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IMDB MOVIES DATASET & ANALYSIS

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INTRODUCTION

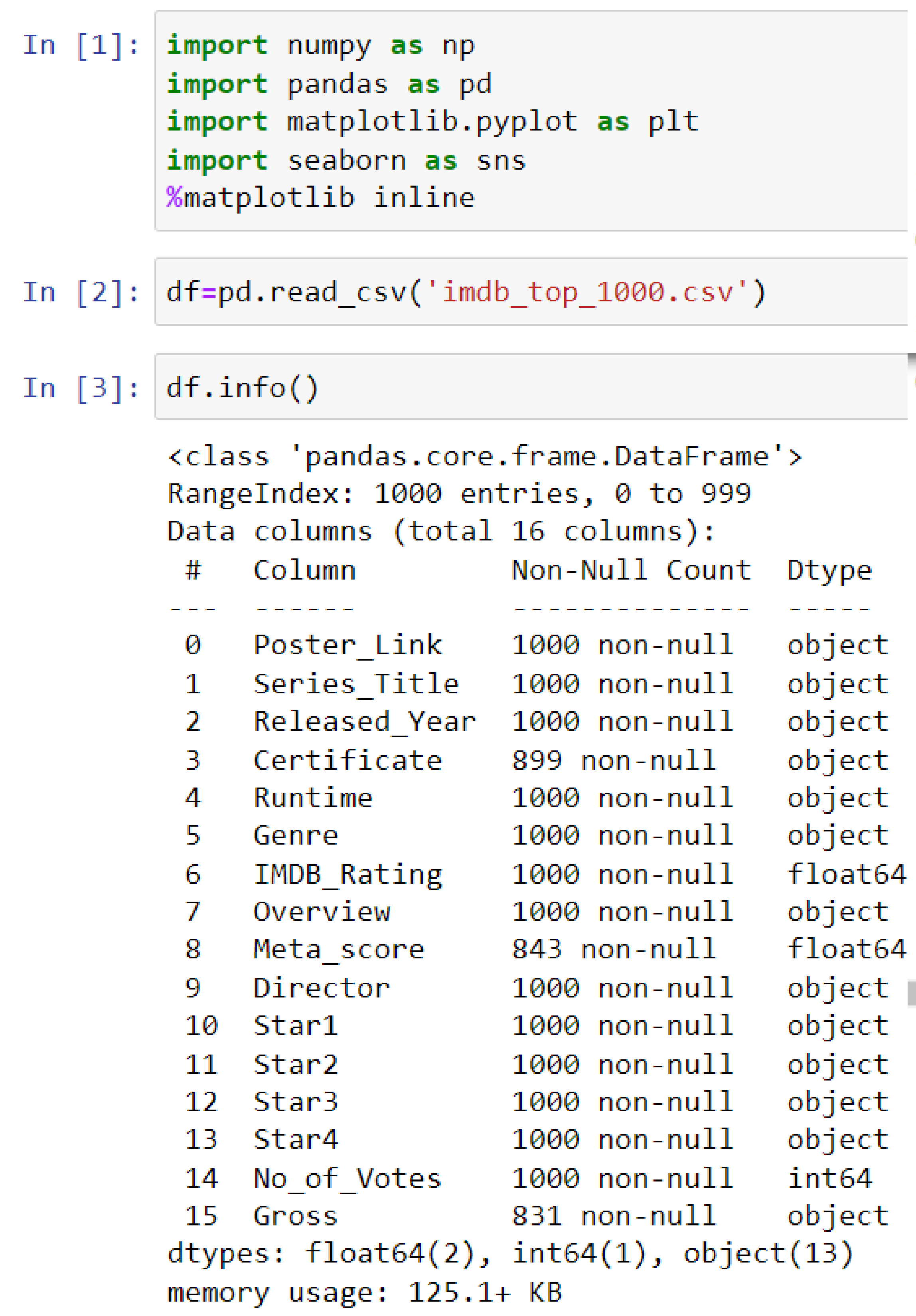
Analysis of last 94yrs. (i.e., from 1920 – 2014) movies data IMDB and come up with the success factors of any movie and their correlation.
The dataset contains 1000 observations of movie data hosted on IMDB. IMDB (Internet Movie Database) is an online database of information related to films, television programs, home videos, and reviews and ratings. Users registered on this site are invited to rate any film on a scale of 1 to 10. It also displays the Metascore of each title. However, unlike IMDB, they get ratings from registered well know agencies and calculates a weighted average of those ratings.

DATA DISCRIPTION

The dataset contains the following Columns:

