```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

df = pd.read_csv('NetflixOriginals.csv', encoding = 'ISO-8859-1')
df
```

```
                                          Title
Genre  \
0                                Enter the Anime
Documentary
1                                   Dark Forces
Thriller
2                                       The App  Science
fiction/Drama
3                                The Open House        Horror
thriller
4                                   Kaali Khuhi
Mystery
..                                          ...                    ..
.
579        Taylor Swift: Reputation Stadium Tour           Concert
Film
580  Winter on Fire: Ukraine's Fight for Freedom
Documentary
581                      Springsteen on Broadway           One-man
show
582    Emicida: AmarElo - It's All For Yesterday
Documentary
583     David Attenborough: A Life on Our Planet
Documentary

              Premiere  Runtime  IMDB Score                    Language

0       August 5, 2019       58         2.5          English/Japanese

1      August 21, 2020       81         2.6                     Spanish

2    December 26, 2019       79         2.6                     Italian

3     January 19, 2018       94         3.2                     English

4     October 30, 2020       90         3.4                       Hindi

..                 ...      ...         ...                         ...

579  December 31, 2018      125         8.4                     English

580    October 9, 2015       91         8.4  English/Ukranian/Russian
```

```
581  December 16, 2018      153         8.5                   English

582   December 8, 2020       89         8.6                Portuguese

583    October 4, 2020       83         9.0                   English


[584 rows x 6 columns]
```

```
df.describe()
```

```
          Runtime  IMDB Score
count  584.000000  584.000000
mean    93.577055    6.271747
std     27.761683    0.979256
min      4.000000    2.500000
25%     86.000000    5.700000
50%     97.000000    6.350000
75%    108.000000    7.000000
max    209.000000    9.000000
```

```
df.isnull().sum()
```

```
Title         0
Genre         0
Premiere      0
Runtime       0
IMDB Score    0
Language      0
dtype: int64
```

```
df['Premiere'] = df['Premiere'].str.extract(r'([A-Za-z]+ \d{1,2}, \
d{4})')[0]
df['Premiere'] = pd.to_datetime(df['Premiere'], errors='coerce')
df['year']    = df['Premiere'].dt.year
df['month']   = df['Premiere'].dt.month_name()
df['weekday'] = df['Premiere'].dt.day_name()
```

```
df.head()
```

```
             Title                    Genre   Premiere  Runtime  IMDB
Score  \
0  Enter the Anime            Documentary 2019-08-05       58
2.5
1      Dark Forces                Thriller 2019-08-05       81
2.6
2          The App  Science fiction/Drama 2019-08-05       79
2.6
3   The Open House         Horror thriller 2019-08-05       94
