In [ ]:
```
from google.colab import files
uploaded = files.upload()
```

Browse...

Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.

```
Saving IMDb Movies India.csv to IMDb Movies India (1).csv
```

In [ ]:
```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error,r2_score
import warnings
warnings.filterwarnings('ignore')
```

In [ ]:
```
df = pd.read_csv("IMDb Movies India.csv",encoding="latin-1")
```

In [ ]:
```
df
```

Out[ ]:

	Name	Year	Duration	Genre	Rating	Votes	Director	A
0		NaN	NaN	Drama	NaN	NaN	J.S. Randhawa	Ma
1	#Gadhvi (He thought he was Gandhi)	(2019)	109 min	Drama	7.0	8	Gaurav Bakshi	
2	#Homecoming	(2021)	90 min	Drama, Musical	NaN	NaN	Soumyajit Majumdar	
3	#Yaaram	(2019)	110 min	Comedy, Romance	4.4	35	Ovais Khan	
4	...And Once Again	(2010)	105 min	Drama	NaN	NaN	Amol Palekar	
...	...	...	...	...	...	...	...	
15504	Zulm Ko Jala Doonga	(1988)	NaN	Action	4.6	11	Mahendra Shah	Nasee
15505	Zulmi	(1999)	129 min	Action, Drama	4.5	655	Kuku Kohli	
15506	Zulmi Raj	(2005)	NaN	Action	NaN	NaN	Kiran Thej	Sa
15507	Zulmi Shikari	(1988)	NaN	Action	NaN	NaN	NaN	
15508	Zulm-O-Sitam	(1998)	130 min	Action, Drama	6.2	20	K.C. Bokadia	Dharr

15509 rows × 10 columns

In [ ]:
```
#Check for missing values in each column
print("/nMissing values in each column:")
df.isnull().sum()
```

```
/nMissing values in each column:
```

Out[ ]:

	0
Name	0
Year	528
Duration	8269
Genre	1877
Rating	7590
Votes	7589
Director	525
Actor 1	1617
Actor 2	2384
Actor 3	3144

dtype: int64

In [ ]:
```
print("\nCount of unique values in 'Name' column:")
print(df['Name'].value_counts())
```

```
Count of unique values in 'Name' column:
Name
Mamta                 7
Anjaam                7
Zindagi               6
Musafir               6
Laila Majnu           5
                     ..
Hamen Bhi Jeene Do    1
Hamen Khelne Do       1
Hameshaa              1
Hamid                 1
Hamari Kahani         1
Name: count, Length: 13838, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Year' column:")
print(df['Year'].value_counts())
```

```
Count of unique values in 'Year' column:
Year
(2019)    410
(2021)    392
(2018)    381
(2017)    360
(2005)    346
          ...
(1922)      1
(1913)      1
(1926)      1
(1914)      1
(1924)      1
Name: count, Length: 102, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Duration' column:")
print(df['Duration'].value_counts())
```

```
Count of unique values in 'Duration' column:
Duration
120 min    240
135 min    173
130 min    171
140 min    167
150 min    154
           ...
204 min      1
235 min      1
298 min      1
217 min      1
250 min      1
Name: count, Length: 182, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Genre' column:")
print(df['Genre'].value_counts())
```

```
Count of unique values in 'Genre' column:
Genre
Drama                                2780
Action                               1289
Thriller                              779
Romance                               708
Drama, Romance                        524
                                     ...
Documentary, Biography, History         1
Documentary, Adventure, Drama           1
Crime, Horror, Romance                  1
Animation, Drama, Adventure             1
Adventure, Horror                       1
Name: count, Length: 485, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Rating' column:")
print(df['Rating'].value_counts())
```

```
Count of unique values in 'Rating' column:
Rating
6.2     269
6.8     264
6.5     254
6.6     239
6.7     227
       ...
9.6       1
1.4       1
9.7       1
10.0      1
1.1       1
Name: count, Length: 84, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Votes' column:")
print(df['Votes'].value_counts())
```

```
Count of unique values in 'Votes' column:
Votes
8         227
7         224
9         221
6         213
10        175
         ...
2,211       1
1,799       1
5,546       1
629         1
13,936      1
Name: count, Length: 2034, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Director' column:")
print(df['Director'].value_counts())
```

```
Count of unique values in 'Director' column:
Director
Jayant Desai       58
Kanti Shah         57
Babubhai Mistry    50
Mahesh Bhatt       48
Master Bhagwan     47
                   ..
Sunanda Mitra       1
Amit Chauhan        1
Dev Dutt            1
Anil Srikantam      1
Vishal Taneja       1
Name: count, Length: 5938, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Actor 1' column:")
print(df['Actor 1'].value_counts())
```

```
Count of unique values in 'Actor 1' column:
Actor 1
Ashok Kumar              158
Jeetendra                140
Dharmendra               140
Mithun Chakraborty       133
Amitabh Bachchan         129
                        ...
Nitesh Tiwari              1
Sonu Sonkar                1
Rahul Tiwari Adhiyari      1
Raj Devgan                 1
Kawal Sharma               1
Name: count, Length: 4718, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Actor 2' column:")
print(df['Actor 2'].value_counts())
```

```
Count of unique values in 'Actor 2' column:
Actor 2
Rekha                 83
Hema Malini           72
Mithun Chakraborty    63
Dharmendra            61
Mala Sinha            48
                      ..
Sumeet Sharma          1
Lokendra Singh         1
Vinod Kapoor           1
Umesh Sharma           1
Victor John            1
Name: count, Length: 4891, dtype: int64
```

In [ ]:
```
print("\nCount of unique values in 'Actor 3' column:")
print(df['Actor 3'].value_counts())
```

```
Count of unique values in 'Actor 3' column:
Actor 3
Pran              91
Shakti Kapoor     65
Anupam Kher       64
Jeevan            59
Prem Chopra       52
                  ..
Shanta Pawar       1
Shraddha Das       1
Usman Rao          1
Ugresen Tanwar     1
Prem Chabra        1
Name: count, Length: 4820, dtype: int64
```

In [ ]:
```
print("\nDuplicate rows in the Dataframe:")
print(df.duplicated().sum())
```

```
Duplicate rows in the Dataframe:
6
```

In [ ]:
```
df = df.drop_duplicates()
```

In [ ]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 15503 entries, 0 to 15508
Data columns (total 10 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   Name      15503 non-null  object 
 1   Year      14976 non-null  object 
 2   Duration  7239 non-null   object 
 3   Genre     13627 non-null  object 
 4   Rating    7919 non-null   float64
 5   Votes     7920 non-null   object 
 6   Director  14979 non-null  object 
 7   Actor 1   13888 non-null  object 
 8   Actor 2   13122 non-null  object 
 9   Actor 3   12363 non-null  object 
dtypes: float64(1), object(9)
memory usage: 1.3+ MB
```

In [ ]:
```
df.describe()
```

Out[ ]:

	Rating
count	7919.000000
mean	5.841621
std	1.381777
min	1.100000
25%	4.900000
50%	6.000000
75%	6.800000
max	10.000000

In [ ]:
```
df['Year'] = pd.to_numeric(df['Year'], errors='coerce')
# Compute and fill missing with median
median_year = df['Year'].median()
df['Year'] = df['Year'].fillna(median_year)
```

In [ ]:
```
# Convert 'Duration' to numeric in case there are non-numeric values
df['Duration'] = pd.to_numeric(df['Duration'], errors='coerce')

# Compute and fill missing with median
median_duration = df['Duration'].median()
```

```
df['Duration'] = df['Duration'].fillna(median_duration)
```

In [ ]:
```
# Ensure 'Rating' is numeric
df['Rating'] = pd.to_numeric(df['Rating'], errors='coerce')

