```
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

```
movie_titles = pd.read_csv('https://media.geeksforgeeks.org/wp-content/uploads/Movie_Id_Titles.csv')
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)

Next steps: Generate code with movie_titles | View recommended plots | New interactive sheet

```
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)
1	290	50	5	880473582	Star Wars (1977)
2	79	50	4	891271545	Star Wars (1977)
3	2	50	5	888552084	Star Wars (1977)
4	8	50	5	879362124	Star Wars (1977)

```
data.groupby('title')['rating'].mean().sort_values(ascending=False).head()
```

title	rating
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

```
data.groupby('title')['rating'].count().sort_values(ascending=False).head()
```

title	rating
Star Wars (1977)	584
Contact (1997)	509
Fargo (1996)	508
Return of the Jedi (1983)	507
Liar Liar (1997)	485

```
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

Next steps: Generate code with ratings | View recommended plots | New interactive sheet

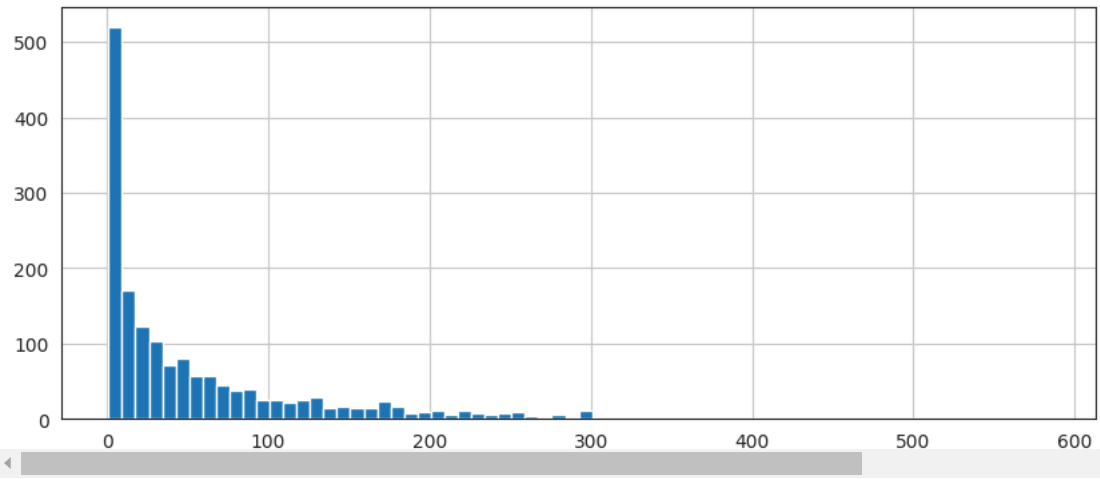
```
import matplotlib.pyplot as plt
import seaborn as sns

sns.set_style('white')
%matplotlib inline


plt.figure(figsize =(10, 4))

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

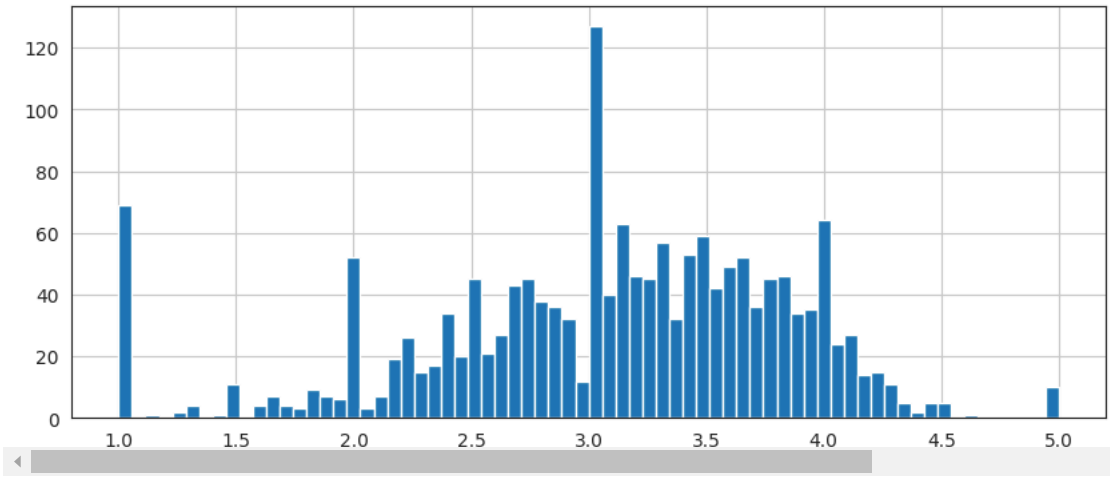
```
<Axes: >
```




```
plt.figure(figsize =(10, 4))

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

```
<Axes: >
```




```
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

```
starwars_user_ratings = moviemat['Star Wars (1977)']
liarliar_user_ratings = moviemat['Liar Liar (1997)']

starwars_user_ratings.head()
```

user_id	Star Wars (1977)
0	5.0
1	5.0
2	5.0
3	NaN
4	5.0

```
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()
```

```
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2897: RuntimeWarning: invalid value encountered in divide
  c /= stddev[:, None]
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2898: RuntimeWarning: invalid value encountered in divide
  c /= stddev[None, :]
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2889: RuntimeWarning: Degrees of freedom <= 0 for slice
  c = cov(x, y, rowvar, dtype=dtype)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2748: RuntimeWarning: divide by zero encountered in divide
  c *= np.true_divide(1, fact)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2748: RuntimeWarning: invalid value encountered in multiply
  c *= np.true_divide(1, fact)
```

title	Correlation
'Til There Was You (1997)	0.872872
1-900 (1994)	-0.645497
101 Dalmatians (1996)	0.211132
12 Angry Men (1957)	0.184289

Next steps: Generate code with corr_starwars | View recommended plots | New interactive sheet

```
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 = False).head()
```

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

```
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 =  False).head()
```

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