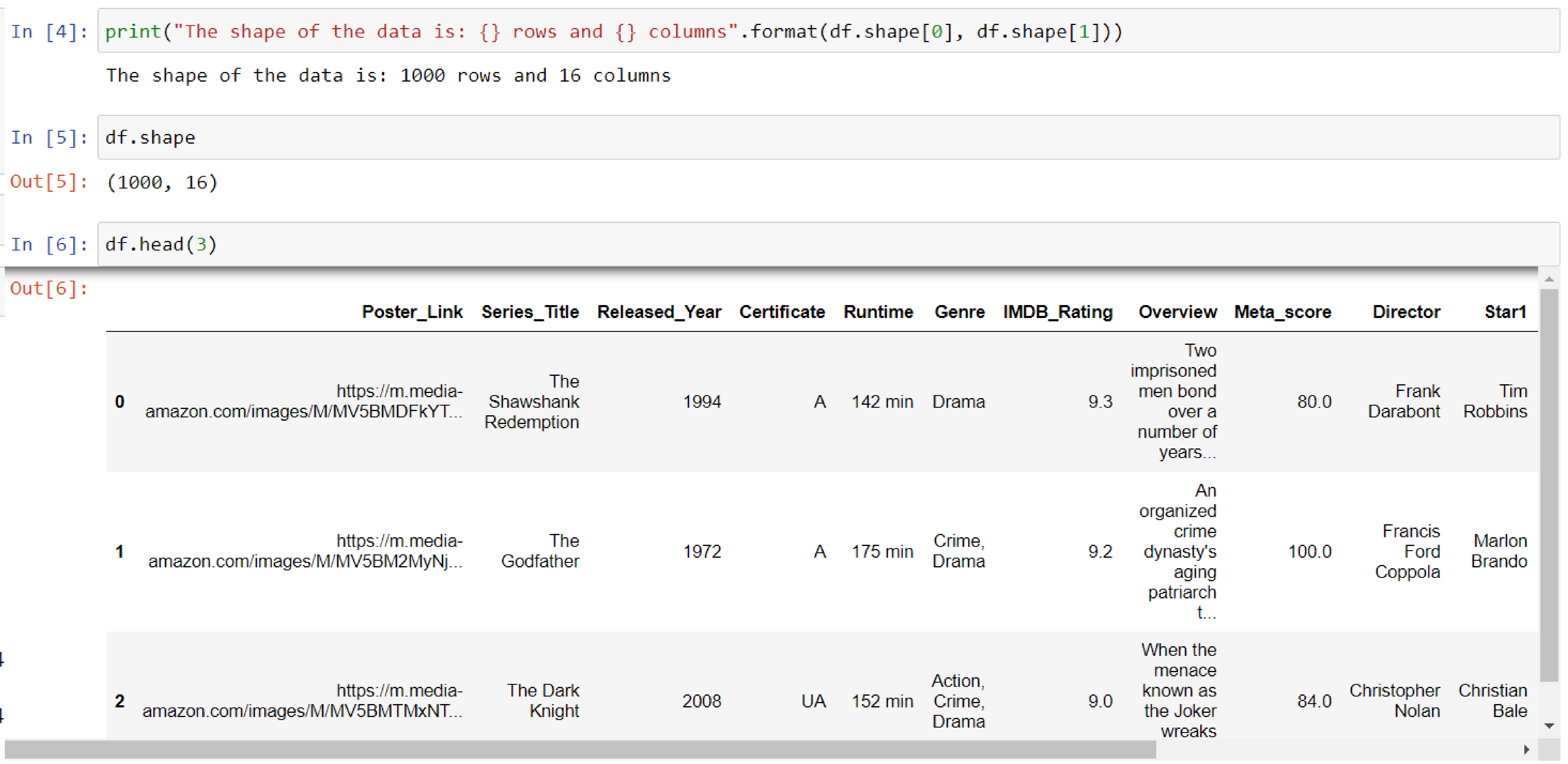
Poster Link: Link of the poster that IMDB is using, **Series Title**: Name of the movie, **Released Year:** Year at which that movie was released, **Certificate:** Certificate earned by that movie, **Runtime**: Total runtime of the movie, **Genre:** Genre of the film, **IMDB Rating:** Rating of the movie at IMDB site, **Overview:** mini story/ summary, **Meta score:** Score earned by the movie, **Director:** Name of the Director, **Star1**, Star2, Star3, Star4: Name of the Stars, **No of votes:** Total number of votes, **Gross**: Money earned by that movie

BASIC IMPLEMENTATION



```
In [1]: import numpy as np
        import pandas as pd
        import matplotlib.pyplot as plt
        import seaborn as sns
        %matplotlib inline

In [2]: df=pd.read_csv('imdb_top_1000.csv')

In [3]: df.info()

        <class 'pandas.core.frame.DataFrame'>
        RangeIndex: 1000 entries, 0 to 999
        Data columns (total 16 columns):
         #   Column         Non-Null Count  Dtype
        ---  ------         --------------  -----
         0   Poster_Link    1000 non-null   object
         1   Series_Title   1000 non-null   object
         2   Released_Year  1000 non-null   object
         3   Certificate    899 non-null    object
         4   Runtime        1000 non-null   object
         5   Genre          1000 non-null   object
         6   IMDB_Rating    1000 non-null   float64
         7   Overview       1000 non-null   object
         8   Meta_score     843 non-null    float64
         9   Director       1000 non-null   object
         10  Star1          1000 non-null   object
         11  Star2          1000 non-null   object
         12  Star3          1000 non-null   object
         13  Star4          1000 non-null   object
         14  No_of_Votes    1000 non-null   int64
         15  Gross          831 non-null    object
        dtypes: float64(2), int64(1), object(13)
        memory usage: 125.1+ KB
```

Shape of the data



```
In [4]: print("The shape of the data is: {} rows and {} columns".format(df.shape[0], df.shape[1]))

        The shape of the data is: 1000 rows and 16 columns

In [5]: df.shape

Out[5]: (1000, 16)

In [6]: df.head(3)

Out[6]:
```

	Poster_Link	Series_Title	Released_Year	Certificate	Runtime	Genre	IMDB_Rating	Overview	Meta_score	Director	Star1
0	https://m.media-amazon.com/images/M/MV5BMDFkYT...	The Shawshank Redemption	1994	A	142 min	Drama	9.3	Two imprisoned men bond over a number of years...	80.0	Frank Darabont	Tim Robbins
1	https://m.media-amazon.com/images/M/MV5BM2MyNj...	The Godfather	1972	A	175 min	Crime, Drama	9.2	An organized crime dynasty's aging patriarch t...	100.0	Francis Ford Coppola	Marlon Brando
2	https://m.media-amazon.com/images/M/MV5BMTMxNT...	The Dark Knight	2008	UA	152 min	Action, Crime, Drama	9.0	When the menace known as the Joker wreaks	84.0	Christopher Nolan	Christian Bale

Number of Null values

In [7]:
```
df.isnull().sum()
```

Out[7]:
```
Poster_Link        0
Series_Title       0
Released_Year      0
Certificate      101
Runtime            0
Genre              0
IMDB_Rating        0
Overview           0
Meta_score       157
Director           0
Star1              0
Star2              0
Star3              0
Star4              0
No_of_Votes        0
Gross            169
dtype: int64
```

