In [1]:
```
import pandas as pd
import numpy as np
```

In [142]:
```
df = pd.read_csv('ratings.csv')
```

In [143]:
```
df.head()
```

Out[143]:

	userId	movieId	rating	timestamp
0	1	1	4.0	964982703
1	1	3	4.0	964981247
2	1	6	4.0	964982224
3	1	47	5.0	964983815
4	1	50	5.0	964982931

In [144]:
```
movies_titles = pd.read_csv('movies.csv')
```

In [145]:
```
movies_titles = movies_titles[['movieId', 'title']]
# movies_titles.head()
```

In [146]:
```
movies_titles.head()
```

Out[146]:

	movieId	title
0	1	Toy Story (1995)
1	2	Jumanji (1995)
2	3	Grumpier Old Men (1995)
3	4	Waiting to Exhale (1995)
4	5	Father of the Bride Part II (1995)

In [147]:
```
df = pd.merge(df, movies_titles, on='movieId')
```

In [149]:
```
df.head()
```

Out[149]:

	userId	movieId	rating	timestamp	title
0	1	1	4.0	964982703	Toy Story (1995)
1	5	1	4.0	847434962	Toy Story (1995)
2	7	1	4.5	1106635946	Toy Story (1995)
3	15	1	2.5	1510577970	Toy Story (1995)
4	17	1	4.5	1305696483	Toy Story (1995)

In [151]:
```
import matplotlib.pyplot as plt
```

In [152]:
```
import seaborn as sns
```

In [153]:
```
sns.set_style('white')
```

In [154]:
```
%matplotlib inline
```

In [156]:
```
df.groupby('title')['rating'].mean().sort_values(ascending=False).head()
```

Out[156]:
```
title
Karlson Returns (1970)                    5.0
Winter in Prostokvashino (1984)           5.0
My Love (2006)                            5.0
Sorority House Massacre II (1990)         5.0
Winnie the Pooh and the Day of Concern (1972)    5.0
Name: rating, dtype: float64
```

In [157]:
```
df.groupby('title')['rating'].count().sort_values(ascending=False).head()
```

Out[157]:
```
title
Forrest Gump (1994)                329
Shawshank Redemption, The (1994)   317
Pulp Fiction (1994)                307
Silence of the Lambs, The (1991)   279
Matrix, The (1999)                 278
Name: rating, dtype: int64
```

In [158]:
```
ratings = pd.DataFrame(df.groupby('title')['rating'].mean())
```

In [159]:
```
ratings.head()
```

Out[159]:

	rating
title	
'71 (2014)	4.0
'Hellboy': The Seeds of Creation (2004)	4.0
'Round Midnight (1986)	3.5
'Salem's Lot (2004)	5.0
'Til There Was You (1997)	4.0

In [161]:
```
ratings['no of ratings'] = pd.DataFrame(df.groupby('title')['rating'].count())
```

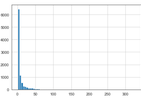
In [163]:
```
ratings.head()
```

Out[163]:

	rating	no of ratings
title		
'71 (2014)	4.0	1
'Hellboy': The Seeds of Creation (2004)	4.0	1
'Round Midnight (1986)	3.5	2
'Salem's Lot (2004)	5.0	1
'Til There Was You (1997)	4.0	2

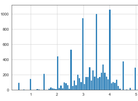
In [164]:
```
ratings['no of ratings'].hist(bins=70)
```

Out[164]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x215eedad160>
```



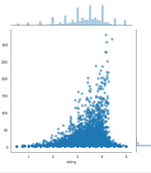
In [165]:
```
ratings['rating'].hist(bins=70)
```

Out[165]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x215eeee67b8>
```



In [166]:
```
sns.jointplot(x='rating', y='no of ratings', data=ratings, alpha=0.5)
```

Out[166]:
```
<seaborn.axisgrid.JointGrid at 0x215f1b6bf60>
```



In [167]:
```
df.head()
```

Out[167]:

	userId	movieId	rating	timestamp	title
0	1	1	4.0	964982703	Toy Story (1995)
1	5	1	4.0	847434962	Toy Story (1995)
2	7	1	4.5	1106635946	Toy Story (1995)
3	15	1	2.5	1510577970	Toy Story (1995)
4	17	1	4.5	1305696483	Toy Story (1995)

In [168]:
```
moviemat = df.pivot_table(index='userId', columns='title', values='rating')
```

In [169]:
```
moviemat.head()
```

Out[169]:

title	'71 (2014)	'Hellboy': The Seeds of Creation (2004)	'Round Midnight (1986)	'Salem's Lot (2004)	'Til There Was You (1997)	'Tis the Season for Love (2015)	'burbs, The (1989)	'night Mother (1986)	(500) Days of Summer (2009)	'batteries not included (1987)	...	Zulu (2013)	[REC] (2007)	[REC]² (2009)
userId														
1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN
2	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN
3	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN
4	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN
5	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN

