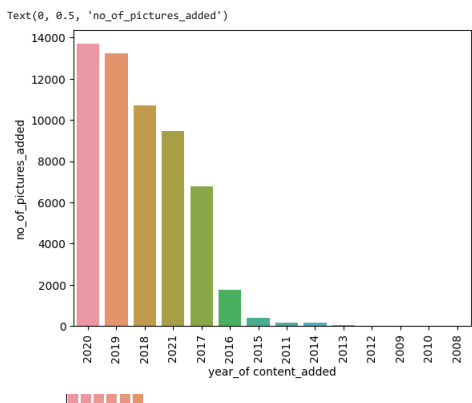
```
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        34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
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Text(67, 0, '1951'),
Text(68, 0, '1950'),
Text(69, 0, '1949'),
Text(70, 0, '1948'),
Text(71, 0, '1947')])
```

```
netflix.columns
import datetime as dt
netflix['date_added']=pd.to_datetime(netflix['date_added'])
netflix['date_added']=netflix['date_added'].to_frame()

p=netflix['date_added'].to_frame() # this function will be applied to series
netflix["date_added"]=p["date_added"].dt.strftime("%Y")
```

```
Text(66, 0, '1959').
# in which year content is added in netflix
y=netflix['date_added'].value_counts()
x=netflix['date_added'].value_counts().index
```

```
sns.countplot(data=netflix,x='date_added',order=netflix['date_added'].value_counts().index)
plt.xticks(rotation=90)
plt.xlabel('year_of content_added')
plt.ylabel('no_of pictures_added')
```

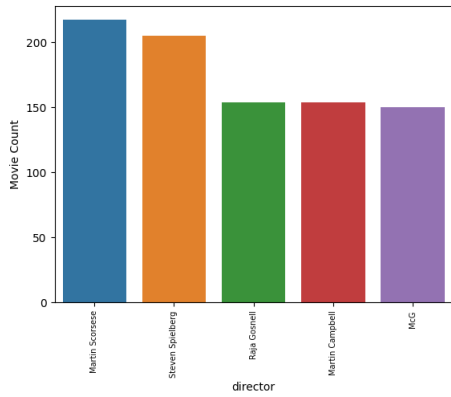


```
# top 5 directors
netflix.columns
import seaborn as sns
netflix.columns
p=netflix['director'].value_counts()

p = netflix['director'].value_counts().reset_index()[0:5]

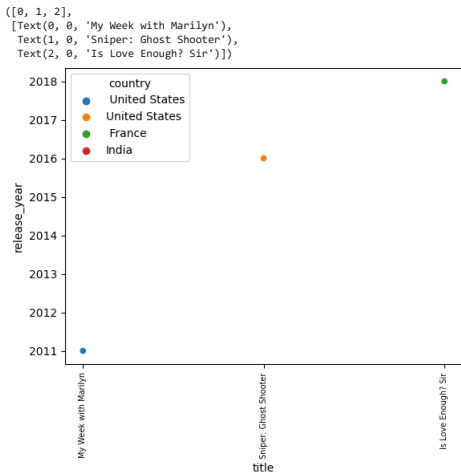
p.columns = ['director', 'Movie Count']

sns.barplot(x='director', y='Movie Count', data=p)
plt.xticks(rotation=90,fontSize=7)
plt.show()
```



```
netflix.columns
# highest duration movies title and released year
p=netflix.sort_values(['duration'],ascending=False).head(5)

sns.scatterplot(x='title',y='release_year',hue='country',data=p)
plt.xticks(rotation =90, fontsize=7)
```



```
# in each year how many pictures are released
netflix['release_year'].value_counts()
plt.figure(figsize=(10,12))
sns.countplot(data=netflix,x='release_year')

plt.xticks(rotation=90,fontSize=7)
```

```
(array([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16,
       17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33,
       34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
       51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67,
       68, 69, 70, 71])),
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 Text(15, 0, '1965'),
 Text(16, 0, '1966'),
 Text(17, 0, '1967'),
 Text(18, 0, '1968'),
 Text(19, 0, '1969'),
 Text(20, 0, '1970'),
 Text(21, 0, '1971'),
 Text(22, 0, '1972'),
 Text(23, 0, '1973'),
 Text(24, 0, '1974'),
 Text(25, 0, '1975'),
 Text(26, 0, '1976'),
 Text(27, 0, '1977'),
 Text(28, 0, '1978'),
 Text(29, 0, '1979'),
 Text(30, 0, '1980'),
 Text(31, 0, '1981'),
 Text(32, 0, '1982'),
 Text(33, 0, '1983'),
 Text(34, 0, '1984'),
 Text(35, 0, '1985'),
 Text(36, 0, '1986'),
 Text(37, 0, '1987'),
 Text(38, 0, '1988'),
 Text(39, 0, '1989'),
 Text(40, 0, '1990'),
 Text(41, 0, '1991'),
 Text(42, 0, '1992'),
 Text(43, 0, '1993'),
 Text(44, 0, '1994'),
 Text(45, 0, '1995'),
 Text(46, 0, '1996'),
 Text(47, 0, '1997'),
 Text(48, 0, '1998'),
 Text(49, 0, '1999'),
 Text(50, 0, '2000'),
 Text(51, 0, '2001'),
 Text(52, 0, '2002'),

# heatmaps in order to correlate variables
Text(55, 0, '2005').

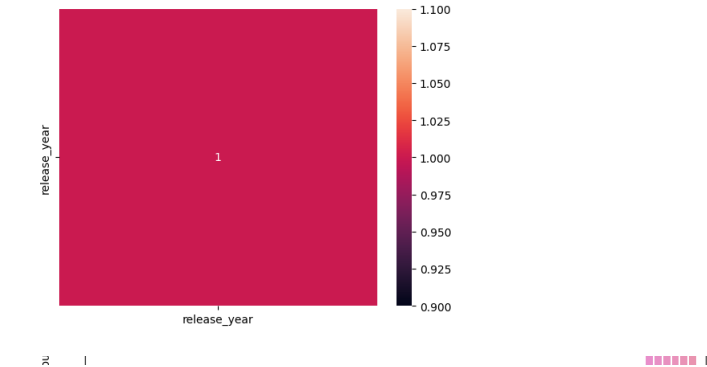
netflix.corr()
```

```
<ipython-input-16-e5c7dba8028d>:1: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will default to False. Select only valid columns or specify the value of numeric_onl
netflix.corr()
```