3.2
4      Kaali Khuhi                Mystery 2019-08-05       90
```

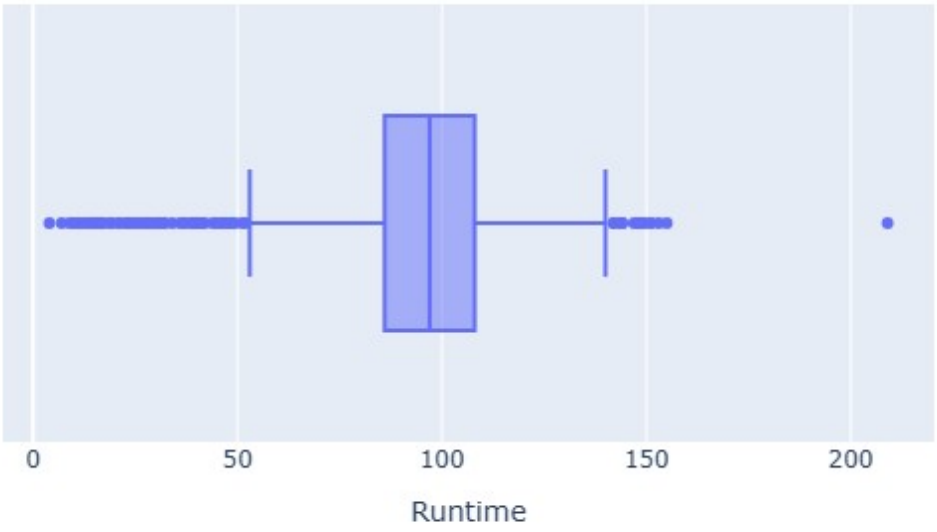
```
3.4
```

```
           Language  year   month weekday
0  English/Japanese  2019  August  Monday
1           Spanish  2019  August  Monday
2           Italian  2019  August  Monday
3           English  2019  August  Monday
4             Hindi  2019  August  Monday
```

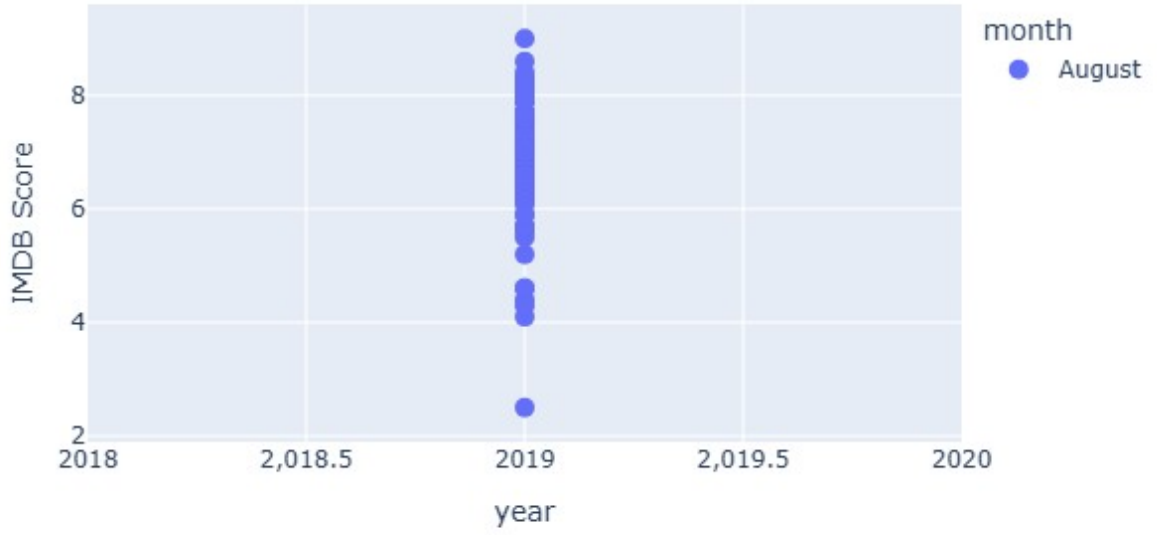
```
df.head()
```

```
             Title                    Genre           Premiere  Runtime
\
0  Enter the Anime            Documentary     August 5, 2019       58

1      Dark Forces                 Thriller    August 21, 2020       81

2          The App  Science fiction/Drama  December 26, 2019       79

3   The Open House        Horror thriller   January 19, 2018       94

4      Kaali Khuhi                Mystery   October 30, 2020       90


   IMDB Score          Language
0         2.5  English/Japanese
1         2.6           Spanish
2         2.6           Italian
3         3.2           English
4         3.4             Hindi
```

```
df_temp = df[['Runtime', 'Title',
'Language']].sort_values(by='Runtime', ascending=False).head(3)
fig = px.box(df, x='Runtime', hover_data = df[['Title','Language']])
fig.update_traces(quartilemethod="inclusive")
fig.show()
```




```
df_doc = df[ ((df['year']== 2019) | (df['year']== 2020) &
((df['month']==('January'))| (df['month']==('February'))|
(df['month']==('March'))|(df['month']==('April')) |
(df['month']==('May'))| (df['month']==('June')))) &
(df['Genre']=="Documentary") ]
fig = px.scatter(df_doc, x='year' , y='IMDB Score', color='month')
fig.update_traces(marker_size=10)
fig.show()
```




```
top_imdb_english = df[df['Language'] == 'English'].copy()
top_imdb_english = top_imdb_english.sort_values(by='IMDB Score',
ascending=False).head(3)
top_imdb_english = top_imdb_english[['Language', 'Genre', 'Title',
'IMDB Score']]
top_imdb_english
```

```
    Language         Genre
Title  \
583  English   Documentary  David Attenborough: A Life on Our Planet

581  English  One-man show                   Springsteen on Broadway

579  English  Concert Film     Taylor Swift: Reputation Stadium Tour


     IMDB Score
583         9.0
581         8.5
579         8.4
```

```
df_hindi = df[df["Language"] == "Hindi"]
df_hindi.Runtime.value_counts()
df_hindi.Runtime.mean()
```

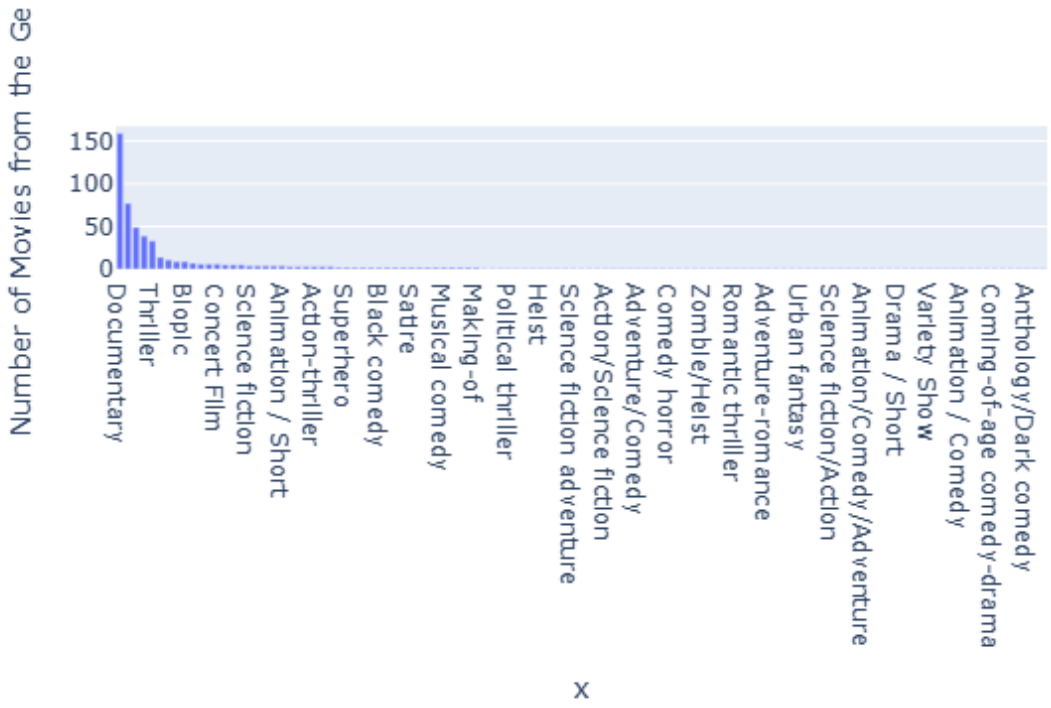
```
np.float64(115.78787878787878)
```

```
df['Genre'].value_counts()
df['Genre'].value_counts().sum()
```

```
genre = df['Genre'].value_counts()
genre
```

```
Genre
Documentary                                159
Drama                                       77
Comedy                                      49
Romantic comedy                             39
Thriller                                    33
                                          ...