Data Cleaning

In [8]:
```
df.drop(['Certificate', 'Star1', 'Star2', 'Star3', 'Star4'], axis=1,inplace=True)
df.head(2)
```

Out[8]:

	Poster_Link	Series_Title	Released_Year	Runtime	Genre	IMDB_Rating	Overview	Meta_score	Director	No_of_Votes	Gross
0	https://m.media-amazon.com/images/M/MV5BMDFkYT...	The Shawshank Redemption	1994	142 min	Drama	9.3	Two imprisoned men bond over a number of	80.0	Frank Darabont	2343110	28,341,469

Performing Different Operation

In [11]:
```python
type(df)
```
Out[11]:
```
pandas.core.frame.DataFrame
```

In [12]:
```python
df[['IMDB_Rating','Meta_score']]
```
Out[12]:

	IMDB_Rating	Meta_score
0	9.3	80.0
1	9.2	100.0
2	9.0	84.0
3	9.0	90.0
4	9.0	96.0
...	...	...
995	7.6	76.0
996	7.6	84.0
997	7.6	85.0
998	7.6	78.0
999	7.6	93.0

1000 rows × 2 columns

In [13]:
```python
df.loc[[432,435],['Runtime','Meta_score']]
```
Out[13]:

	Runtime	Meta_score
432	138 min	91.0
435	174 min	95.0

In [14]:
```python
df.iloc[2:4]
```
Out[14]:

Poster_Link	Series_Title	Released_Year	Runtime	Genre	IMDB_Rating	Overview
https://m.media-amazon.com/images/M/MV5BMTMxNT...	The Dark Knight	2008	152 min	Action, Crime, Drama	9.0	When the menace known as the Joker wreaks havo...

In [16]:
```python
df.describe()
```
Out[16]:

	IMDB_Rating	Meta_score	No_of_Votes
count	1000.000000	843.000000	1.000000e+03
mean	7.949300	77.971530	2.736929e+05
std	0.275491	12.376099	3.273727e+05
min	7.600000	28.000000	2.508800e+04
25%	7.700000	70.000000	5.552625e+04
50%	7.900000	79.000000	1.385485e+05
75%	8.100000	87.000000	3.741612e+05
max	9.300000	100.000000	2.343110e+06

In [17]:
```python
df.describe().transpose()
```
Out[17]:

	count	mean	std	min	25%	50%	75%	max
IMDB_Rating	1000.0	7.94930	0.275491	7.6	7.70	7.9	8.10	9.3
Meta_score	843.0	77.97153	12.376099	28.0	70.00	79.0	87.00	100.0
No_of_Votes	1000.0	273692.91100	327372.703934	25088.0	55526.25	138548.5	374161.25	2343110.0

In [18]:
```python
type(df['Meta_score'])
```
Out[18]:
```
pandas.core.series.Series
```

In [19]:
```python
df_avg= df['IMDB_Rating'].mean()

print('The overall average of all the IMDB_Rating of out of 10 is: ', df_avg)
```
```
The overall average of all the IMDB_Rating of out of 10 is:  7.949300000000012
```

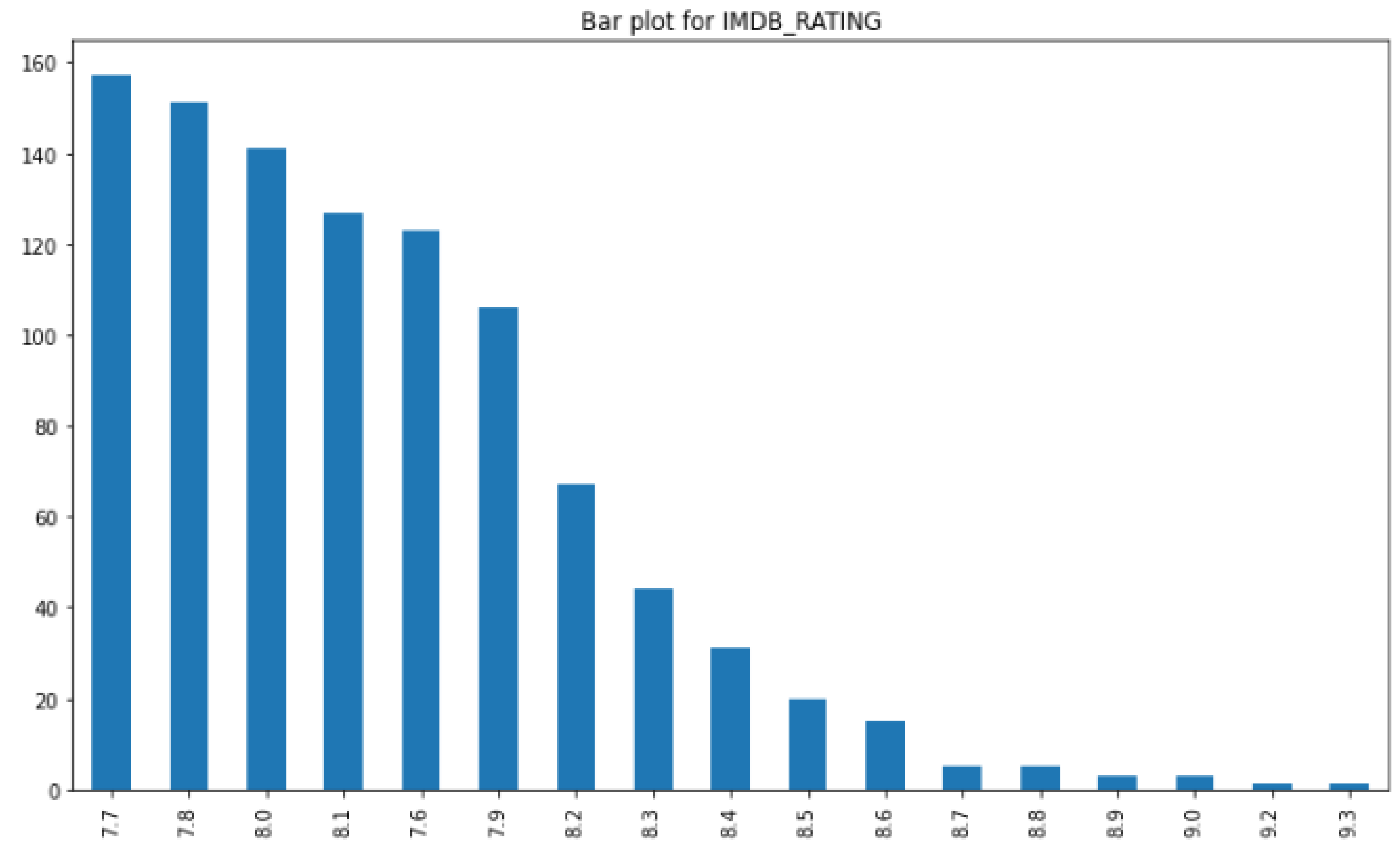
In [20]:
```python
var=df['Series_Title'].value_counts()
print(var)
```
```
Drishyam                    2
The Shawshank Redemption    1
Awakenings                  1
Tombstone                   1
The Sandlot                 1
                           ..
Guardians of the Galaxy     1
Blade Runner 2049           1
Her                         1
Bohemian Rhapsody           1
```