# Calculate and fill median
median_rating = df['Rating'].median()
df['Rating'] = df['Rating'].fillna(median_rating)
```

In [ ]:
```
df['Votes'] = pd.to_numeric(df['Votes'], errors='coerce')
median_Votes = df['Votes'].median()
df['Votes'] = df['Votes'].fillna(median_Votes)
```

In [ ]:
```
df.drop(['Year','Duration','Votes'],axis=1,inplace=True,errors='ignore')
```

In [ ]:
```
df
```

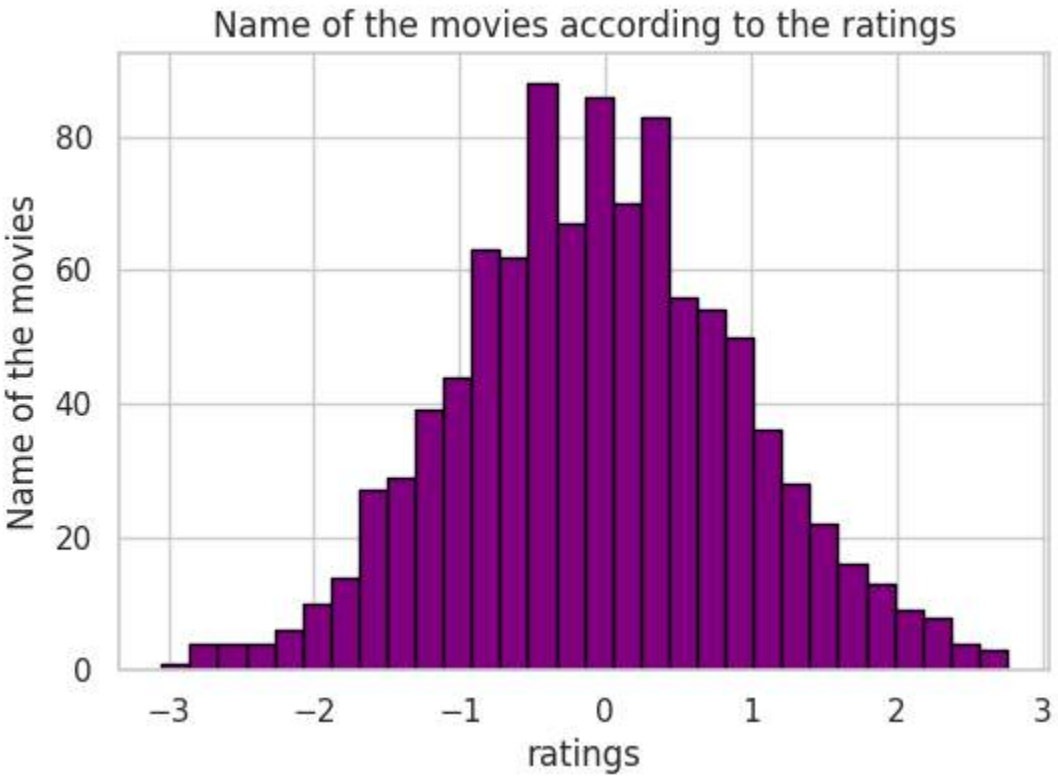
Out[ ]:

	Name	Genre	Rating	Director	Actor 1	Actor 2	Actor
0		Drama	6.0	J.S. Randhawa	Manmauji	Birbal	Rajend Bhat
1	#Gadhvi (He thought he was Gandhi)	Drama	7.0	Gaurav Bakshi	Rasika Dugal	Vivek Ghamande	Arvi Jang
2	#Homecoming	Drama, Musical	6.0	Soumyajit Majumdar	Sayani Gupta	Plabita Borthakur	R Angar
3	#Yaaram	Comedy, Romance	4.4	Ovais Khan	Prateik	Ishita Raj	Siddha Kapo
4	...And Once Again	Drama	6.0	Amol Palekar	Rajat Kapoor	Rituparna Sengupta	Anta M
...	...	...	...	...	...	...	
15504	Zulm Ko Jala Doonga	Action	4.6	Mahendra Shah	Naseeruddin Shah	Sumeet Saigal	Supar Anar
15505	Zulmi	Action, Drama	4.5	Kuku Kohli	Akshay Kumar	Twinkle Khanna	Aru Ira
15506	Zulmi Raj	Action	6.0	Kiran Thej	Sangeeta Tiwari	NaN	Na
15507	Zulmi Shikari	Action	6.0	NaN	NaN	NaN	Na
15508	Zulm-O-Sitam	Action, Drama	6.2	K.C. Bokadia	Dharmendra	Jaya Prada	Arju Sar

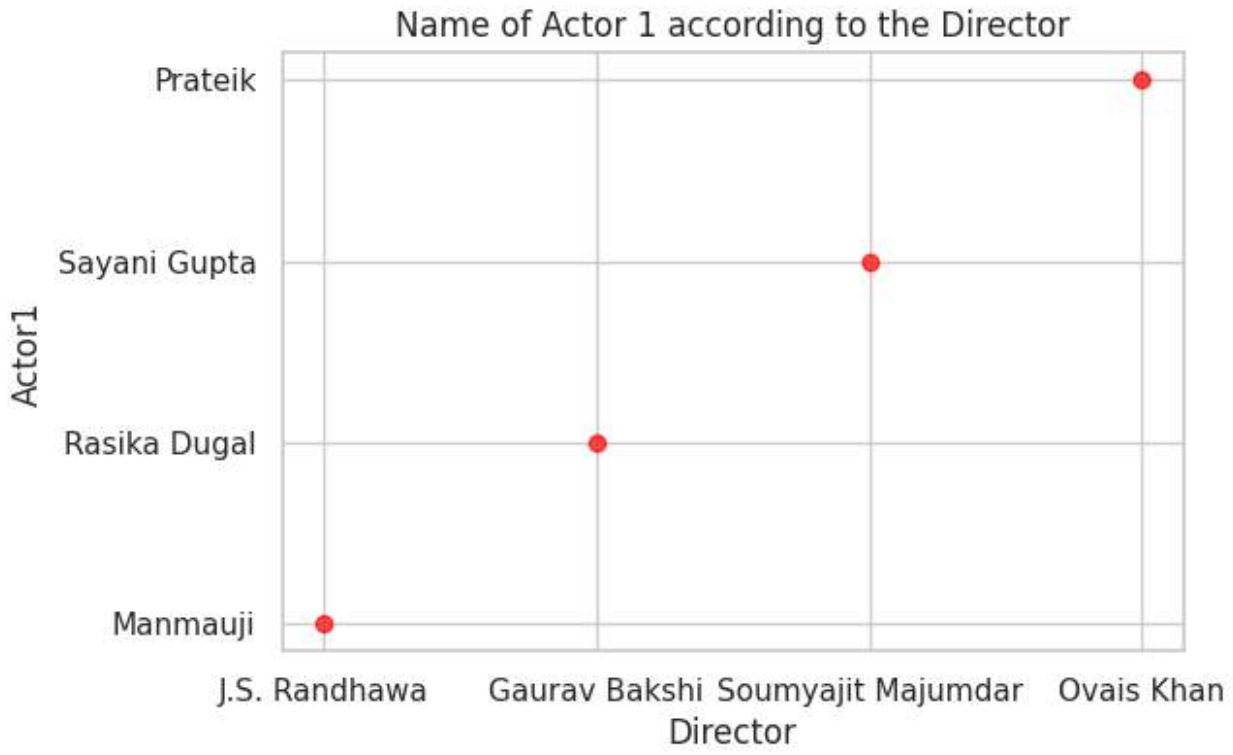
15509 rows × 7 columns

In [ ]:
```
np.random.seed(0)#For reproducibility
data = np.random.normal(loc=0, scale=1, size=1000)#Generate random data with n
plt.figure(figsize=(6, 4))
```

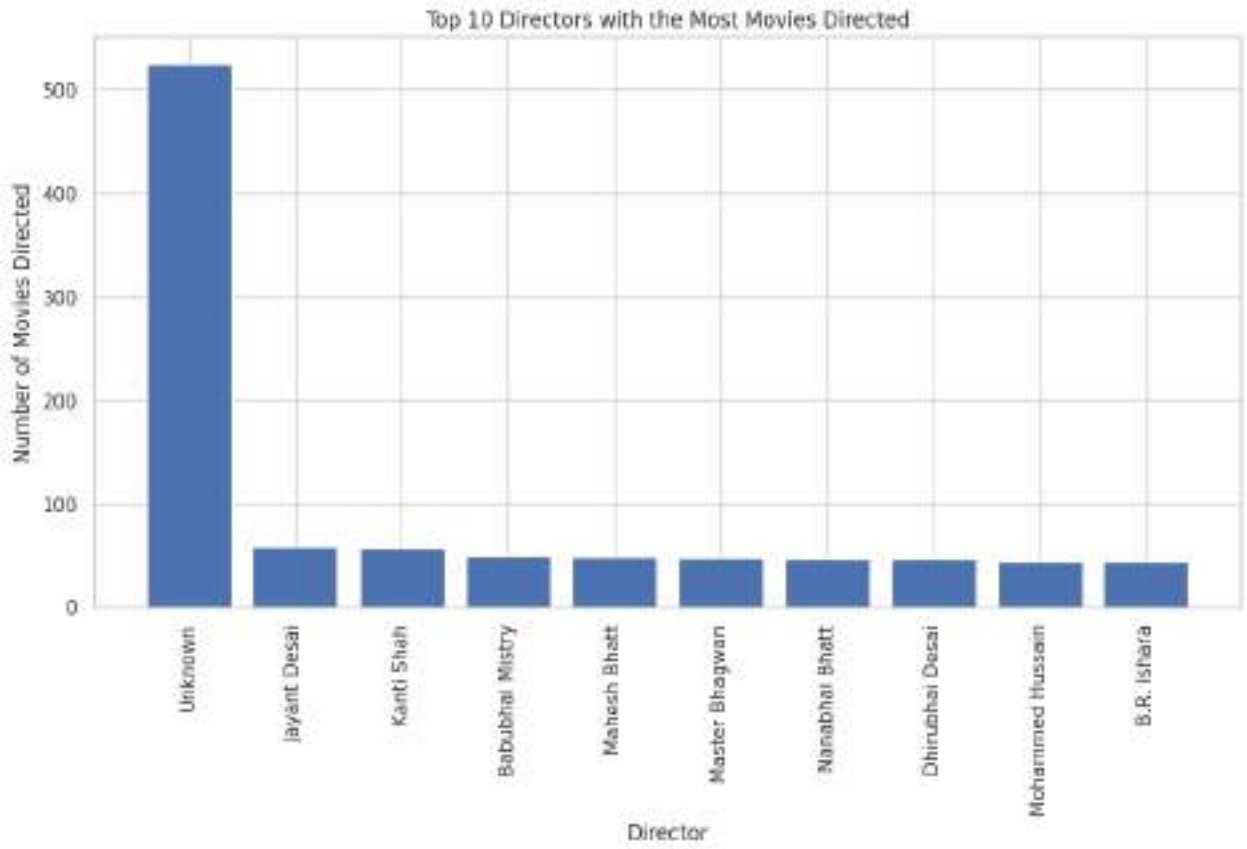
```
plt.hist(data, bins=30, color='purple', edgecolor='black')#Histogram showing t
plt.title('Name of the movies according to the ratings')#Histogram of data dis
plt.xlabel('ratings')
plt.ylabel('Name of the movies')
plt.grid(True)
plt.show()
```



In [ ]:
```
import matplotlib.pyplot as plt