Action-adventure                             1
Animation / Science Fiction                  1
Anthology/Dark comedy                        1
Musical / Short                              1
Animation/Christmas/Comedy/Adventure         1
Name: count, Length: 115, dtype: int64
```

```
fig = px.bar(genre, x= genre.index, y=genre.values,
labels={'y':'Number of Movies from the Genre','index':'Genres'})
fig.update_layout(xaxis={'categoryorder': 'total descending'})
fig.show()
```

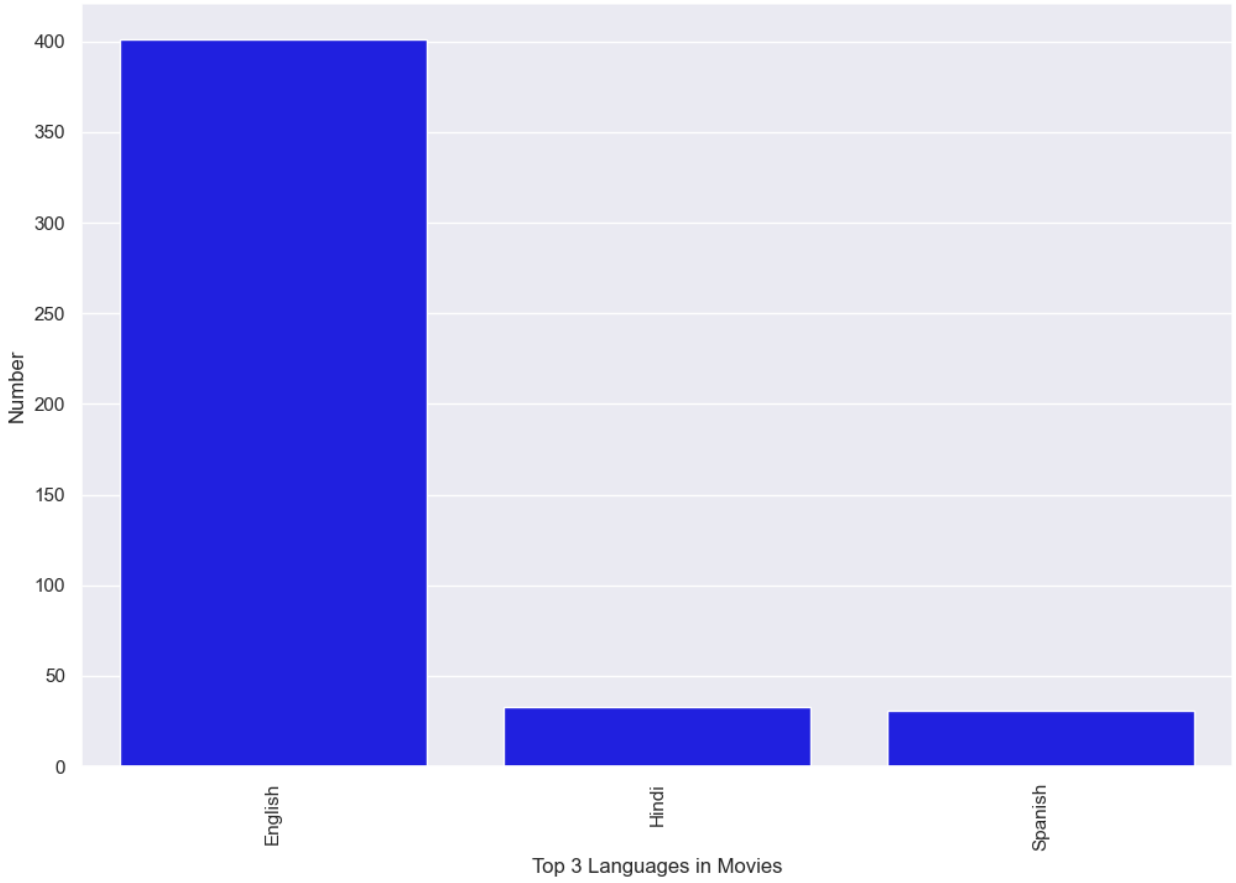



```
df.Language.unique()
df.Language.value_counts()
```

```
Language
English                          401
Hindi                             33
```

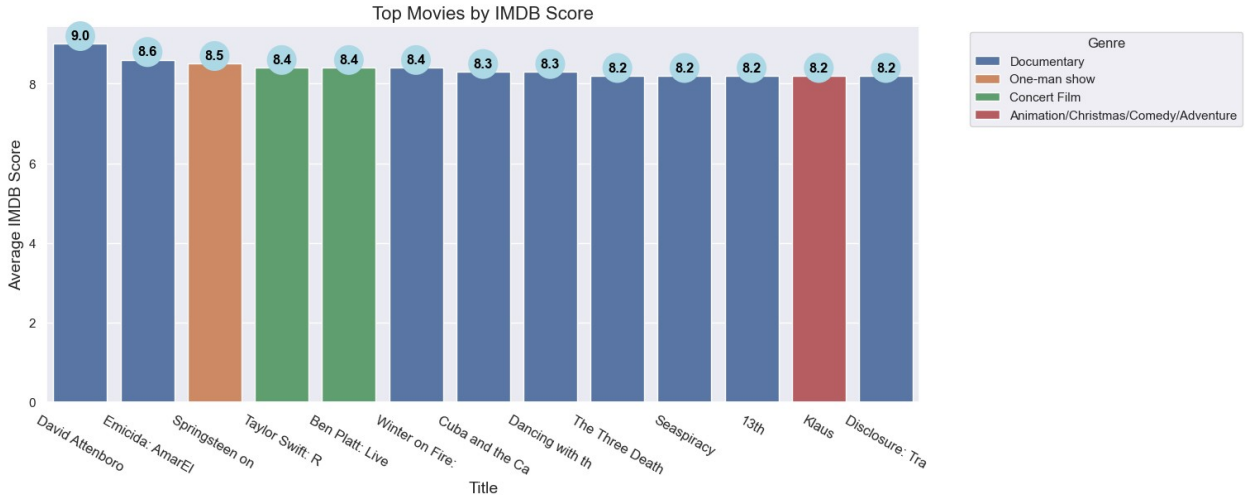
```
Spanish                          31
French                           20
Italian                          14
Portuguese                       12
Indonesian                        9
Korean                            6
Japanese                          6
Turkish                           5
English/Spanish                   5
German                            5
Dutch                             3
Polish                            3
Marathi                           3
English/Japanese                  2
Filipino                          2
Thai                              2