Data Visualization

In [23]:
```
var = df['IMDB_Rating'].value_counts()
print(var)
var.plot(kind='bar', figsize = (12,7), title='Bar plot for IMDB_RATING')
```

```
7.7    157
7.8    151
8.0    141
8.1    127
7.6    123
7.9    106
8.2     67
8.3     44
8.4     31
8.5     20
8.6     15
8.7      5
8.8      5
8.9      3
9.0      3
9.2      1
9.3      1
Name: IMDB_Rating, dtype: int64
```

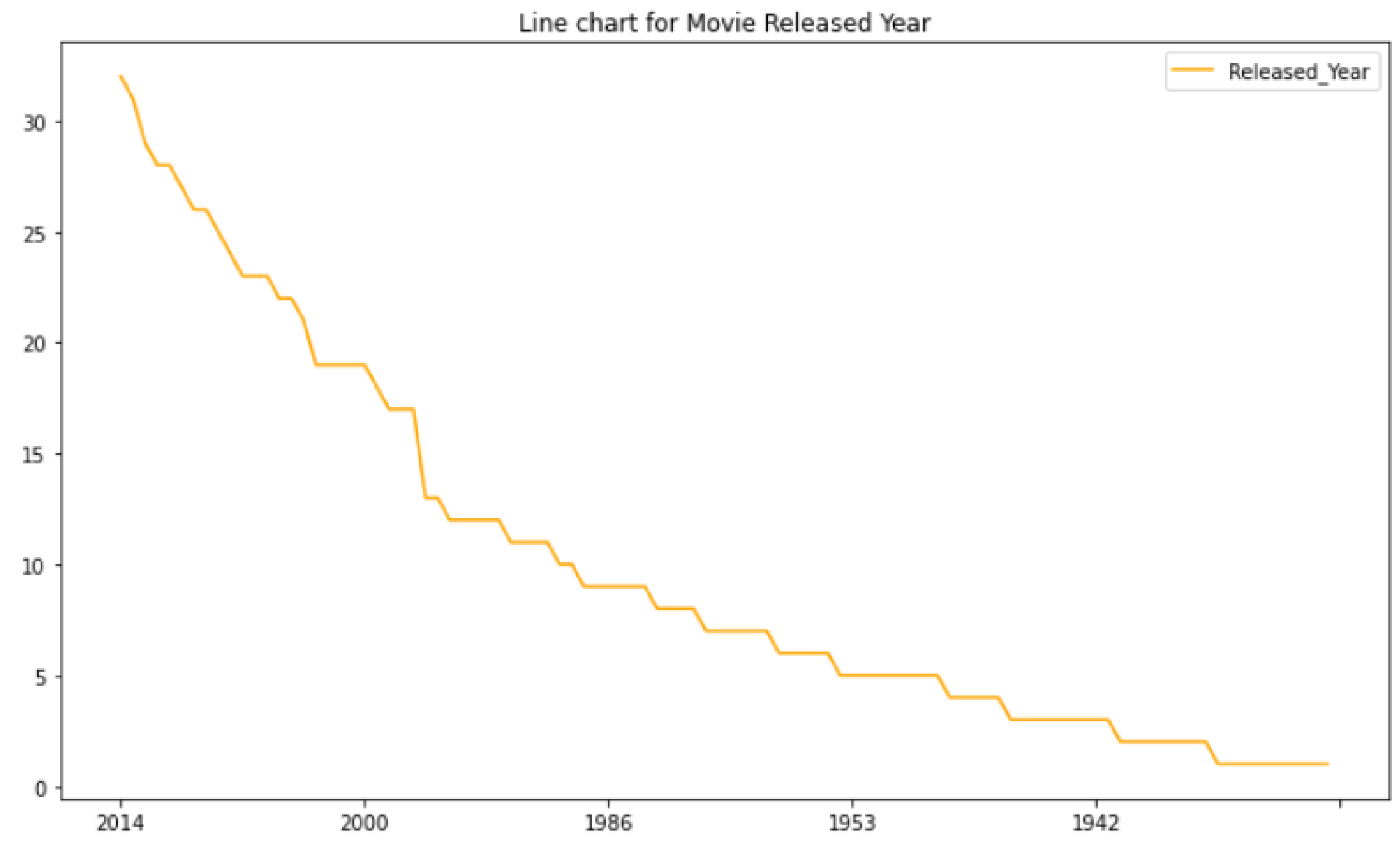
Out[23]:
```
<AxesSubplot:title={'center':'Bar plot for IMDB_RATING'}>
```