# Fill NaN values with a placeholder string
df['Director'].fillna('Unknown', inplace=True)
df['Actor 1'].fillna('Unknown', inplace=True)

plt.figure(figsize=(6,4))
x=df["Director"].head(4)
y=df["Actor 1"].head(4)
plt.scatter(x,y,color='red',alpha=0.7)#Scatter plot showing relationship betwe
plt.title("Name of Actor 1 according to the Director")
plt.xlabel("Director")
plt.ylabel("Actor1")
plt.grid(True)
plt.show()
```

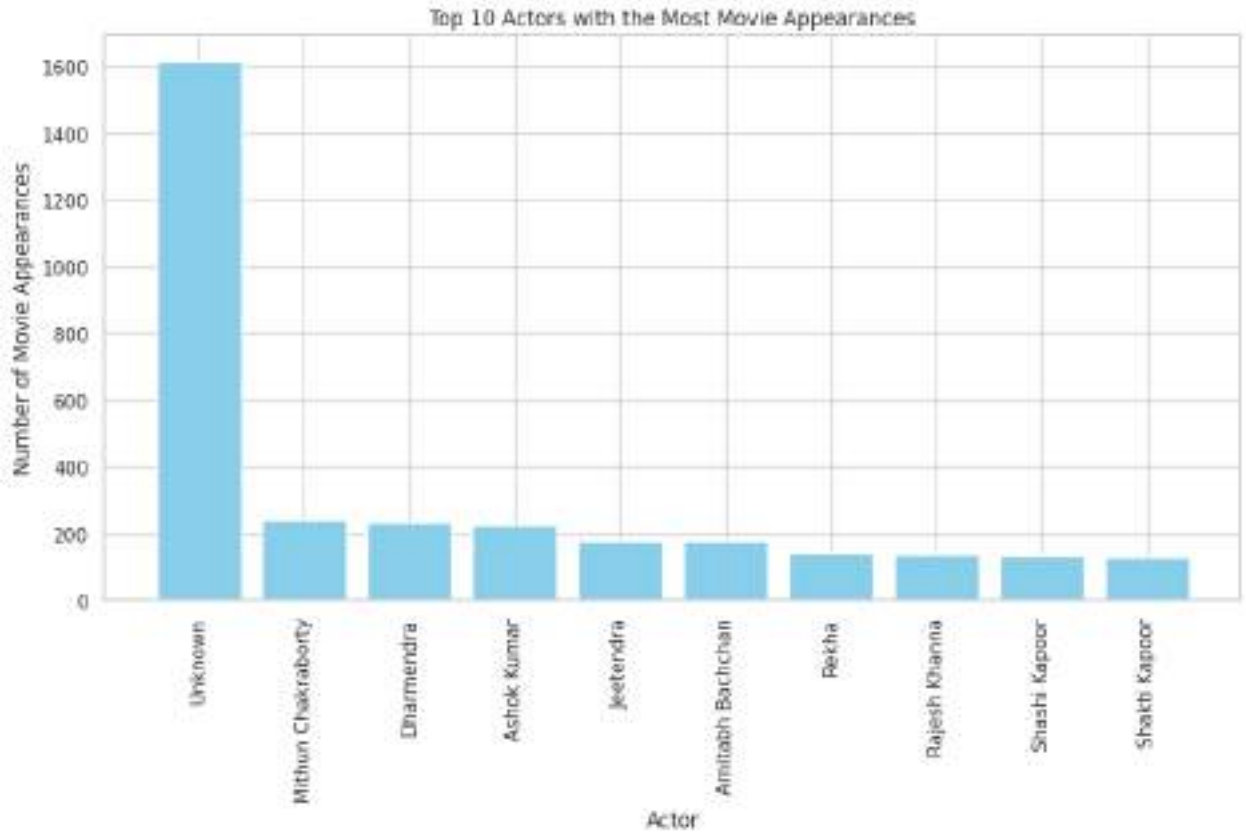


In [ ]:
```python
# Count the number of movies directed by each director
director_counts = df['Director'].value_counts()