English/Mandarin                  2
English/Hindi                     2
Malay                             1
Norwegian                         1
Swedish                           1
Spanish/Basque                    1
Spanish/Catalan                   1
English/Swedish                   1
English/Taiwanese/Mandarin        1
Thia/English                      1
Georgian                          1
Bengali                           1
Khmer/English/French              1
Tamil                             1
Spanish/English                   1
English/Korean                    1
English/Arabic                    1
English/Russian                   1
English/Akan                      1
English/Ukranian/Russian          1
Name: count, dtype: int64
```

```
df_top_lang = df.Language.value_counts().nlargest(3)

plt.figure(figsize=(12, 8))
sns.barplot(x=df_top_lang.index, y=df_top_lang.values, color='blue')
plt.xlabel('Top 3 Languages in Movies')
plt.xticks(rotation=90)
plt.ylabel('Number')
plt.show()
```




```
df_temp = df.sort_values(by='IMDB Score',
ascending=False).reset_index().iloc[:13,:]
fig, ax = plt.subplots(1, 1, figsize=(15, 6), constrained_layout=True)
sns.barplot(x='Title', y='IMDB Score', data=df_temp, hue='Genre',
ax=ax)
for i in ax.patches:
    if i.get_height() > 0:
        ax.text(x = i.get_x() + i.get_width()/2,
                y = i.get_height() + 0.1,
                s = f"{i.get_height():.1f}", # Formatted to 1 decimal
place
                ha = 'center', size = 12, weight = 'bold',
                color = 'black', # Changed to black for better
visibility inside lightblue
                bbox = dict(boxstyle="circle,pad=0.3", fc='lightblue',
ec='lightblue', lw=2))
ax.set_xlabel('Title', fontsize=14)
ax.set_ylabel('Average IMDB Score', fontsize=14)
ax.set_xticks(range(len(df_temp)))
ax.set_xticklabels([i[:15] for i in df_temp['Title']], fontsize=12,
rotation=-30)
plt.title('Top Movies by IMDB Score', fontsize=16)
```

```
plt.legend(title='Genre', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.show()
```

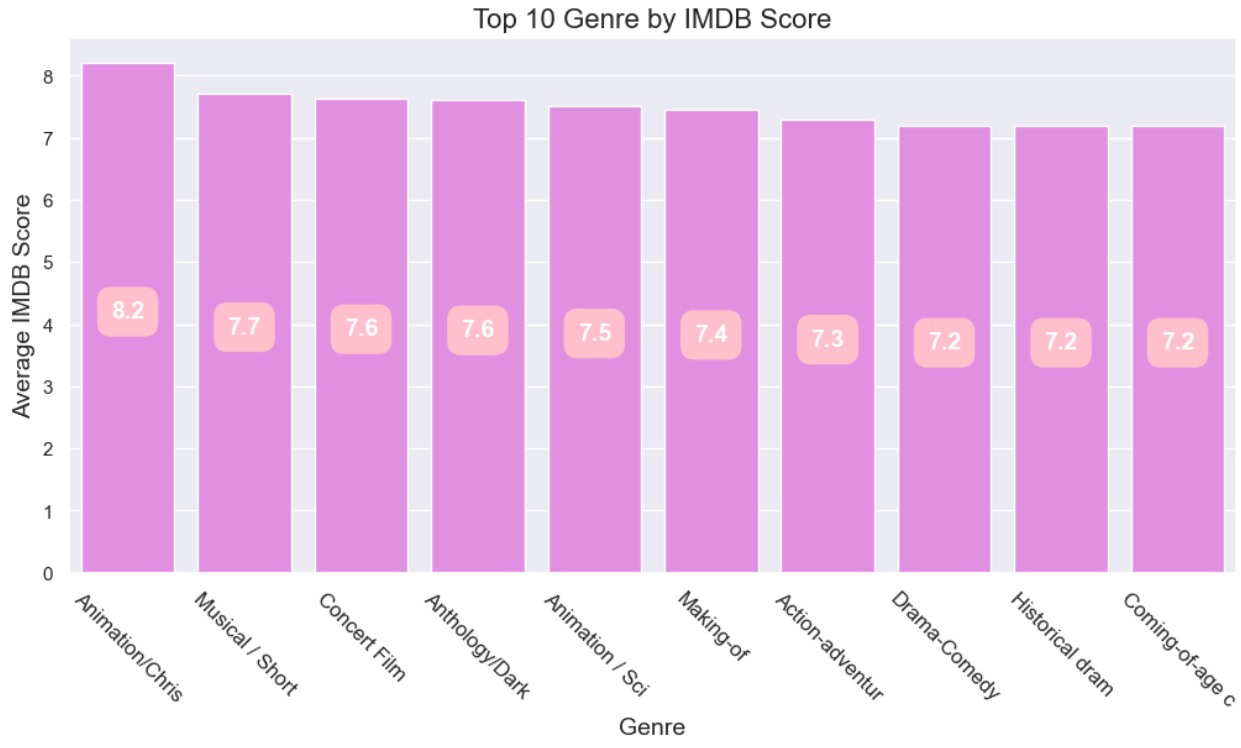



```
df[['IMDB Score','Runtime']].corr()
```

	IMDB Score	Runtime
IMDB Score	1.000000	-0.040896
Runtime	-0.040896	1.000000

```
fig = px.scatter(df, x='IMDB Score', y='Runtime')
fig.show()
```

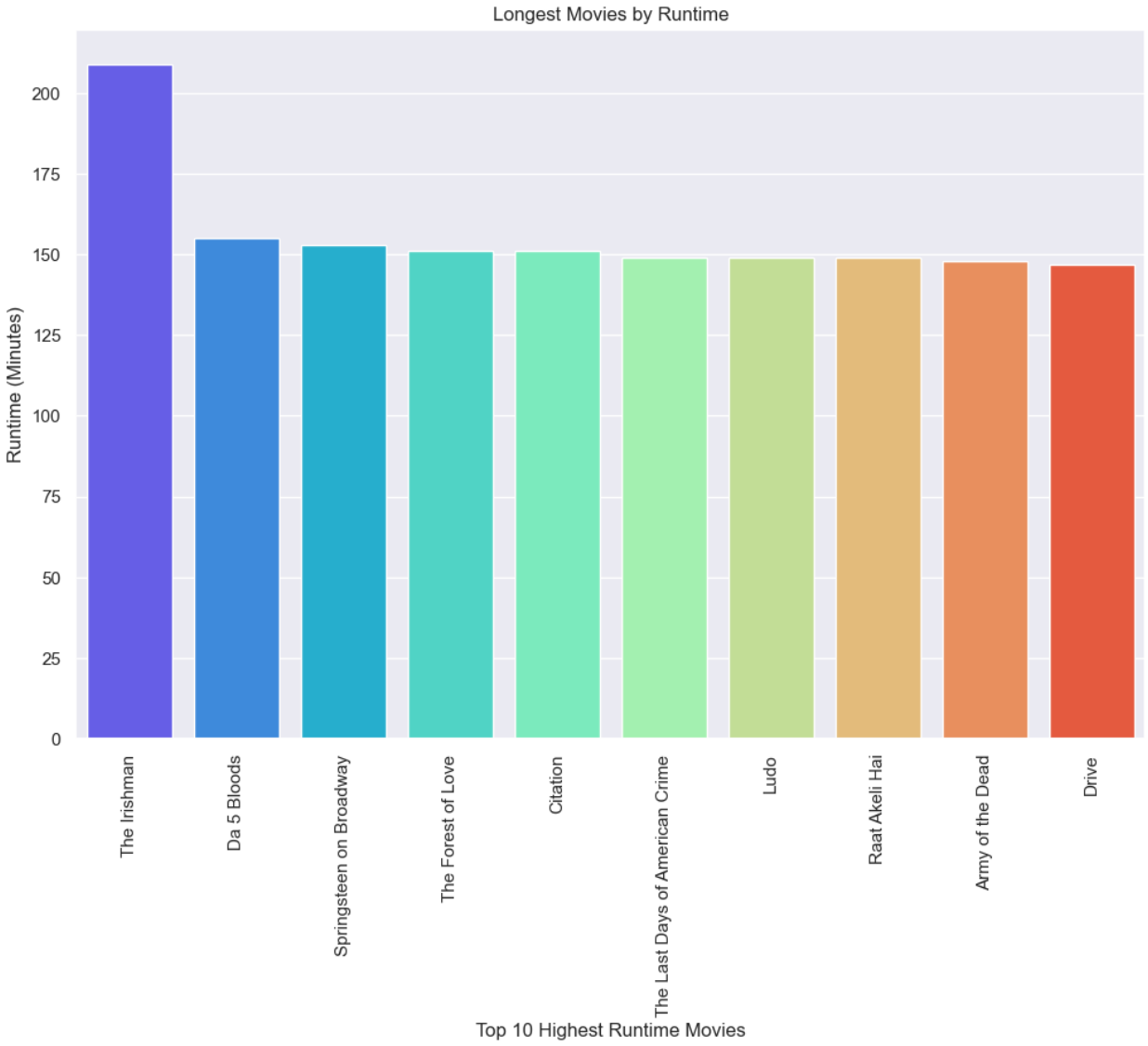
```
df_temp = df.groupby(['Genre'])[['IMDB
Score']].mean().sort_values(by='IMDB Score',
ascending=False).reset_index().iloc[:10,:]
fig, ax = plt.subplots(1, 1, figsize=(10, 6), constrained_layout=True)
sns.barplot(x='Genre', y='IMDB Score', data=df_temp, color='violet',