In [24]:
```
Year = df['Released_Year'].value_counts()
print(Year)
Year.plot.line(title='Line chart for Movie Released Year',color = ('Orange'), figsize = (12,7), legend=True)
```

```
2014    32
2004    31
2009    29
2013    28
2016    28
        ..
1926     1
1936     1
1924     1
1921     1
PG       1
Name: Released_Year, Length: 100, dtype: int64
```

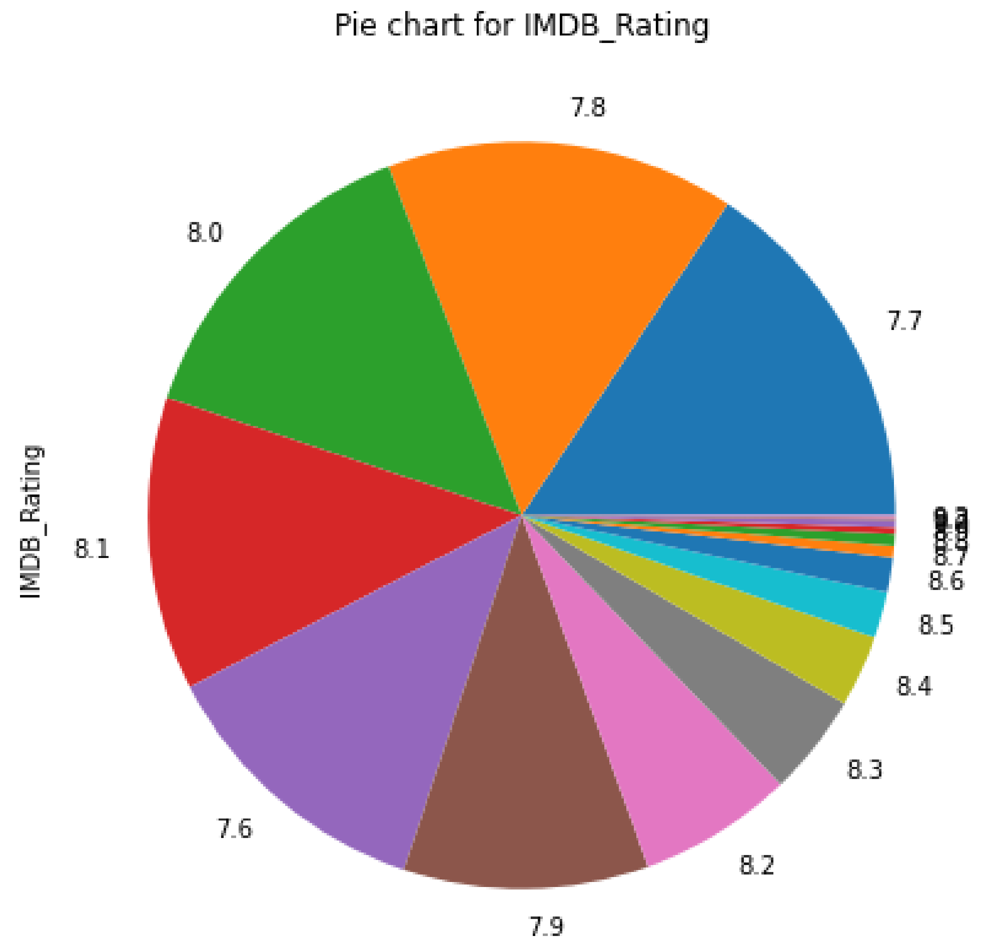
Out[24]:
```
<AxesSubplot:title={'center':'Line chart for Movie Released Year'}>
```



```
In [27]: IR=df['IMDB_Rating'].value_counts()
         print(IR)
         IR.plot.pie(title='Pie chart for IMDB_Rating',figsize = (12,7), legend=False)
```