# Select the top 10 directors with the most movies directed
top_10_directors = director_counts.head(10)

# Create a bar plot to visualize the top 10 directors with the most movies dir
plt.figure(figsize=(12, 6))
plt.bar(top_10_directors.index, top_10_directors.values),
plt.title('Top 10 Directors with the Most Movies Directed')
plt.xlabel('Director')
plt.ylabel('Number of Movies Directed')
plt.xticks(rotation=90)
plt.show()
```

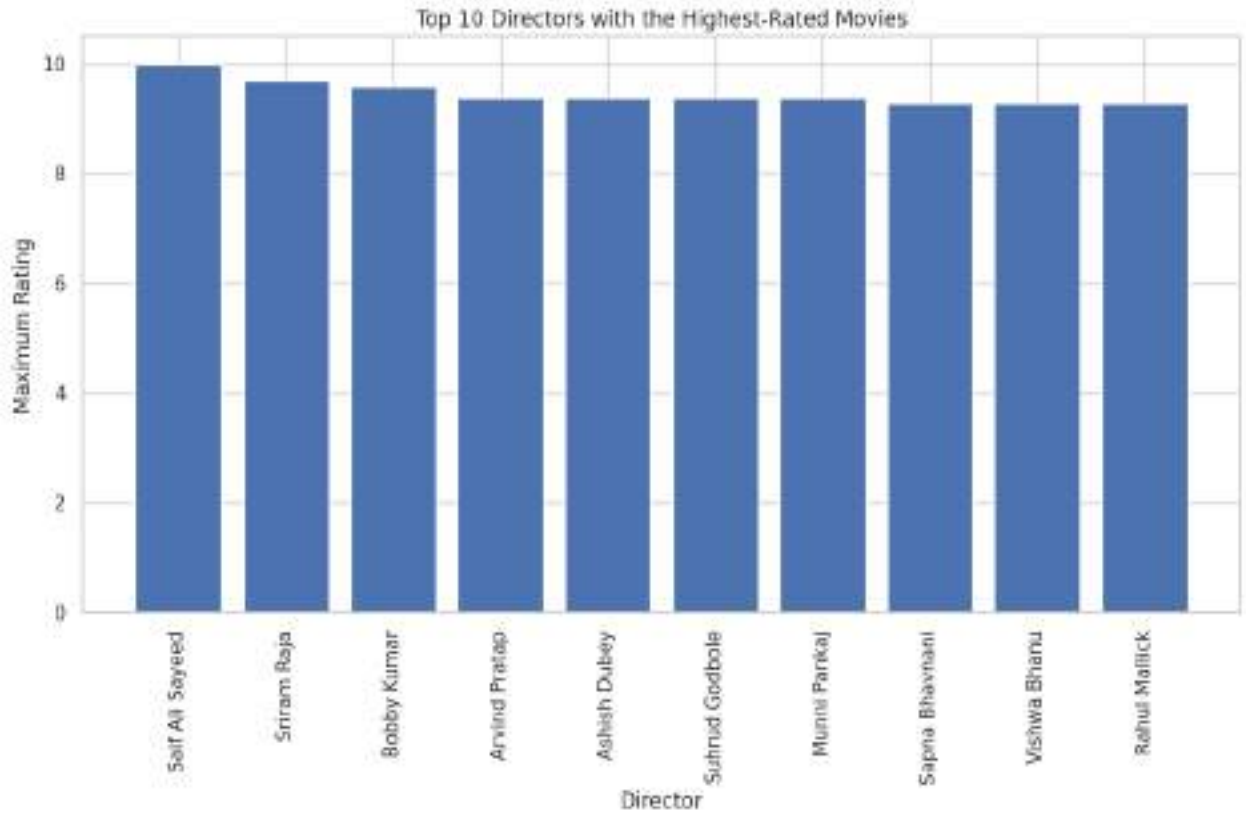


In [ ]:

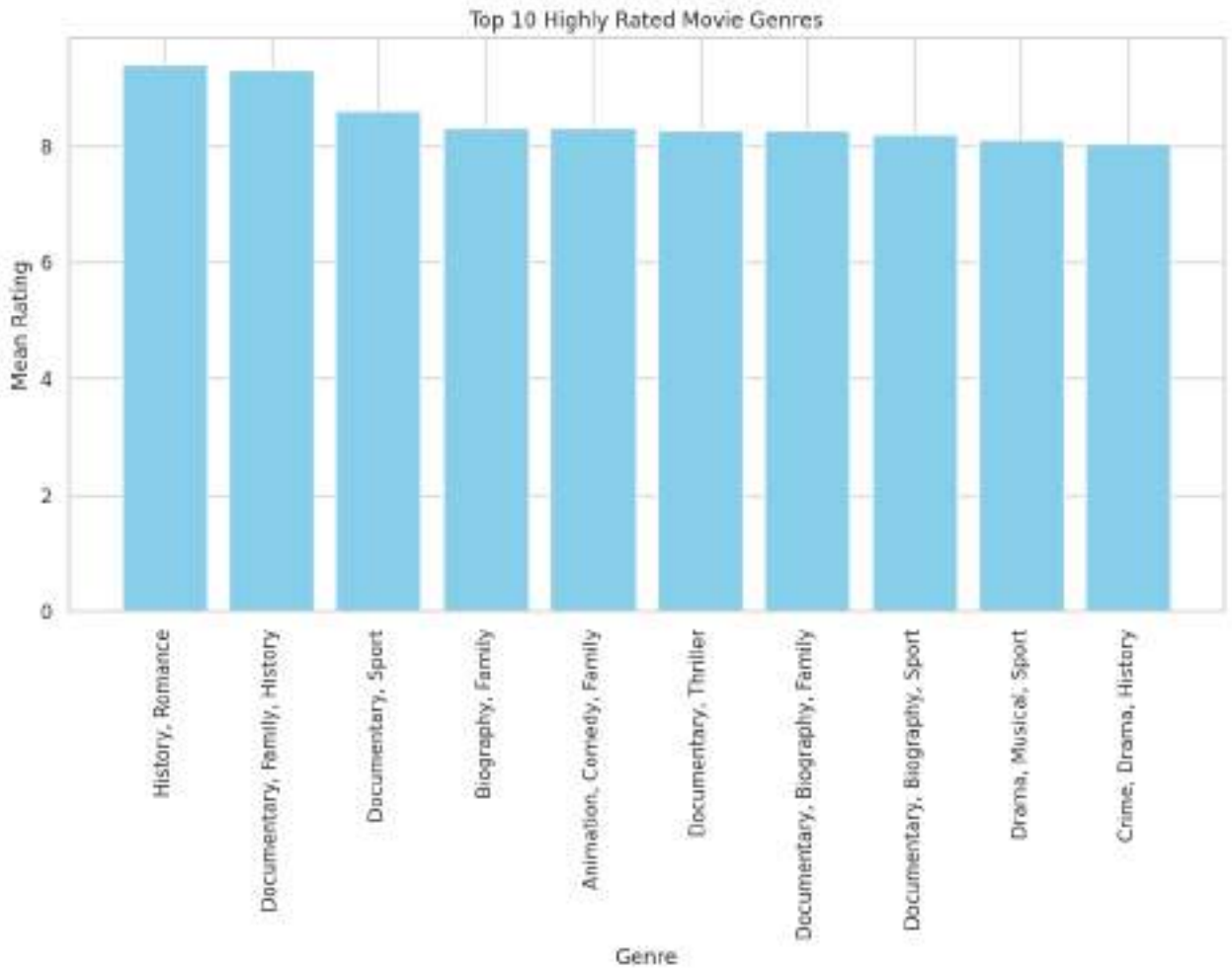
```
# Count the number of movies in which each actor starred
actor_counts = df[['Actor 1', 'Actor 2', 'Actor 3']].stack().value_counts()

# Select the top 10 actors with the most movie appearances
top_10_actors = actor_counts.head(10)

# Create a bar plot to visualize the top 10 actors with the most movie appeara
plt.figure(figsize=(12, 6))
plt.bar(top_10_actors.index, top_10_actors.values,  color='skyblue')
plt.title('Top 10 Actors with the Most Movie Appearances')
plt.xlabel('Actor')
plt.ylabel('Number of Movie Appearances')
plt.xticks(rotation=90)
plt.show()
```



In [ ]:
```python
# Group the data by director and find the maximum rating within each group
directors_max_rating = df.groupby('Director')['Rating'].max()

# Sort the directors by their highest rating in descending order and select th
top_10_directors = directors_max_rating.sort_values(ascending=False).head(10)

# Create a bar plot to visualize the top 10 directors with the highest-rated m
plt.figure(figsize=(12, 6))
plt.bar(top_10_directors.index, top_10_directors.values)
plt.title('Top 10 Directors with the Highest-Rated Movies')
plt.xlabel('Director')
plt.ylabel('Maximum Rating')
plt.xticks(rotation=90)
plt.show()
```



In [ ]:
```
# Group the data by genre and calculate the mean rating for each genre
genre_mean_ratings = df.groupby('Genre')['Rating'].mean()

# Sort the genres by mean rating in descending order and select the top 10
top_10_genres = genre_mean_ratings.sort_values(ascending=False).head(10)

# Create a bar plot to visualize the top 10 highly rated genres
plt.figure(figsize=(12, 6))
plt.bar(top_10_genres.index, top_10_genres.values, color='skyblue')
plt.title('Top 10 Highly Rated Movie Genres')
plt.xlabel('Genre')
plt.ylabel('Mean Rating')
plt.xticks(rotation=90)
plt.show()
```

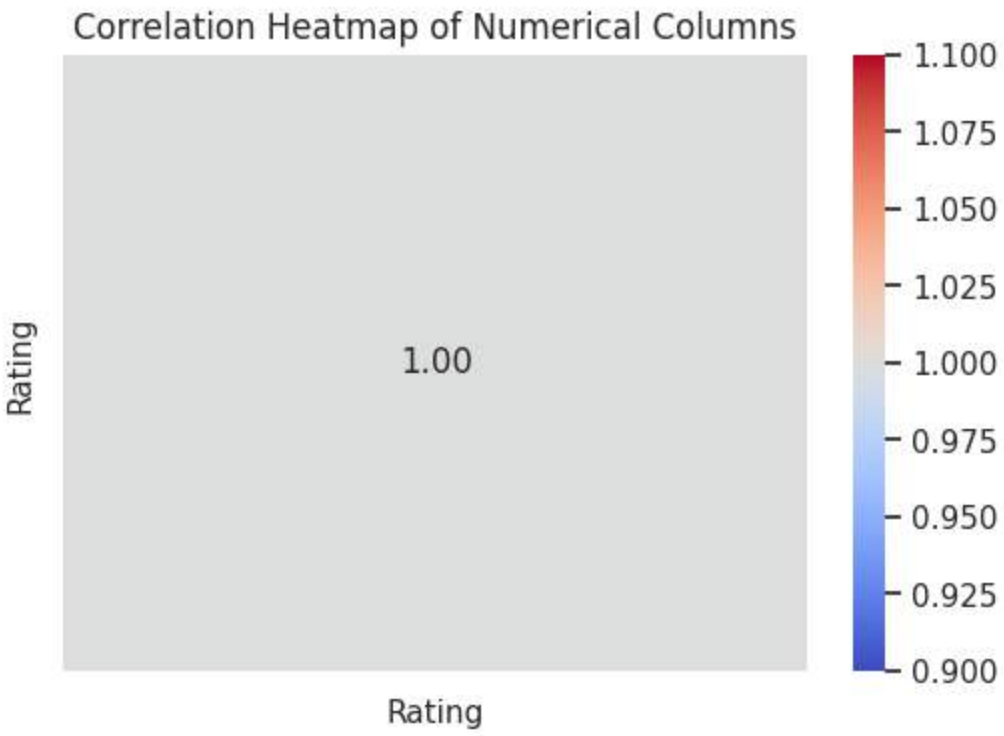


In [ ]:
```
# Count the occurrences of each Director and Actor 1 combination
collaboration_counts = df.groupby(['Director', 'Actor 1']).size().reset_index(