ax=ax)
for i in ax.patches:
    ax.text(x = i.get_x() + i.get_width()/2,
            y = i.get_height()/2,
            s = f"{round(i.get_height(),1)}",
            ha = 'center', size = 14, weight = 'bold', rotation = 0,
color = 'white',
            bbox=dict(boxstyle="round,pad=0.5", fc='pink', ec="pink",
lw=2))
ax.set_xlabel('Genre', fontsize=14)
ax.set_ylabel('Average IMDB Score', fontsize=14)
ax.set_xticks(range(len(df_temp)))
ax.set_xticklabels([i[:15] for i in df_temp['Genre']], fontsize=12,
rotation=-45)
plt.title('Top 10 Genre by IMDB Score', fontsize=16)
plt.show()
```



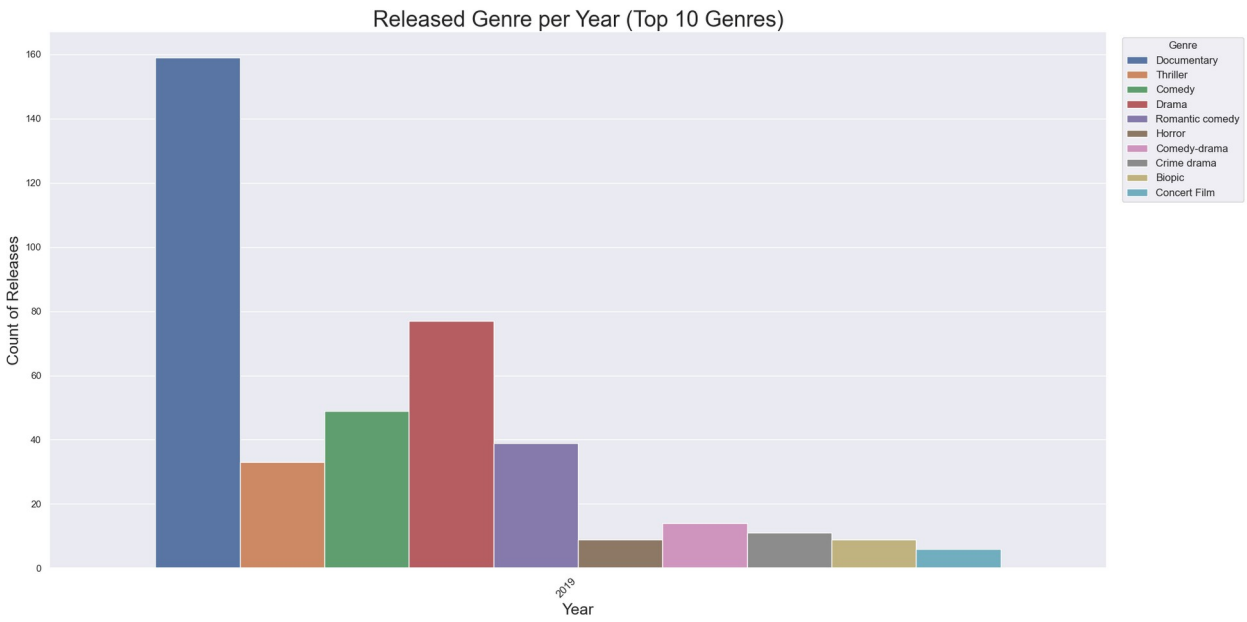

```
df_temp = df.groupby(['Title'])
[['Runtime']].mean().sort_values(by='Runtime',
ascending=False).reset_index().head(10)
plt.figure(figsize=(12, 8))
```

```
sns.barplot(x="Title", y="Runtime", data=df_temp, palette='rainbow')
plt.xlabel('Top 10 Highest Runtime Movies')
plt.xticks(rotation=90)
plt.ylabel('Runtime (Minutes)')
plt.title('Longest Movies by Runtime')
plt.show()
```

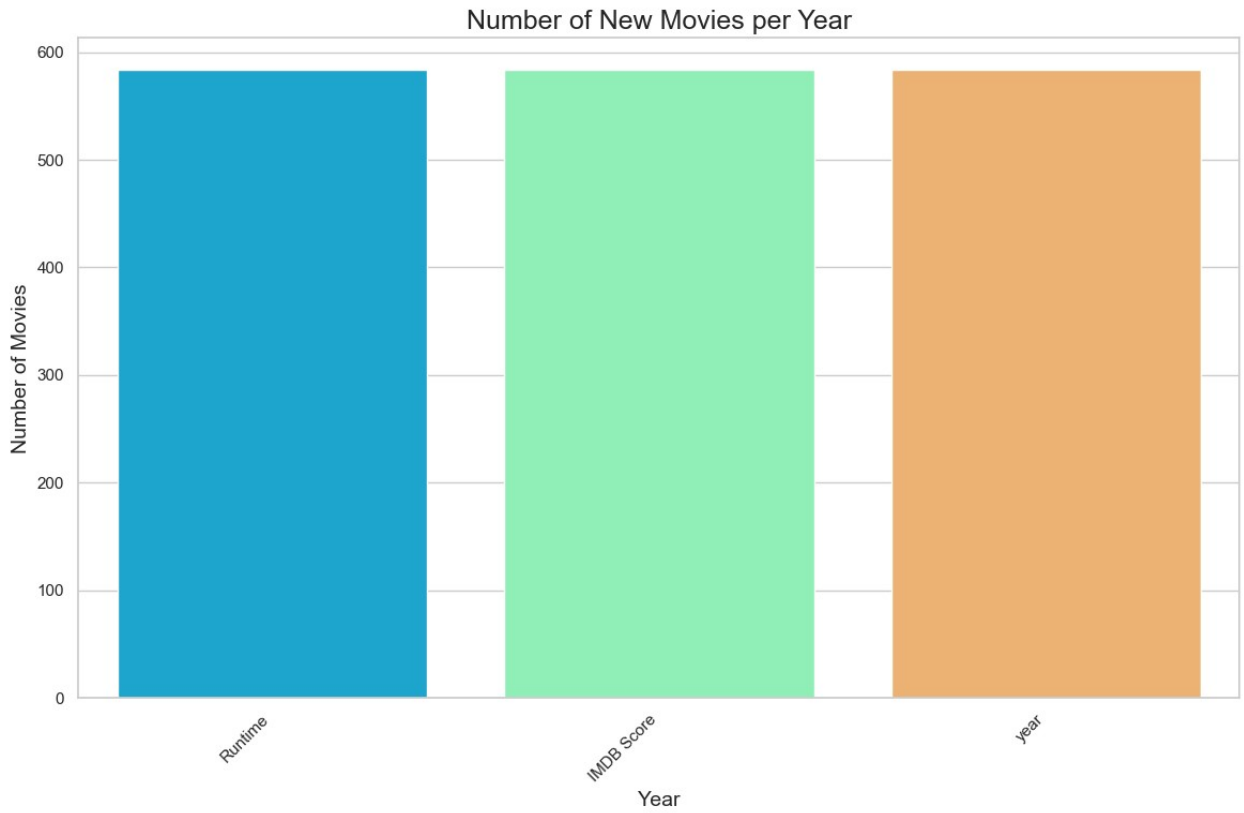
```
C:\Users\DELL\AppData\Local\Temp\ipykernel_12328\3260303302.py:3:
FutureWarning:


Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `x` variable to `hue` and set
`legend=False` for the same effect.
