```
# import pandas library
import pandas as pd

# Get the data
column_names = ['user_id', 'item_id', 'rating', 'timestamp']

path = 'https://media.geeksforgeeks.org/wp-content/uploads/file.tsv'

df = pd.read_csv(path, sep='\t', names=column_names)

# Check the head of the data
df.head()
```

	user_id	item_id	rating	timestamp
0	0	50	5	881250949
1	0	172	5	881250949
2	0	133	1	881250949
3	196	242	3	881250949
4	186	302	3	891717742

```
# Check out all the movies and their respective IDs
movie_titles = pd.read_csv('https://media.geeksforgeeks.org/wp-content/uploads/Movie_Id_Title
movie_titles.head()
```

	item_id	title
0	1	Toy Story (1995)
1	2	GoldenEye (1995)
2	3	Four Rooms (1995)
3	4	Get Shorty (1995)
4	5	Copycat (1995)

```
data = pd.merge(df, movie_titles, on='item_id')
data.head()
```

	user_id	item_id	rating	timestamp	title
0	0	50	5	881250949	Star Wars (1977)

```
# Calculate mean rating of all movies
data.groupby('title')['rating'].mean().sort_values(ascending=False).head()
```

```
title
They Made Me a Criminal (1939)                5.0
Marlene Dietrich: Shadow and Light (1996)     5.0
Saint of Fort Washington, The (1993)          5.0
Someone Else's America (1995)                 5.0
Star Kid (1997)                               5.0
Name: rating, dtype: float64
```

```
# Calculate count rating of all movies
data.groupby('title')['rating'].count().sort_values(ascending=False).head()
```

```
title
Star Wars (1977)             584
Contact (1997)               509
Fargo (1996)                 508
Return of the Jedi (1983)    507
Liar Liar (1997)             485
Name: rating, dtype: int64
```

```
# creating dataframe with 'rating' count values
ratings = pd.DataFrame(data.groupby('title')['rating'].mean())

ratings['num of ratings'] = pd.DataFrame(data.groupby('title')['rating'].count())

ratings.head()
```

title	rating	num of ratings
'Til There Was You (1997)	2.333333	9
1-900 (1994)	2.600000	5
101 Dalmatians (1996)	2.908257	109
12 Angry Men (1957)	4.344000	125
187 (1997)	3.024390	41

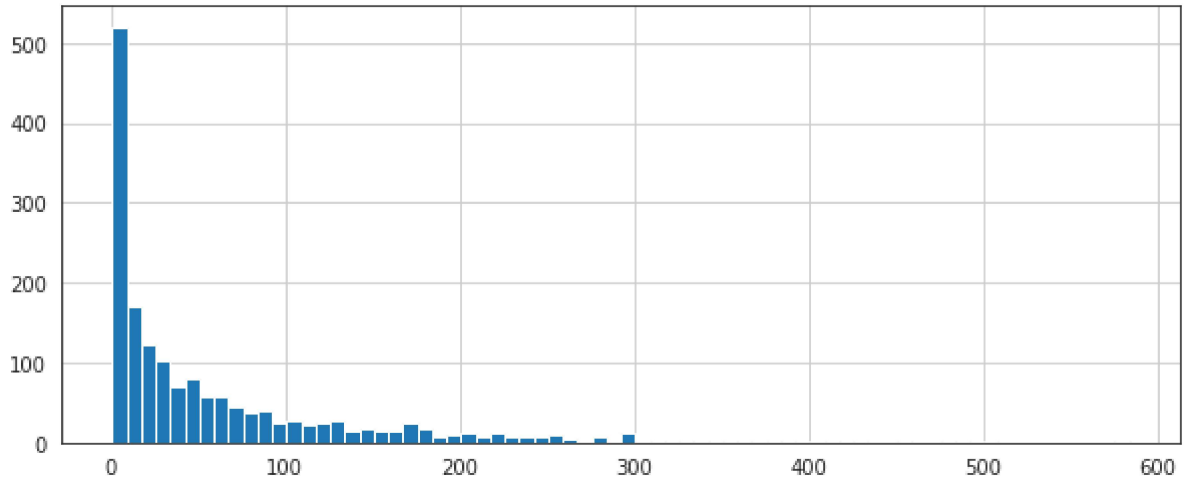
```
import matplotlib.pyplot as plt
import seaborn as sns
```

```
sns.set_style('white')
%matplotlib inline
```

```
# plot graph of 'num of ratings column'
plt.figure(figsize =(10, 4))

ratings['num of ratings'].hist(bins = 70)
```