5 rows × 9719 columns

In [170]:
```
ratings.sort_values('no of ratings', ascending=False).head(10)
```

Out[170]:

	rating	no of ratings
title		
Forrest Gump (1994)	4.164134	329
Shawshank Redemption, The (1994)	4.429022	317
Pulp Fiction (1994)	4.197068	307
Silence of the Lambs, The (1991)	4.161290	279
Matrix, The (1999)	4.192446	278
Star Wars: Episode IV - A New Hope (1977)	4.231076	251
Jurassic Park (1993)	3.750000	238
Braveheart (1995)	4.031646	237
Terminator 2: Judgment Day (1991)	3.970982	224
Schindler's List (1993)	4.225000	220

In [172]:
```
forrest_gump_ratings = moviemat['Forrest Gump (1994)']
matrix_ratings = moviemat['Matrix, The (1999)']
```

In [173]:
```
similar_to_forrest_gump = moviemat.corrwith(forrest_gump_ratings)
```

```
C:\Users\Vikas\Anaconda3\lib\site-packages\numpy\lib\function_base.py:2522: RuntimeWarning: Degrees of freedom <= 0 for slice
  c = cov(x, y, rowvar)
C:\Users\Vikas\Anaconda3\lib\site-packages\numpy\lib\function_base.py:2451: RuntimeWarning: divide by zero encountered in true_divide
  c *= np.true_divide(1, fact)
```

In [174]:
```
similar_to_matrix = moviemat.corrwith(matrix_ratings)
```

In [176]:
```
corr_forrest_gump = pd.DataFrame(similar_to_forrest_gump, columns=['Correlation'])
corr_forrest_gump.dropna(inplace=True)
```

In [177]:
```
corr_forrest_gump.head()
```

Out[177]:

	Correlation
title	
'burbs, The (1989)	0.197712
(500) Days of Summer (2009)	0.234095
*batteries not included (1987)	0.892710
...And Justice for All (1979)	0.928571
10 Cent Pistol (2015)	-1.000000

In [178]:
```
corr_forrest_gump.sort_values('Correlation', ascending=False).head()
```

Out[178]:

	Correlation
title	
Lost & Found (1999)	1.0
Century of the Self, The (2002)	1.0
The 5th Wave (2016)	1.0
Play Time (a.k.a. Playtime) (1967)	1.0
Memories (Memorias) (1995)	1.0

In [179]:
```
corr_forrest_gump = corr_forrest_gump.join(ratings['no of ratings'])
```

In [180]:
```
corr_forrest_gump.head()
```

Out[180]:

	Correlation	no of ratings
title		
'burbs, The (1989)	0.197712	17
(500) Days of Summer (2009)	0.234095	42
*batteries not included (1987)	0.892710	7
...And Justice for All (1979)	0.928571	3
10 Cent Pistol (2015)	-1.000000	2

In [181]:
```
corr_forrest_gump[corr_forrest_gump['no of ratings']>100].sort_values('Correlation', ascending=False).head()
```

Out[181]:

	Correlation	no of ratings
title		
Forrest Gump (1994)	1.000000	329
Good Will Hunting (1997)	0.466442	141
Aladdin (1992)	0.464268	183
American History X (1998)	0.457287	129
Truman Show, The (1998)	0.432556	125

In [182]:
```
corr_matrix = pd.DataFrame(similar_to_matrix, columns=['Correlation'])
```

In [184]:
```
corr_matrix.dropna(inplace=True)
corr_matrix.head()
```

Out[184]:

	Correlation
title	
'burbs, The (1989)	-0.160843
(500) Days of Summer (2009)	0.302316
*batteries not included (1987)	0.392232
...And Justice for All (1979)	0.654654
10 Cent Pistol (2015)	-1.000000

In [187]:
```
corr_matrix = corr_matrix.join(ratings['no of ratings'])
```

In [188]:
```
corr_matrix.head()
```

Out[188]:

	Correlation	rating	no of ratings
title			
'burbs, The (1989)	-0.160843	3.176471	17
(500) Days of Summer (2009)	0.302316	3.666667	42
*batteries not included (1987)	0.392232	3.285714	7
...And Justice for All (1979)	0.654654	3.166667	3
10 Cent Pistol (2015)	-1.000000	1.250000	2

In [190]:
```
corr_matrix[corr_matrix['no of ratings']>100].sort_values('Correlation', ascending=False).head()
```

Out[190]:

	Correlation	rating	no of ratings
title			
Matrix, The (1999)	1.000000	4.192446	278
Die Hard (1988)	0.544468	3.902959	145
Inception (2010)	0.514787	4.006434	143
Braveheart (1995)	0.490045	4.031646	237
Aliens (1986)	0.470665	3.964286	126

In [ ]:
```

```