```



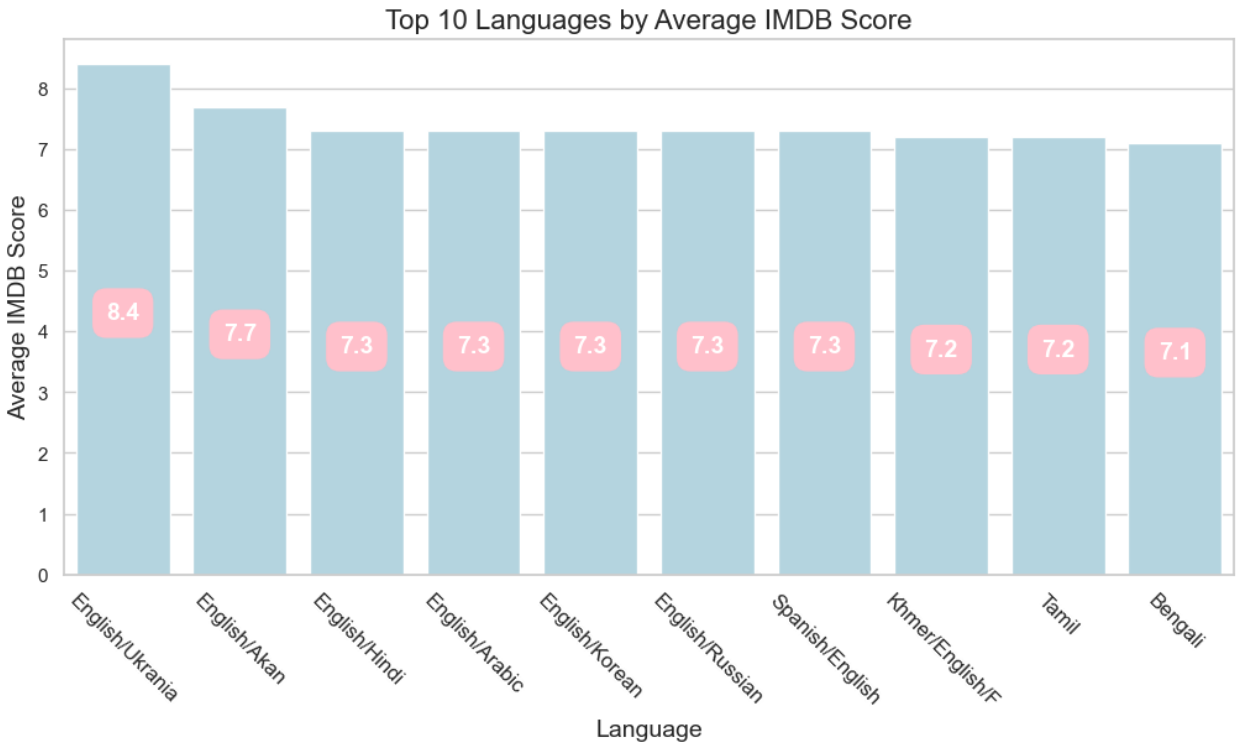

```
top_genres_list =
df.groupby('Genre').sum(numeric_only=True).sort_values(by='IMDB
Score', ascending=False).head(10).index
df_filtered =
df[df['Genre'].isin(top_genres_list)].sort_values('year')
plt.figure(figsize=(20, 10))
sns.countplot(data=df_filtered, x='year', hue='Genre')
plt.title('Released Genre per Year (Top 10 Genres)', size=25)
plt.xlabel('Year', size=18)
plt.ylabel('Count of Releases', size=18)
plt.xticks(rotation=45, ha='right', size=12)
plt.legend(title='Genre', bbox_to_anchor=(1.01, 1), loc='upper left',
fontsize=12)
plt.tight_layout()
plt.show()
```




```
sns.set(style="whitegrid", rc={'figure.figsize':(14, 8)})
ax = sns.countplot(data=df.sort_values('year'), palette='rainbow')
ax.set_title('Number of New Movies per Year', fontsize=18)
plt.xlabel('Year', fontsize=14)
plt.ylabel('Number of Movies', fontsize=14)
plt.xticks(rotation=45, ha='right')
plt.show()
```

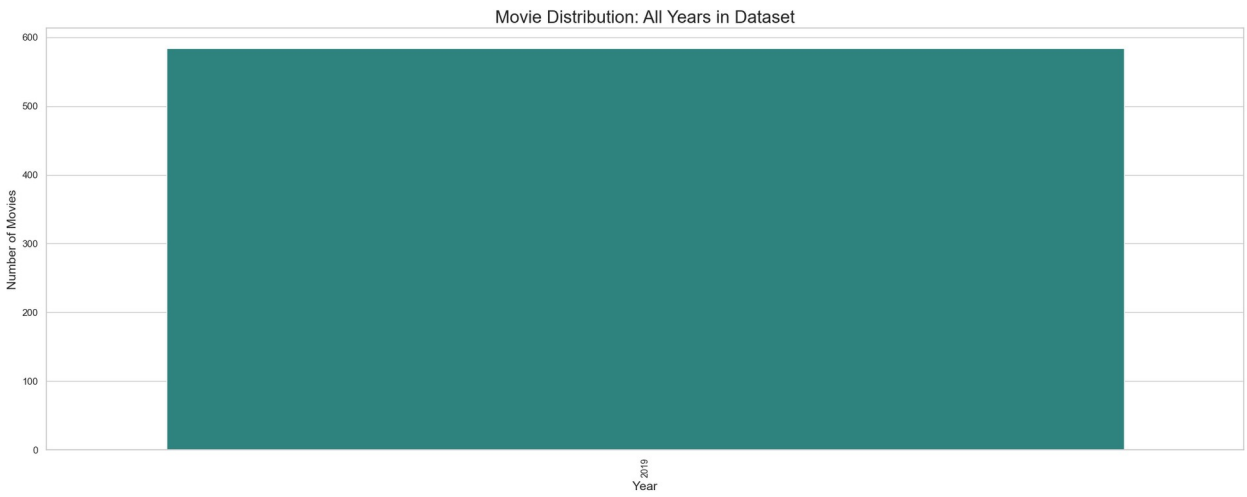



```
df_temp = df.groupby(['Language'])[['IMDB
Score']].mean().sort_values(by='IMDB Score',
ascending=False).reset_index().iloc[:10,:]
fig, ax = plt.subplots(1, 1, figsize=(10, 6), constrained_layout=True)
sns.barplot(x='Language', y='IMDB Score', data=df_temp,
color='lightblue', ax=ax)
for i in ax.patches:
    ax.text(x = i.get_x() + i.get_width()/2,
            y = i.get_height()/2,
            s = f"{round(i.get_height(), 1)}",
            ha = 'center', size = 14, weight = 'bold', rotation = 0,
color = 'white',
            bbox=dict(boxstyle="round,pad=0.5", fc='pink', ec="pink",
lw=2))
ax.set_xlabel('Language', fontsize=14)
ax.set_ylabel('Average IMDB Score', fontsize=14)
ax.set_xticks(range(len(df_temp)))
ax.set_xticklabels([str(i)[:15] for i in df_temp['Language']],
fontsize=12, rotation=-45)
plt.title('Top 10 Languages by Average IMDB Score', fontsize=16)
plt.show()
```




```
sns.set(style="whitegrid")
plt.figure(figsize=(20, 8))
ax = sns.countplot(data=df.sort_values('year'), x='year',
palette='viridis')
plt.xticks(rotation=90, fontsize=10)
plt.title('Movie Distribution: All Years in Dataset', fontsize=20)
plt.xlabel('Year', fontsize=14)
plt.ylabel('Number of Movies', fontsize=14)
plt.tight_layout()
plt.show()
```

```
C:\Users\DELL\AppData\Local\Temp\ipykernel_12328\3181359401.py:3:
FutureWarning:


Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `x` variable to `hue` and set
`legend=False` for the same effect.