# Sort the collaborations by count in descending order
frequent_collaborations = collaboration_counts.sort_values(by='collaboration_c

# Display the most frequent collaborations (you can adjust the number to displ
print("Most frequent Director and Actor 1 collaborations:")
display(frequent_collaborations.head(20)) # Display top 20 collaborations
```

```
Most frequent Director and Actor 1 collaborations:
```

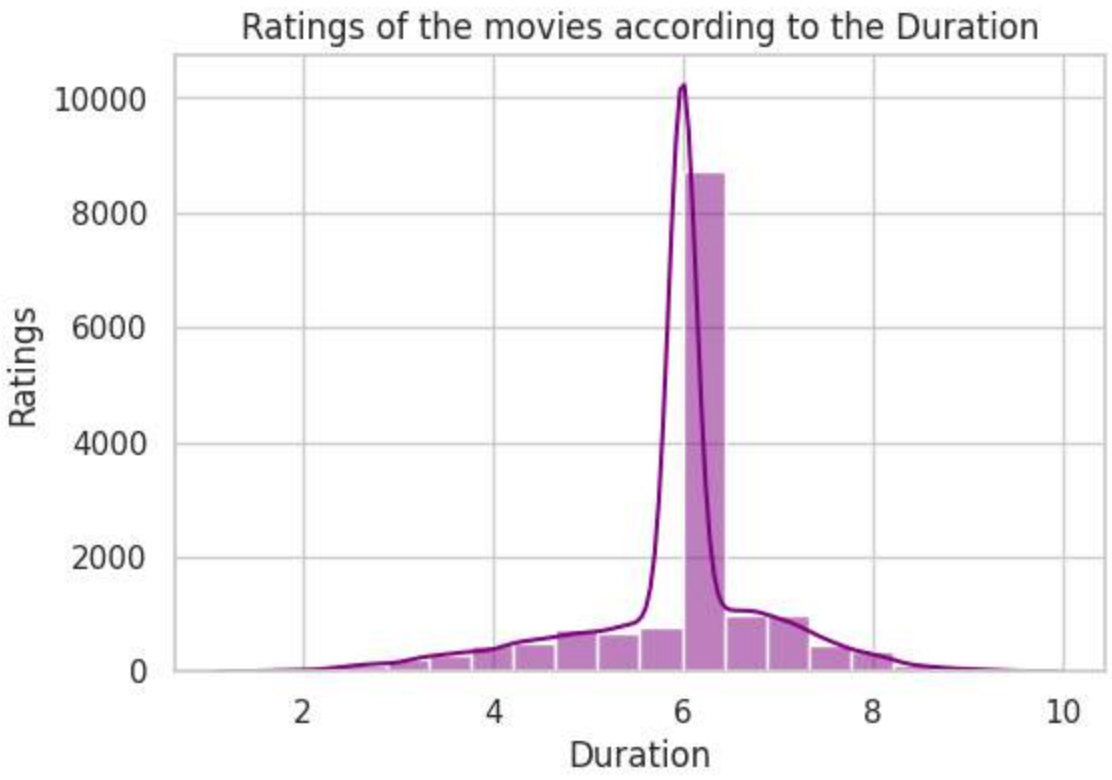
	Director	Actor 1	collaboration_count
12104	Unknown	Unknown	524
160	Abbas Alibhai Burmawalla	Mastan Alibhai Burmawalla	22
11137	Shyam Ramsay	Tulsi Ramsay	21
8837	Rajiv Chilaka	Unknown	19
10664	Shakeela	Unknown	18
6448	Master Bhagwan	Master Bhagwan	17
2800	Dev Anand	Dev Anand	15
11841	T.L.V. Prasad	Mithun Chakraborty	14
2076	Bhimsain	Unknown	13
5212	Kanti Shah	Sapna Sappu	13
8267	R. Krishnan	S. Panju	11
3046	Dinesh Chaudhary	Uttar Kumar	11
3297	Franz Osten	Devika Rani	11
2639	David Dhawan	Govinda	10
7271	Navinchandra	Unknown	10
2408	Chandulal Shah	Gohar	10
12327	Vijay Anand	Dev Anand	10
7816	Phani Majumdar	Unknown	9
6632	Mohammed Hussain	Dara Singh	9
4001	Homi Wadia	Fearless Nadia	9

In [ ]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

plt.figure(figsize=(6,4))

# Select only numerical columns for the correlation heatmap
numerical_df = df.select_dtypes(include=np.number)

# Calculate the correlation matrix
corr_matrix = numerical_df.corr()

# Create the heatmap
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', fmt=".2f")

plt.title("Correlation Heatmap of Numerical Columns")
plt.show()
```



In [ ]:
```
sns.set(style='whitegrid')
```

In [ ]:
```
plt.figure(figsize=(6,4))
sns.histplot(df['Rating'],bins=20,kde=True, color='purple')#Histogram with KDE
plt.title('Ratings of the movies according to the Duration')#Histogram with KD
plt.xlabel('Duration')
plt.ylabel('Ratings')
plt.show()
```

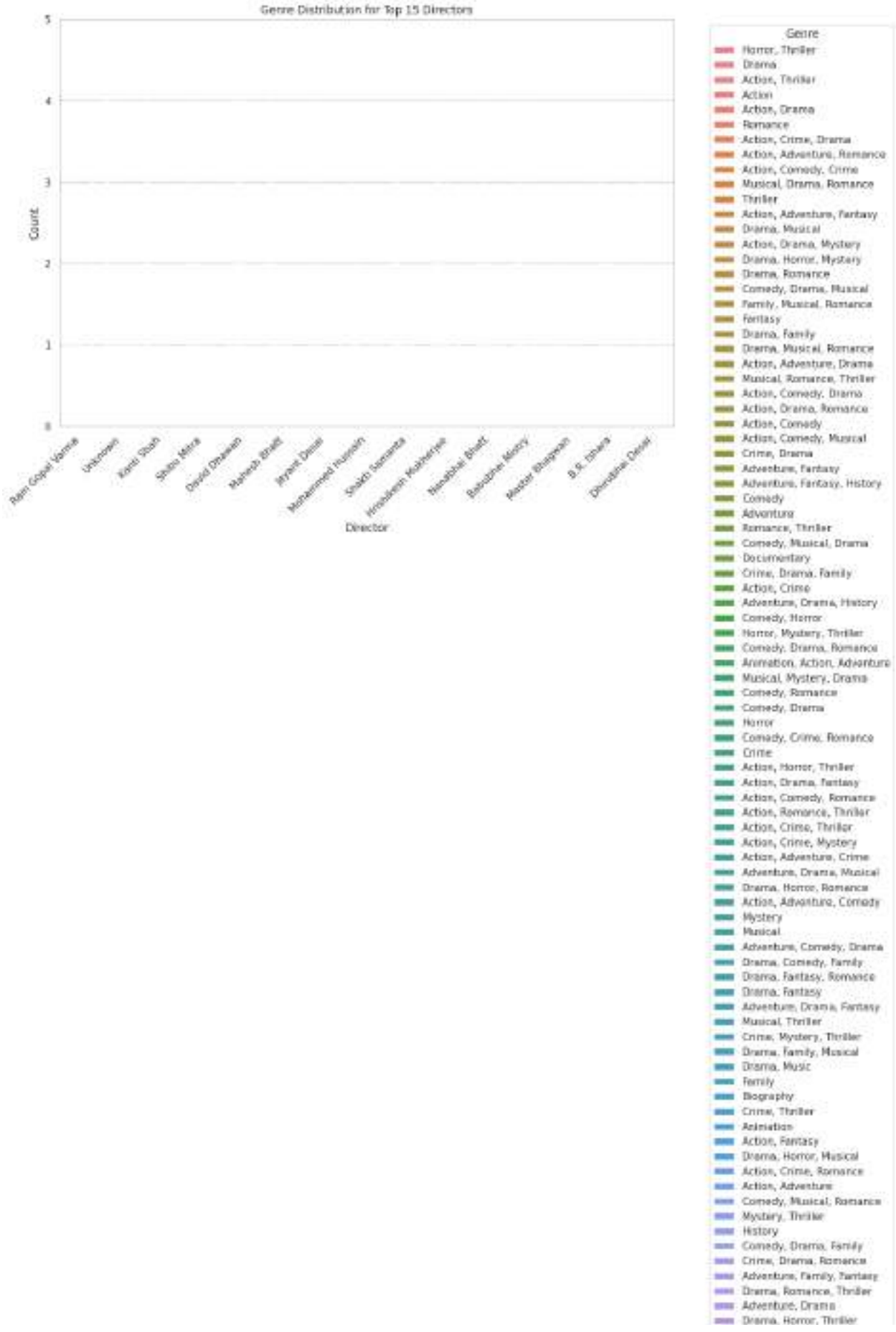


In [ ]:
```
import seaborn as sns
import matplotlib.pyplot as plt
plt.figure(figsize=(6,4))
sns.scatterplot(x='Name',y='Rating',data=df, hue='Genre',palette='deep',alpha=
plt.title('Name Vs Rating')
plt.xlabel('Name')
plt.ylabel('Rating')
plt.show()
```


