```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
file_path = '/content/IMDB-Movie-Data.xlsx'
df = pd.read_excel(file_path)
print(df.info())
print(df.describe())
print(df.head())
print(df.isnull().sum())
df['Metascore'] = df['Metascore'].fillna(df['Metascore'].mean())
df['Revenue (Millions)'] = df['Revenue (Millions)'].fillna(df['Revenue (Millions)'].mean())
df['Director'] = df['Director'].fillna('Unknown')
df['Actors'] = df['Actors'].fillna('Unknown')
df = df.dropna(subset=['Rating', 'Votes'])
df['Year'] = pd.to_datetime(df['Year'], format='%Y')
df['Genres'] = df['Genre'].str.split(',')
df_exploded = df.explode('Genres')
genres_over_time = df_exploded.groupby(['Year', 'Genres']).size().unstack().fillna(0)
plt.figure(figsize=(14,7))
genres over time.plot(kind='area', stacked=True, figsize=(14,7))
plt.title('Popular Genres Over Time')
plt.xlabel('Year')
plt.ylabel('Number of Movies')
plt.legend(loc='upper left')
plt.show()
plt.figure(figsize=(10,6))
sns.scatterplot(x='Rating', y='Votes', data=df)
plt.title('Correlation Between Ratings and Votes')
plt.xlabel('Rating')
plt.ylabel('Votes')
plt.show()
avg_ratings = df.groupby(df['Year'].dt.year)['Rating'].mean()
plt.figure(figsize=(12,6))
avg_ratings.plot(kind='line')
plt.title('Average Movie Ratings Over the Years')
plt.xlabel('Year')
plt.ylabel('Average Rating')
plt.grid(True)
plt.show()
top_directors = df.groupby('Director')['Rating'].mean().sort_values(ascending=False).head(10)
plt.figure(figsize=(12,6))
top_directors.plot(kind='bar')
plt.title('Top 10 Directors by Average Rating')
plt.xlabel('Director')
plt.ylabel('Average Rating')
plt.xticks(rotation=45)
plt.show()
movies_per_year = df['Year'].dt.year.value_counts().sort_index()
plt.figure(figsize=(12,6))
movies_per_year.plot(kind='bar')
```

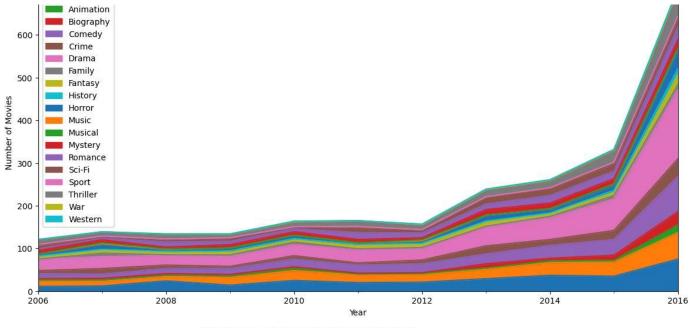
```
plt.title('Number of Movies Released Each Year')
plt.xlabel('Year')
plt.ylabel('Number of Movies')
plt.grid(True)
plt.show()

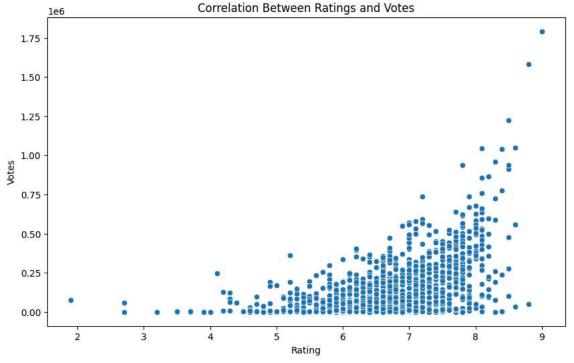
actor_list = df['Actors'].str.split(',').explode('Actors')
top_actors = actor_list.value_counts().head(10)

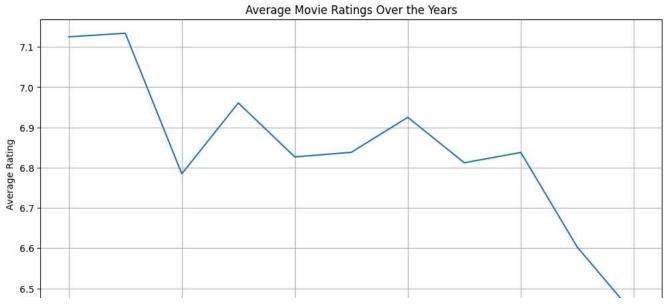
plt.figure(figsize=(12,6))
top_actors.plot(kind='bar')
plt.title('Top 10 Popular Actors')
plt.xlabel('Actors')
plt.ylabel('Number of Movies')
plt.xticks(rotation=45)
plt.show()
```

```
RangeIndex: 1000 entries, 0 to 999
    Data columns (total 12 columns):
     #
         Column
                             Non-Null Count
                                             Dtype
    ---
                             -----
                             1000 non-null
     0
         Rank
                             1000 non-null
     1
         Title
                                             object
     2
         Genre
                             1000 non-null
                                             object
     3
         Description
                             1000 non-null
                                             object
         Director
                             1000 non-null
                                             object
                             1000 non-null
     5
         Actors
                                             object
     6
         Year
                             1000 non-null
                                              int64
     7
         Runtime (Minutes)
                             1000 non-null
                                              int64
     8
                             1000 non-null
         Rating
                                             float64
     9
         Votes
                             1000 non-null
                                             int64
     10
         Revenue (Millions)
                             872 non-null
                                             float64
     11 Metascore
                             936 non-null
                                             float64
    dtypes: float64(3), int64(4), object(5)
    memory usage: 93.9+ KB
                               Year Runtime (Minutes)
                                                                             Votes
                  Rank
                                                             Rating
    count 1000.000000
                        1000.000000
                                           1000.000000
                                                        1000.000000
                                                                     1.0000000+03
            500.500000
                        2012.783000
                                            113.172000
                                                            6.723200
                                                                      1.698083e+05
    mean
    std
            288.819436
                           3.205962
                                             18.810908
                                                           0.945429
                                                                     1.887626e+05
                                                           1.900000
                                                                     6.100000e+01
              1,000000
                        2006,000000
                                             66,000000
    min
    25%
            250.750000