```




```
df_run= df[df["year"] ==2019]
df_run.Runtime.mean()
```

```
np.float64(93.57705479452055)
```

```
genre_lang =[]
for i in df.Language.unique():
    df_lang =df[df["Language"]==i]
    df_lang_genre =df_lang.Genre.value_counts().nlargest(1)
    genre_lang.append((i,df_lang_genre))

df_lang = pd.DataFrame(genre_lang, columns = ['Language', 'Genre'])
df_lang.sort_values(by=['Language'],ignore_index=True)
```

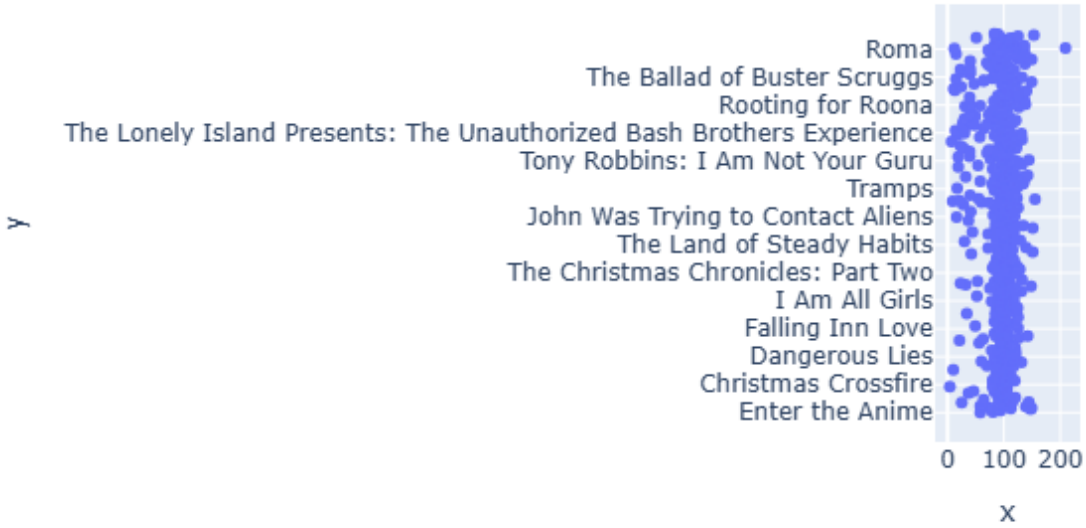
```
                      Language  \
0                      Bengali
1                        Dutch
2                      English
3                 English/Akan
4               English/Arabic
5                English/Hindi
6             English/Japanese
7               English/Korean
8             English/Mandarin
9              English/Russian
10             English/Spanish
11             English/Swedish
12  English/Taiwanese/Mandarin
13    English/Ukranian/Russian
14                    Filipino
15                      French
16                    Georgian
17                      German
18                       Hindi
19                  Indonesian
```

```
20                      Italian
21                     Japanese
22        Khmer/English/French
23                       Korean
24                        Malay
25                      Marathi
26                    Norwegian
27                       Polish
28                   Portuguese
29                      Spanish
30               Spanish/Basque
31              Spanish/Catalan
32              Spanish/English
33                      Swedish
34                        Tamil
35                         Thai
36                 Thia/English
37                      Turkish

                                                    Genre
0    Genre
Documentary    1
Name: count, dtype: int64
1   Genre
Romantic comedy    1
Name: count, dtype:...
2   Genre
Documentary    120
Name: count, dtype: i...
3      Genre
War drama    1
Name: count, dtype: int64
4    Genre
Documentary    1
Name: count, dtype: int64
5    Genre
Documentary    2
Name: count, dtype: int64
6    Genre
Documentary    1
Name: count, dtype: int64
7   Genre
Action-adventure    1
Name: count, dtype...
8    Genre
Documentary    2
Name: count, dtype: int64
9    Genre
Documentary    1
```

```
Name: count, dtype: int64
10   Genre
Documentary    5
Name: count, dtype: int64
11   Genre
Documentary    1
Name: count, dtype: int64
12         Genre
Drama    1
Name: count, dtype: int64
13   Genre
Documentary    1
Name: count, dtype: int64
14         Genre
Drama    1
Name: count, dtype: int64
15   Genre
Documentary    6
Name: count, dtype: int64
16   Genre
Documentary    1
Name: count, dtype: int64
17      Genre
Thriller    1
Name: count, dtype: int64
18        Genre
Drama    13
Name: count, dtype: int64
19         Genre
Drama    3
Name: count, dtype: int64
20         Genre
Drama    4
Name: count, dtype: int64
21  Genre
Anime/Science fiction    2
Name: count, ...
22         Genre
Drama    1
Name: count, dtype: int64
23         Genre
Drama    2
Name: count, dtype: int64
24  Genre
Action comedy    1
Name: count, dtype: i...
25         Genre
Drama    2
Name: count, dtype: int64
```

```
26        Genre
Horror    1
Name: count, dtype: int64
27        Genre
Horror    1
Name: count, dtype: int64
28        Genre
Comedy    6
Name: count, dtype: int64
29   Genre
Documentary    8
Name: count, dtype: int64
30  Genre
Black comedy    1
Name: count, dtype: int64
31   Genre
Documentary    1
Name: count, dtype: int64
32   Genre
Documentary    1
Name: count, dtype: int64
33      Genre
Thriller    1
Name: count, dtype: int64
34         Genre
Drama    1
Name: count, dtype: int64
35        Genre
Horror    1
Name: count, dtype: int64
36   Genre
Documentary    1
Name: count, dtype: int64
37        Genre
Comedy    2
Name: count, dtype: int64
```

```
fig = px.scatter(x=df['Runtime'], y=df['Title'])
fig.show()
```


Roma
The Ballad of Buster Scruggs
Rooting for Roona
The Lonely Island Presents: The Unauthorized Bash Brothers Experience
Tony Robbins: I Am Not Your Guru
Tramps
John Was Trying to Contact Aliens
The Land of Steady Habits
The Christmas Chronicles: Part Two
I Am All Girls
Falling Inn Love
Dangerous Lies
Christmas Crossfire
Enter the Anime
y
0
100
200
x