Name Vs Rating
Rating
10
8
6
4
2
Genre
Drama
Drama, Musical
Comedy, Romance
Comedy, Drama, Musical
Drama, Romance, War
Documentary
Horror, Mystery, Thriller
Action, Crime, Thriller
Horror
Horror, Romance, Thriller
Comedy, Drama, Romance
Thriller
Comedy, Drama
Comedy, Drama, Fantasy
Comedy, Drama, Family
Crime, Drama, Mystery
Horror, Thriller
Biography
Comedy, Horror
Action
Drama, Horror, Mystery
Comedy
Action, Thriller
Drama, History
Drama, History, Sport
Horror, Mystery, Romance
Horror, Mystery
Drama, Horror, Romance
Action, Drama, History
Action, Drama, War
Comedy, Family
Adventure, Horror, Mystery
Action, Sci-Fi
Crime, Mystery, Thriller
War
Sport
Biography, Drama, History
Horror, Romance
Crime, Drama
Drama, Romance
Adventure, Drama
Comedy, Mystery, Thriller
Action, Crime, Drama
Crime, Thriller
Horror, Sci-Fi, Thriller
Crime, Drama, Thriller
Drama, Mystery, Thriller
Drama, Sport
Drama, Family, Musical
Action, Comedy
Comedy, Thriller
Action, Adventure, Fantasy
Drama, Romance, Thriller
Action, Drama
Drama, Horror, Musical
Action, Biography, Drama
Adventure, Comedy, Drama

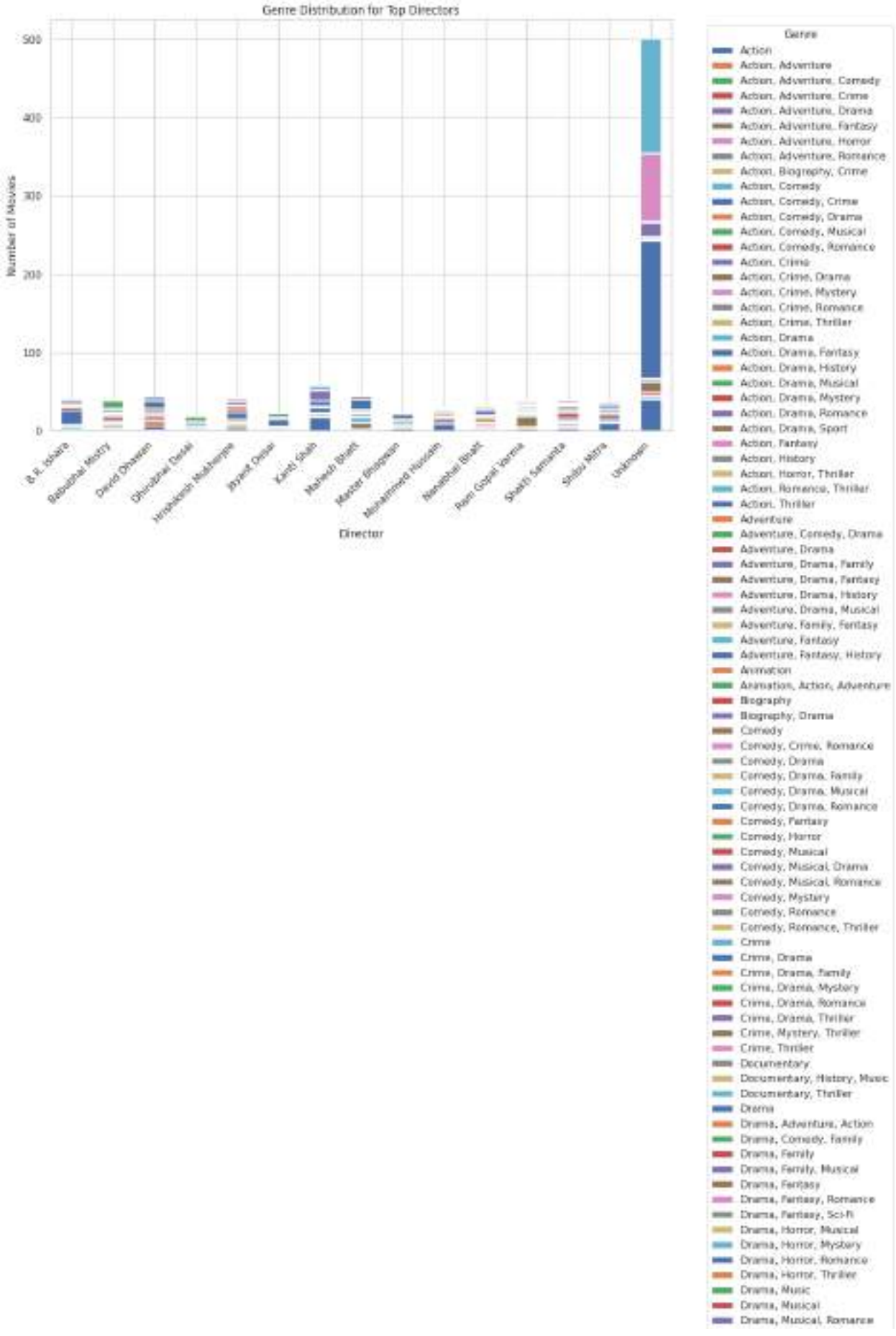
In [ ]:

```
# Find the top N directors (you can adjust N as needed)
top_n = 15  # For example, top 15 directors
top_directors = df['Director'].value_counts().nlargest(top_n).index

# Filter the DataFrame to include only movies by the top directors
df_top_directors = df[df['Director'].isin(top_directors)].copy()

# Create the countplot for the top directors
plt.figure(figsize=(12, 8))
sns.countplot(data=df_top_directors, x='Director', hue='Genre')
plt.title(f'Genre Distribution for Top {top_n} Directors')
plt.xlabel('Director')
plt.ylabel('Count')
plt.xticks(rotation=45, ha='right') # Rotate x-axis labels for better readabil
plt.legend(title='Genre', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.tight_layout()
plt.ylim(0, 5) # Set y-axis limit to zoom in on lower counts
plt.show()
```


Genre Distribution for Top 15 Directors
Count
0
1
2
3
4
5
Director
Ram Gopal Varma
Unknown
Kanti Shah
Shibu Mitra
David Dhawan
Mahesh Bhatt
Jitendra Desai
Mohammed Hussain
Shakti Samanta
Hrishikesh Mukherjee
Nanabhai Bhatt
Babubhai Mistry
Master Bhagwan
B.R. Ishara
Dhirubhai Desai
Genre
Horror, Thriller
Drama
Action, Thriller
Action
Action, Drama
Romance
Action, Crime, Drama
Action, Adventure, Romance
Action, Comedy, Crime
Musical, Drama, Romance
Thriller
Action, Adventure, Fantasy
Drama, Musical
Action, Drama, Mystery
Drama, Horror, Mystery
Drama, Romance
Comedy, Drama, Musical
Family, Musical, Romance
Fantasy
Drama, Family
Drama, Musical, Romance
Action, Adventure, Drama
Musical, Romance, Thriller
Action, Comedy, Drama
Action, Drama, Romance
Action, Comedy
Action, Comedy, Musical
Crime, Drama
Adventure, Fantasy
Adventure, Fantasy, History
Comedy
Adventure
Romance, Thriller
Comedy, Musical, Drama
Documentary
Crime, Drama, Family
Action, Crime
Adventure, Drama, History
Comedy, Horror
Horror, Mystery, Thriller
Comedy, Drama, Romance
Animation, Action, Adventure
Musical, Mystery, Drama
Comedy, Romance
Comedy, Drama
Horror
Comedy, Crime, Romance
Crime
Action, Horror, Thriller
Action, Drama, Fantasy
Action, Comedy, Romance
Action, Romance, Thriller
Action, Crime, Thriller
Action, Crime, Mystery
Action, Adventure, Crime
Adventure, Drama, Musical
Drama, Horror, Romance
Action, Adventure, Comedy
Mystery
Musical
Adventure, Comedy, Drama
Drama, Comedy, Family
Drama, Fantasy, Romance
Drama, Fantasy
Adventure, Drama, Fantasy
Musical, Thriller
Crime, Mystery, Thriller
Drama, Family, Musical
Drama, Music
Family
Biography
Crime, Thriller
Animation
Action, Fantasy
Drama, Horror, Musical
Action, Crime, Romance
Action, Adventure
Comedy, Musical, Romance
Mystery, Thriller
History
Comedy, Drama, Family
Crime, Drama, Romance
Adventure, Family, Fantasy
Drama, Romance, Thriller
Adventure, Drama
Drama, Horror, Thriller