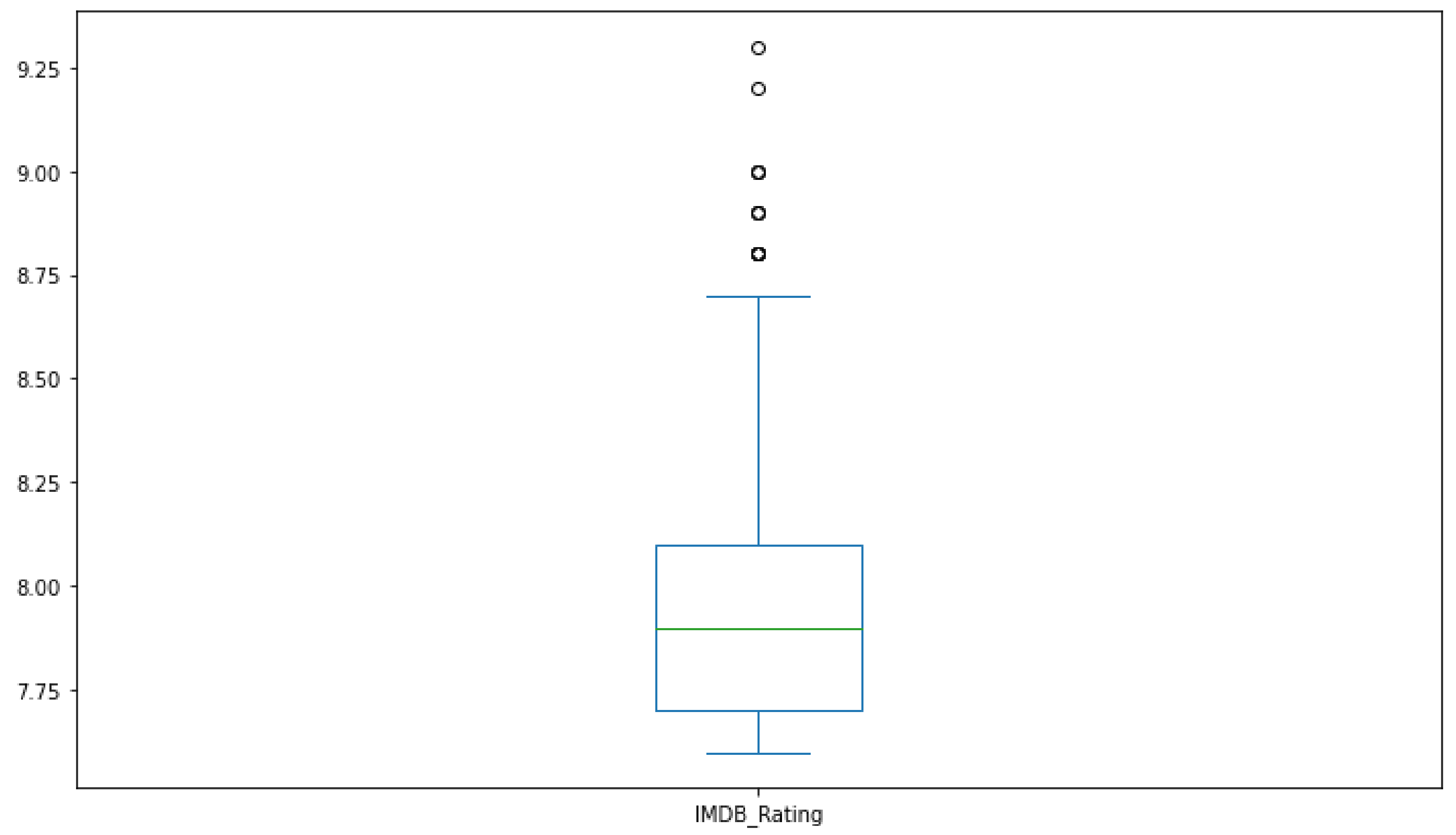
```
7.7    157
7.8    151
8.0    141
8.1    127
7.6    123
7.9    106
8.2     67
8.3     44
8.4     31
8.5     20
8.6     15
8.7      5
8.8      5
8.9      3
9.0      3
9.2      1
9.3      1
Name: IMDB_Rating, dtype: int64
```

```
Out[27]: <AxesSubplot:title={'center':'Pie chart for IMDB_Rating'}, ylabel='IMDB_Rating'>
```



```
In [26]: df.IMDB_Rating.plot(kind = 'box',figsize = (12,7))
```

```
Out[26]: <AxesSubplot:>
```