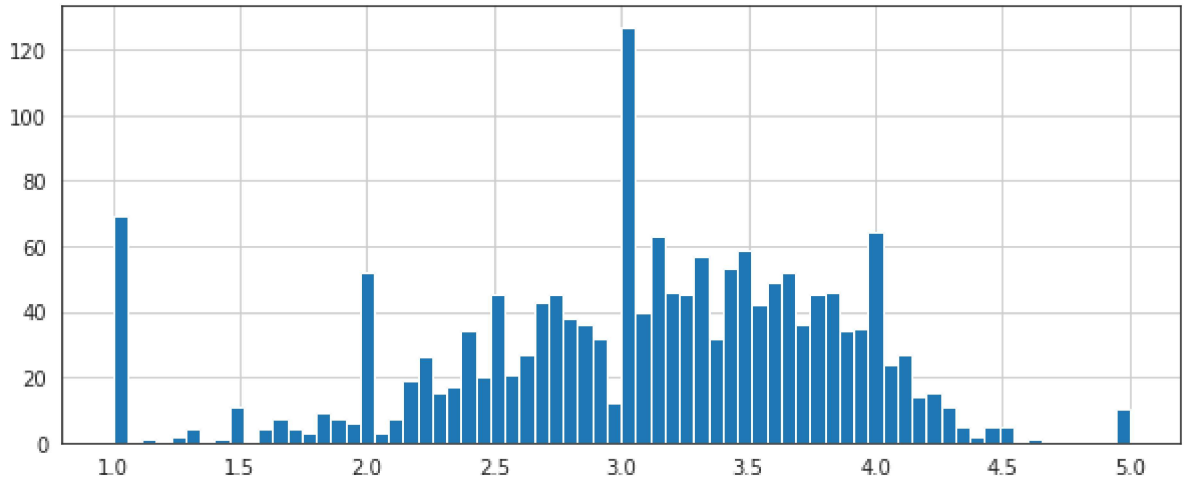
```
<matplotlib.axes._subplots.AxesSubplot at 0x7f8717f53490>
```




```
# plot graph of 'ratings' column
plt.figure(figsize =(10, 4))

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

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f8717dc7d10>
```




```
# Sorting values according to
# the 'num of rating column'
moviemat = data.pivot_table(index ='user_id',
              columns ='title', values ='rating')

moviemat.head()

ratings.sort_values('num of ratings', ascending = False).head(10)
```

title	rating	num of ratings
Star Wars (1977)	4.359589	584
Contact (1997)	3.803536	509
Fargo (1996)	4.155512	508
Return of the Jedi (1983)	4.007890	507
Liar Liar (1997)	3.156701	485
English Patient, The (1996)	3.656965	481
Scream (1996)	3.441423	478
Toy Story (1995)	3.878319	452
Air Force One (1997)	3.631090	431
Independence Day (ID4) (1996)	3.438228	429

```
# analysing correlation with similar movies
starwars_user_ratings = moviemat['Star Wars (1977)']
liarliar_user_ratings = moviemat['Liar Liar (1997)']

starwars_user_ratings.head()
```

```
user_id
0    5.0
1    5.0
2    5.0
3    NaN
4    5.0
Name: Star Wars (1977), dtype: float64
```

```
# analysing correlation with similar movies
similar_to_starwars = moviemat.corrwith(starwars_user_ratings)
similar_to_liarliar = moviemat.corrwith(liarliar_user_ratings)

corr_starwars = pd.DataFrame(similar_to_starwars, columns =['Correlation'])
corr_starwars.dropna(inplace = True)

corr_starwars.head()
```

title	Correlation
'Til There Was You (1997)	0.872872
1-900 (1994)	-0.645497

```
# Similar movies like starwars
corr_starwars.sort_values('Correlation', ascending = False).head(10)
corr_starwars = corr_starwars.join(ratings['num of ratings'])

corr_starwars.head()

corr_starwars[corr_starwars['num of ratings']>100].sort_values('Correlation', ascending = Fal
```

title	Correlation	num of ratings
Star Wars (1977)	1.000000	584
Empire Strikes Back, The (1980)	0.748353	368
Return of the Jedi (1983)	0.672556	507
Raiders of the Lost Ark (1981)	0.536117	420
Austin Powers: International Man of Mystery (1997)	0.377433	130

```
# Similar movies as of liarliar
corr_liarliar = pd.DataFrame(similar_to_liarliar, columns =['Correlation'])
corr_liarliar.dropna(inplace = True)

corr_liarliar = corr_liarliar.join(ratings['num of ratings'])
corr_liarliar[corr_liarliar['num of ratings']>100].sort_values('Correlation', ascending = Fal
```

title	Correlation	num of ratings
Liar Liar (1997)	1.000000	485
Batman Forever (1995)	0.516968	114
Mask, The (1994)	0.484650	129
Down Periscope (1996)	0.472681	101
Con Air (1997)	0.469828	137