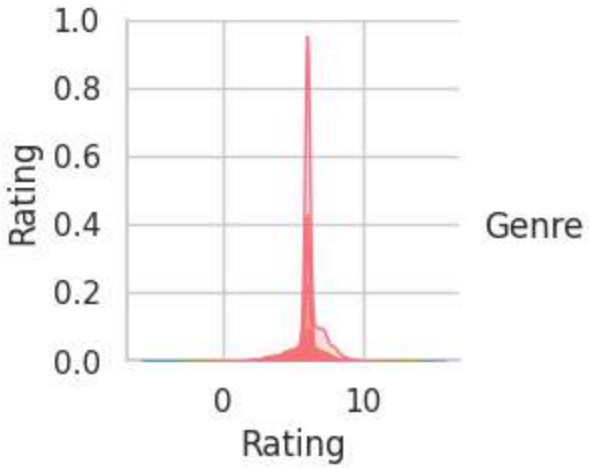
In [ ]:
```
# Count the occurrences of each Director-Genre combination
director_genre_counts = df.groupby(['Director', 'Genre']).size().reset_index(r

# Find the top N directors (you can adjust N as needed)
top_directors = df['Director'].value_counts().nlargest(15).index

# Filter the counts for the top directors
top_directors_genre_counts = director_genre_counts[director_genre_counts['Dire

# Pivot the data for the stacked bar chart
pivot_df = top_directors_genre_counts.pivot(index='Director', columns='Genre',

# Create the stacked bar chart
plt.figure(figsize=(12, 8))
pivot_df.plot(kind='bar', stacked=True, figsize=(12, 8))

plt.title('Genre Distribution for Top Directors')
plt.xlabel('Director')
plt.ylabel('Number of Movies')
plt.xticks(rotation=45, ha='right')
plt.legend(title='Genre', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.tight_layout()
plt.show()
```

```
<Figure size 1200x800 with 0 Axes>
```

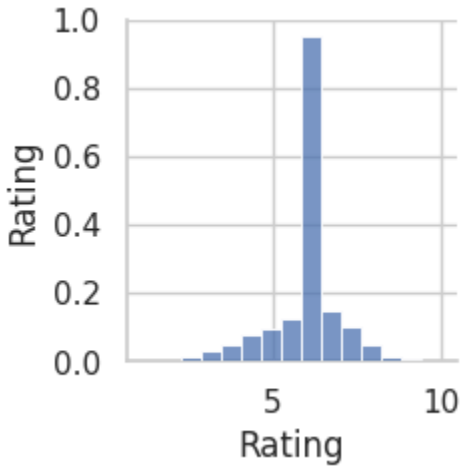

Genre Distribution for Top Directors
Number of Movies
0
100
200
300
400
500
B. R. Ishara
Babubhai Mistry
David Dhawan
Dhirubhai Desai
Hrishikesh Mukherjee
Jitendra Desai
Kanti Shah
Mahesh Bhatt
Master Bhagwan
Mohammed Hussain
Nanabhai Bhatt
Ram Gopal Varma
Shanti Sawaria
Shibu Mitra
Unknown
Director
Genre
Action
Action, Adventure
Action, Adventure, Comedy
Action, Adventure, Crime
Action, Adventure, Drama
Action, Adventure, Fantasy
Action, Adventure, Horror
Action, Adventure, Romance
Action, Biography, Crime
Action, Comedy
Action, Comedy, Crime
Action, Comedy, Drama
Action, Comedy, Musical
Action, Comedy, Romance
Action, Crime
Action, Crime, Drama
Action, Crime, Mystery
Action, Crime, Romance
Action, Crime, Thriller
Action, Drama
Action, Drama, Fantasy
Action, Drama, History
Action, Drama, Musical
Action, Drama, Mystery
Action, Drama, Romance
Action, Drama, Sport
Action, Fantasy
Action, History
Action, Horror, Thriller
Action, Romance, Thriller
Action, Thriller
Adventure
Adventure, Comedy, Drama
Adventure, Drama
Adventure, Drama, Family
Adventure, Drama, Fantasy
Adventure, Drama, History
Adventure, Drama, Musical
Adventure, Family, Fantasy
Adventure, Fantasy
Adventure, Fantasy, History
Animation
Animation, Action, Adventure
Biography
Biography, Drama
Comedy
Comedy, Crime, Romance
Comedy, Drama
Comedy, Drama, Family
Comedy, Drama, Musical
Comedy, Drama, Romance
Comedy, Fantasy
Comedy, Horror
Comedy, Musical
Comedy, Musical, Drama
Comedy, Musical, Romance
Comedy, Mystery
Comedy, Romance
Comedy, Romance, Thriller
Crime
Crime, Drama
Crime, Drama, Family
Crime, Drama, Mystery
Crime, Drama, Romance
Crime, Drama, Thriller
Crime, Mystery, Thriller
Crime, Thriller
Documentary
Documentary, History, Music
Documentary, Thriller
Drama
Drama, Adventure, Action
Drama, Comedy, Family
Drama, Family
Drama, Family, Musical
Drama, Fantasy
Drama, Fantasy, Romance
Drama, Fantasy, Sci-fi
Drama, Horror, Musical
Drama, Horror, Mystery
Drama, Horror, Romance
Drama, Horror, Thriller
Drama, Music
Drama, Musical
Drama, Musical, Romance

In [ ]:
```
plt.figure(figsize=(5,5))
sns.pairplot(df[["Name","Genre","Rating","Director","Actor 1","Actor 2","Actor
plt.show()
```

```
<Figure size 500x500 with 0 Axes>
```