                        2010.000000
                                            100.000000
                                                            6.200000
                                                                     3.630900e+04
                                            111.000000
    50%
            500.500000
                        2014.000000
                                                           6.800000
                                                                     1.107990e+05
            750.250000
                        2016.000000
                                            123.000000
                                                           7.400000
                                                                     2.399098e+05
    75%
    max
           1000.000000
                        2016.000000
                                            191.000000
                                                           9.000000
                                                                     1.791916e+06
           Revenue (Millions)
                                Metascore
                   872.000000
                              936,000000
    count
    mean
                    82.956376
                                58.985043
    std
                   103.253540
                                17.194757
                     0.000000
                                11.000000
    min
    25%
                    13.270000
                                47.000000
    50%
                    47.985000
                                59.500000
    75%
                   113.715000
                                72.000000
                               100.000000
    max
                   936.630000
                               Title
       Rank
             Guardians of the Galaxy
                                       Action, Adventure, Sci-Fi
                                      Adventure, Mystery, Sci-Fi
    1
          2
                          Prometheus
    2
          3
                               Split
                                               Horror, Thriller
    3
                                Sing
                                       Animation, Comedy, Family
    4
                       Suicide Squad Action, Adventure, Fantasy
                                             Description
                                                                       Director \
       A group of intergalactic criminals are forced ...
                                                                     James Gunn
    0
       Following clues to the origin of mankind, a te...
                                                                   Ridley Scott
       Three girls are kidnapped by a man with a diag...
                                                            M. Night Shyamalan
       In a city of humanoid animals, a hustling thea... Christophe Lourdelet
       A secret government agency recruits some of th...
                                                                    David Aver
                                                                 Runtime (Minutes)
                                                          Year
       Chris Pratt, Vin Diesel, Bradley Cooper, Zoe S...
                                                                               121
       Noomi Rapace, Logan Marshall-Green, Michael Fa...
    1
                                                          2012
                                                                               124
       James McAvoy, Anya Taylor-Joy, Haley Lu Richar...
                                                                               117
       Matthew McConaughey, Reese Witherspoon, Seth Ma...
                                                                               108
       Will Smith, Jared Leto, Margot Robbie, Viola D...
                                                                               123
       Rating
                Votes Revenue (Millions) Metascore
    0
               757074
                                   333.13
                                                76.0
          8.1
    1
          7.0
              485820
                                   126,46
                                                65.0
              157606
                                   138.12
                                                62.0
          7.3
    3
          7.2
                60545
                                   270.32
                                                59.0
    4
          6.2 393727
                                   325.02
                                                40.0
    Rank
                            a
    Title
                            0
    Genre
                            0
    Description
                            a
    Director
                            0
    Actors
                            0
    Year
                            0
    Runtime (Minutes)
                            A
    Rating
    Votes
                            0
    Revenue (Millions)
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    Metascore
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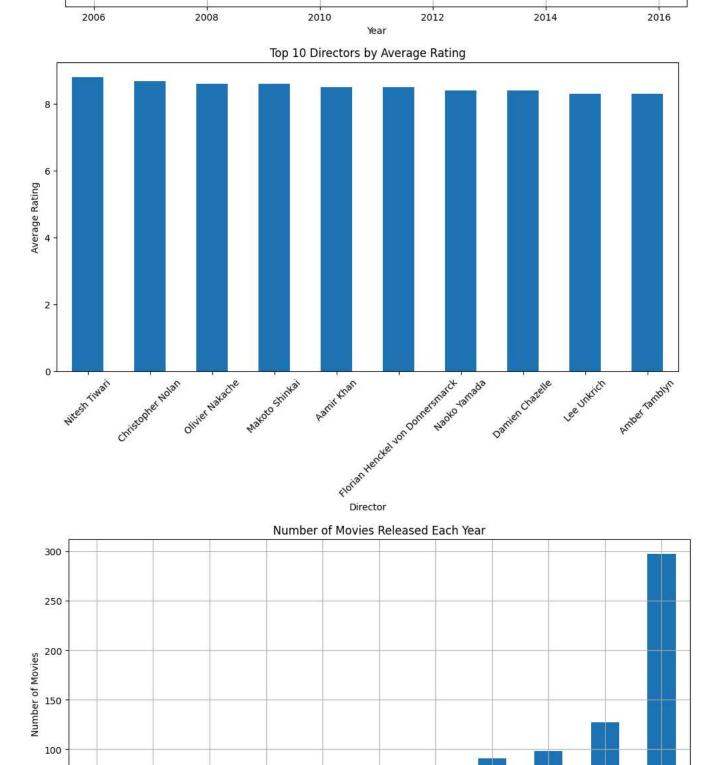
Popular Genres Over Time











2010 -

2012 -