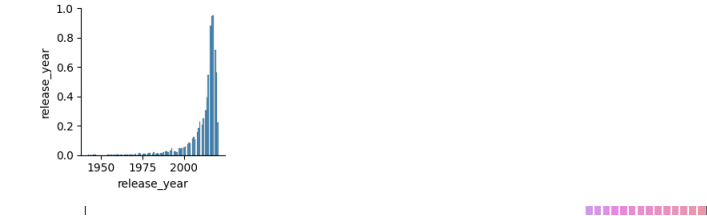


```
Text(67, 0, '2017').
sns.heatmap(netflix.corr(),annot=True)
```

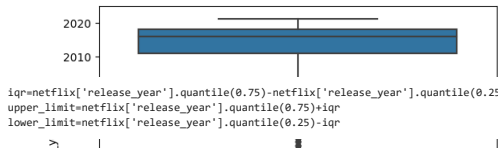
```
<ipython-input-17-91d20fba8c7f>:1: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future version, it will default to False. Select only valid columns or specify the value of numeric_onl
sns.heatmap(netflix.corr(),annot=True)
<Axes: >
```



```
sns.pairplot(data=netflix)
<seaborn.axisgrid.PairGrid at 0x7d3dde237160>
```



```
# outliers detection by using inter quantile range
sns.boxplot(y=netflix['release_year'])
mean=netflix['release_year'].mean()
```



```
iqr=netflix['release_year'].quantile(0.75)-netflix['release_year'].quantile(0.25)
upper_limit=netflix['release_year'].quantile(0.75)+iqr
lower_limit=netflix['release_year'].quantile(0.25)-iqr
```

show_id type title director cast country date_added release_year rating duration listed_in description											
iqr											
7.0											
upper_limit											
2026.0											
lower_limit											
2002.0											

```
outliers=netflix[netflix['release_year']<lower_limit]
netflix['release_year']=netflix['release_year']>lower_limit
```

```
netflix1=netflix[netflix['release_year']]
```