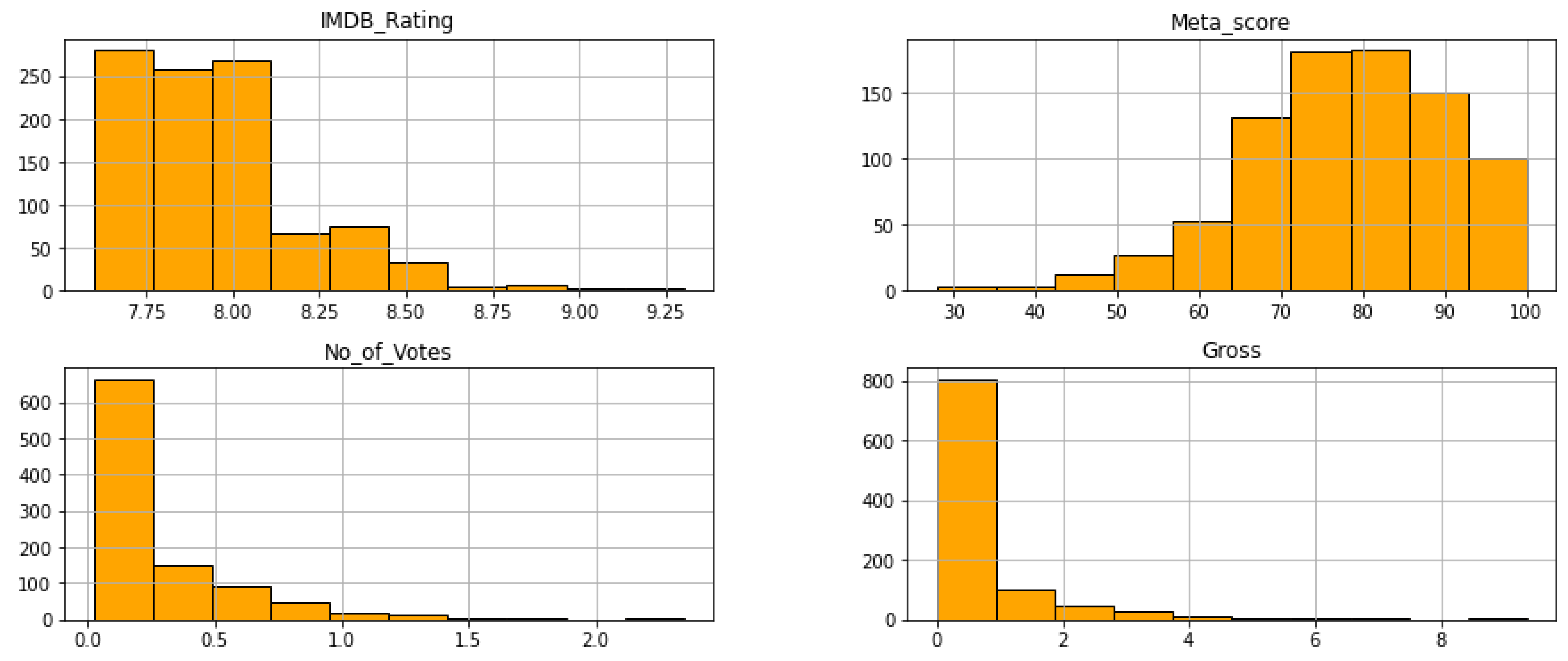


Looking for Correlation

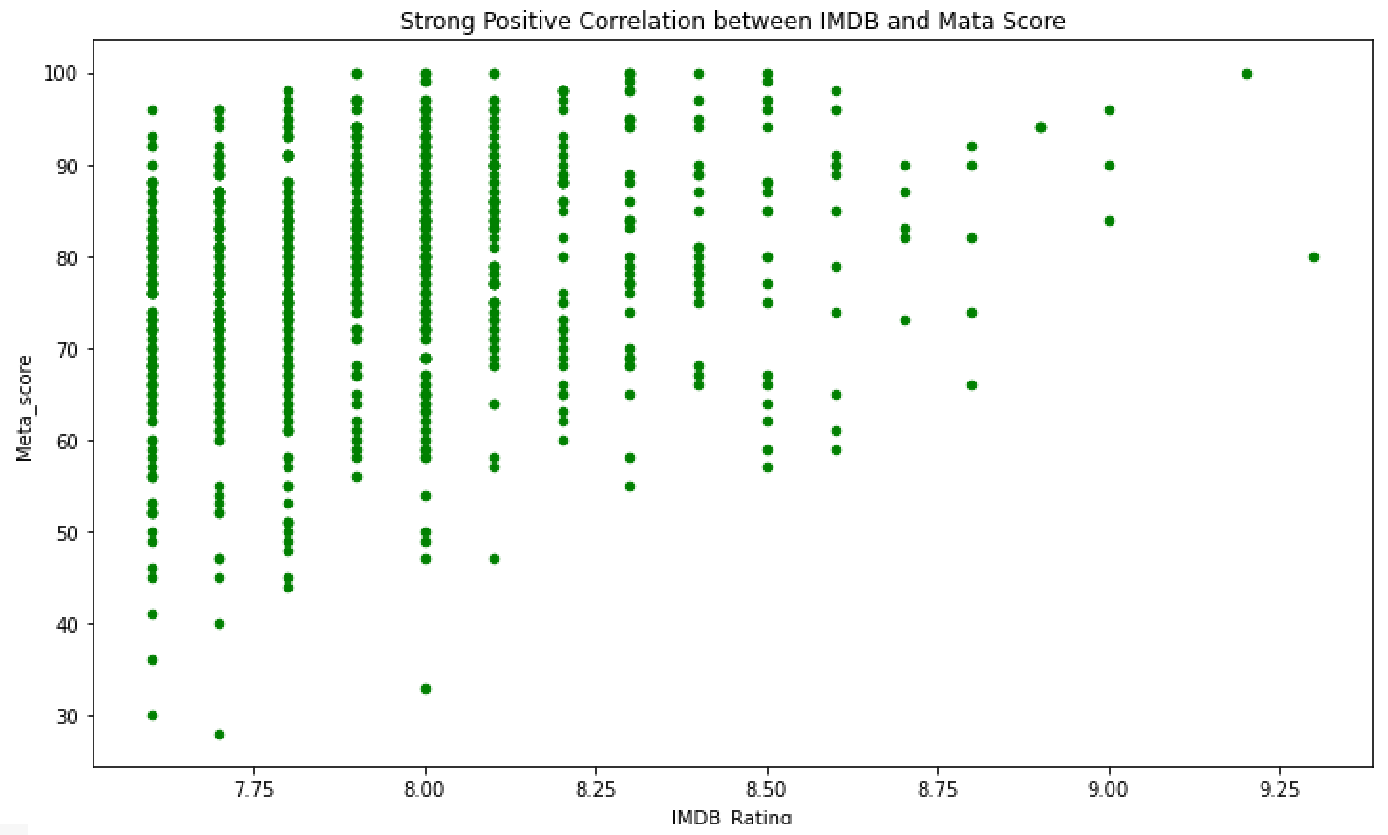
```
In [28]: print(df['Gross'].head(1))
         df['Gross'] = df['Gross'].str.replace(',', '')
         print(df['Gross'].head(1))

         df['Gross'] = df['Gross'].astype('float64')
         df['Gross'] = df['Gross'].replace(np.nan, 0)

         0    28,341,469
         Name: Gross, dtype: object
         0    28341469
         Name: Gross, dtype: object

In [29]: df['Gross'] = df['Gross'].astype(int)

In [30]: df['Gross'].dtype

Out[30]: dtype('int32')

In [31]: df.corr()

Out[31]:
```

	IMDB_Rating	Meta_score	No_of_Votes	Gross
IMDB_Rating	1.000000	0.268531	0.494979	0.082381
Meta_score	0.268531	1.000000	-0.018507	-0.053659
No_of_Votes	0.494979	-0.018507	1.000000	0.602128
Gross	0.082381	-0.053659	0.602128	1.000000

```
In [32]: numerical_attributes = ['IMDB_Rating', 'Meta_score', 'No_of_Votes', 'Gross']
         df[numerical_attributes].hist(figsize = (15, 6), color = 'orange', edgecolor = 'black', layout = (2, 2));
```