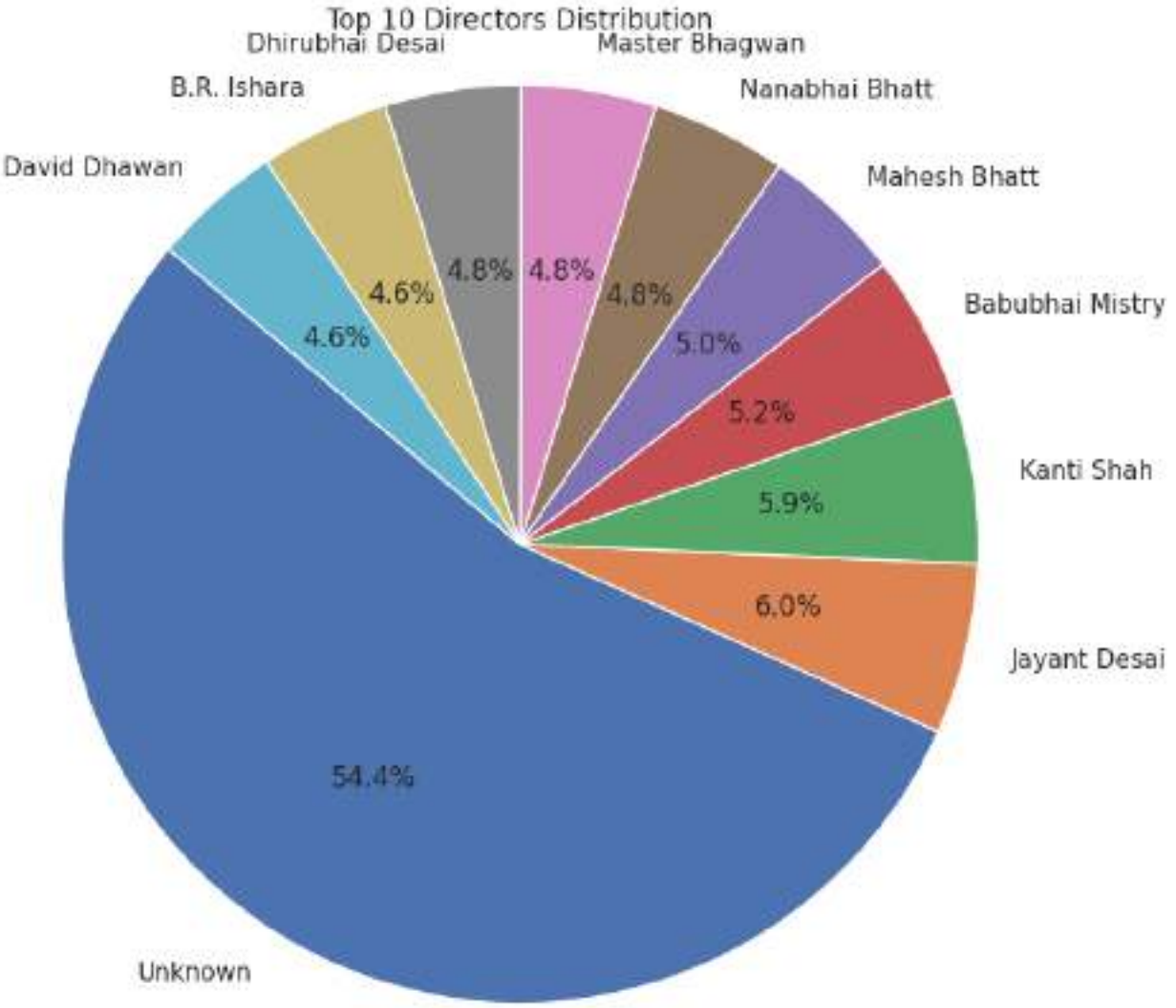


In [ ]:
```
# Select the numerical variables for the pair plot
numerical_columns = df.select_dtypes(include=['number'])

# Create a pair plot for the numerical variables
sns.pairplot(numerical_columns)
plt.show()
```



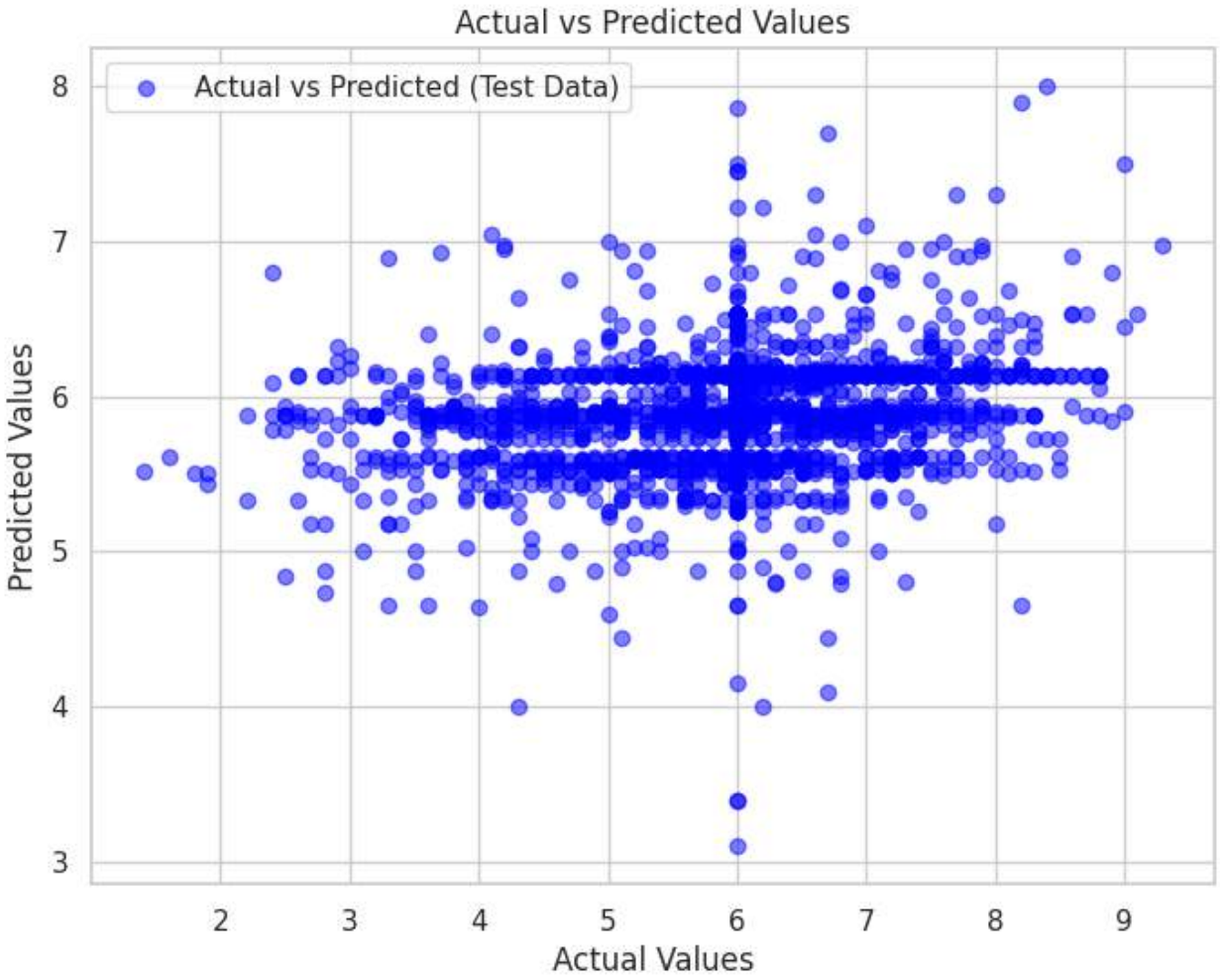
In [ ]:
```
# Get the counts of each director
director_counts = df['Director'].value_counts()

# Select the top N directors (you can adjust N as needed)
top_n = 10  # For example, top 10 directors
top_directors_counts = director_counts.nlargest(top_n)

# Create the pie chart
plt.figure(figsize=(8, 8))
plt.pie(top_directors_counts, labels=top_directors_counts.index, autopct='%1.1
plt.title(f'Top {top_n} Directors Distribution')
```

```
plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.
plt.show()
```



In [ ]:
```
#Define predictor variable
X=df["Genre"]
#Define target variable
y=df["Rating"]

#Split data into training and testing sets
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=

# One-hot encode the 'Genre' column
X_train = pd.get_dummies(X_train, drop_first=True)
X_test = pd.get_dummies(X_test, drop_first=True)

# Align columns so both have the same dummy columns
X_train, X_test = X_train.align(X_test, join='left', axis=1, fill_value=0)

# Handle missing values in y_train by filling with the median
y_train = y_train.fillna(y_train.median())
```

```
simple_model=LinearRegression()
simple_model.fit(X_train,y_train)

# Handle missing values in y_test by filling with the median of y_train
y_test = y_test.fillna(y_train.median())

#Predictions
y_pred=simple_model.predict(X_test)

# Create a scatter plot for the test data
plt.figure(figsize=(8, 6))
plt.scatter(y_test, y_pred, alpha=0.5, color='blue', label='Actual vs Predicte
plt.title('Actual vs Predicted Values')
plt.xlabel('Actual Values')
plt.ylabel('Predicted Values')
plt.legend()
plt.grid(True)

# Show the plot
plt.show()
```



In [ ]:
```
# Handle missing values in y_train by filling with the median
```

```
y_train = y_train.fillna(y_train.median())

simple_model=LinearRegression()
simple_model.fit(X_train,y_train)
```

Out[ ]:

```
▾ LinearRegression
LinearRegression()
```

In [ ]:
```
# Handle missing values in y_test by filling with the median of y_train
y_test = y_test.fillna(y_train.median())

#Predictions
y_pred=simple_model.predict(X_test)
```

In [ ]:
```
#Evaluate the model
print(f'Mean Squared Error: {mean_squared_error(y_test ,y_pred)}')
print(f'R^2 Score:{r2_score(y_test,y_pred)}')
```

```
Mean Squared Error: 0.9392953704288026
R^2 Score:0.039197073995850484
```

In [ ]:
```
#Display the coefficients of the model
coefficients=pd.DataFrame(simple_model.coef_,X_train.columns,columns=['Coeffic
print(coefficients)
```

```
                               Coefficient
Action, Adventure               -0.136325
Action, Adventure, Biography     1.923675
Action, Adventure, Comedy       -0.239483
Action, Adventure, Crime        -0.289658
Action, Adventure, Drama        -0.110223
...                                   ...
Thriller, Action                 0.123675
Thriller, Musical, Mystery       1.223675
Thriller, Mystery                0.657008
Thriller, Mystery, Family        0.223675
War                             -0.590611

[441 rows x 1 columns]
```