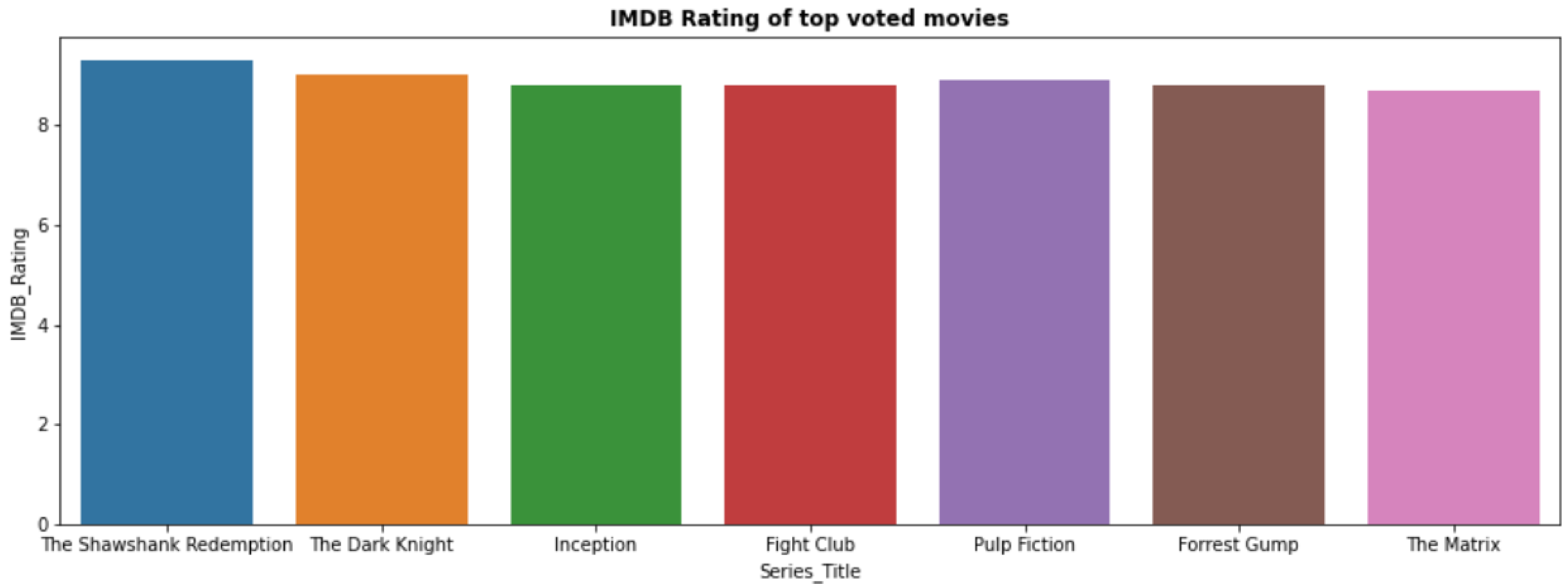
```
In [33]: df.plot(kind='scatter', x = 'IMDB_Rating', y = 'Meta_score', title = ("Strong Positive Correlation between IMDB and Mata Score"),

Out[33]: <AxesSubplot:title={'center':'Strong Positive Correlation between IMDB and Mata Score'}, xlabel='IMDB_Rating', ylabel='Meta_sco
         re'>
```



Top voted movies rating

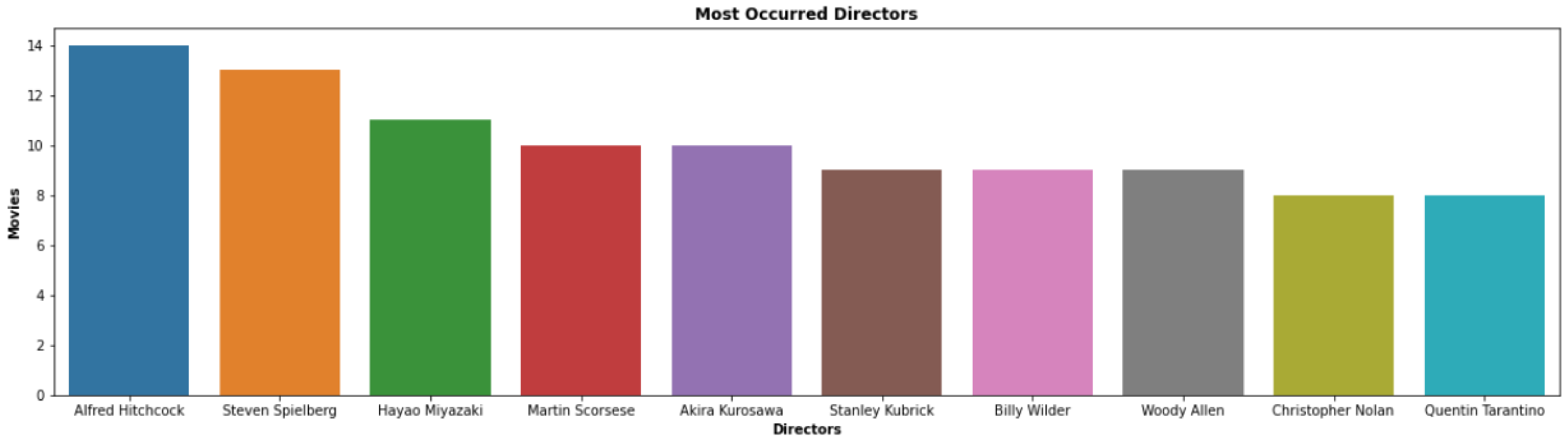
```
In [34]: top_voted = df.sort_values(['No_of_Votes'], ascending = False)
```

```
In [35]: fig,axs=plt.subplots(figsize=(15,5))
         g=sns.barplot(x=top_voted['Series_Title'][:7],y=top_voted['IMDB_Rating'][:7])
         g.set_title("IMDB Rating of top voted movies", weight = "bold")
         plt.show()
```



Most occurred directors

```
In [36]: fig,axs=plt.subplots(figsize=(20,5))
         g=sns.barplot(x=data['Director'].value_counts()[:10].index,y=data['Director'].value_counts()[:10])
         g.set_title("Most Occurred Directors", weight = "bold")
         g.set_xlabel("Directors", weight = "bold")
         g.set_ylabel("Movies", weight = "bold")
         plt.show()
```



Conclusion

The preparation of the data, the modeling of these data, then the visualization of these data with a wide variety of graphs, and finally the interpretation of these graphs made it possible to conduct an analysis and a global view of movies released in the cinema between 1920 and 2014. This study through a large volume of data, allowed us to determine the following points for movies between 1920 and 2014:

- Critics rate more severely than the public
- The more the public appreciates a film, the more they vote and give a good rating
- Animation, biography, crime, drama, mystery, and sci-fi movies are the highest-rated by critics
- Animation, adventure, biography, crime, documentary, mystery, and science-fiction movies are the highest rated by the public