In [6]:
```
import pandas as pd

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

path = 'file.tsv'

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

In [7]:
```
df.head()
```

Out[7]:

	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

In [9]:
```
movie_titles = pd.read_csv('Movie_Id_Titles.csv')
movie_titles.head()
```

Out[9]:

	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)

In [10]:
```
data = pd.merge(df, movie_titles, on='item_id')
data.head()
```

Out[10]:

	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)

In [11]:
```
# Calculate count rating of all movies
data.groupby('title')['rating'].count().sort_values(ascending=False).head()
```

Out[11]:
```
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
```

In [12]:
```
# 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()
```

Out[12]:

	rating	num of ratings
title		
'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

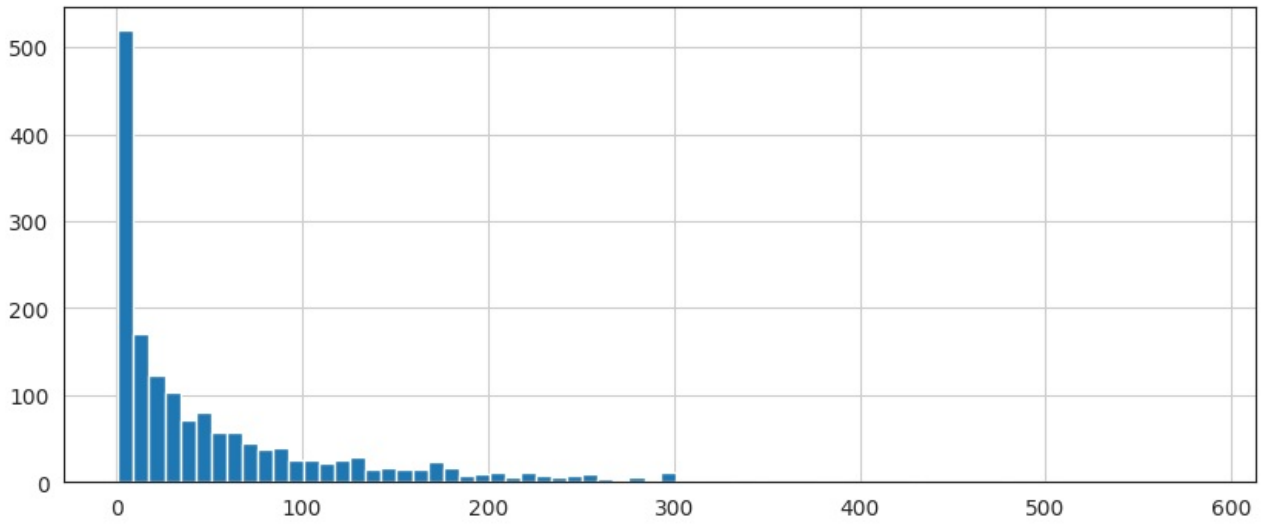
In [13]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

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

In [14]:
```
# plot graph of 'num of ratings column'
plt.figure(figsize =(10, 4))

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

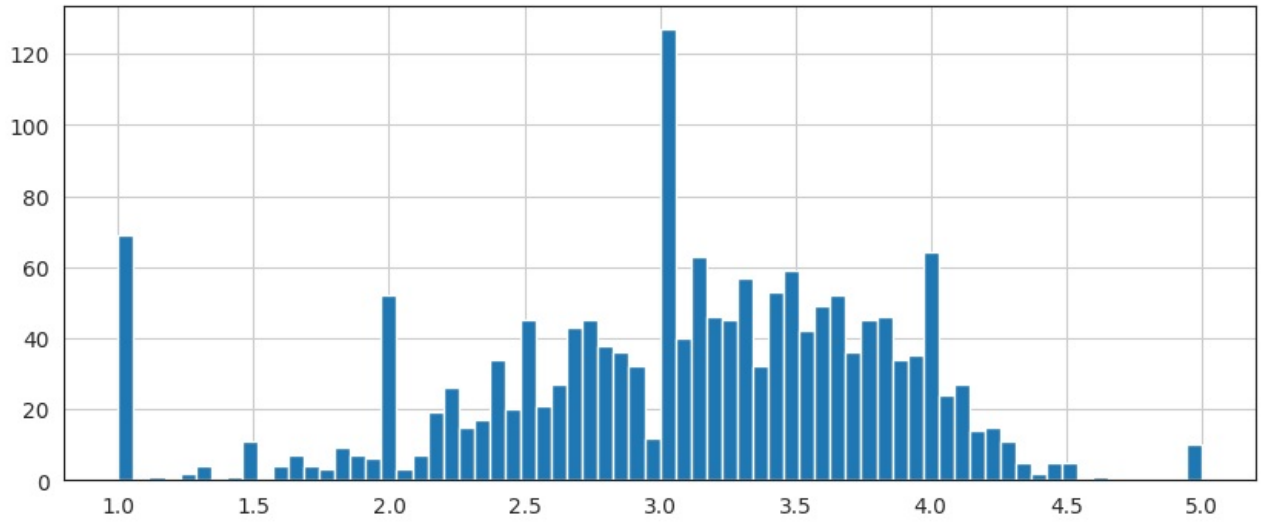
Out[14]:
```
<Axes: >
```



In [15]:
```
# plot graph of 'ratings' column
plt.figure(figsize =(10, 4))

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

Out[15]:
```
<Axes: >
```



In [16]:
```
# 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)
```

Out[16]:

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

In [17]:
```
# analysing correlation with similar movies
starwars_user_ratings = moviemat['Star Wars (1977)']
liarliar_user_ratings = moviemat['Liar Liar (1997)']

starwars_user_ratings.head()
```

Out[17]:
```
user_id
0    5.0
1    5.0
2    5.0
3    NaN
4    5.0
Name: Star Wars (1977), dtype: float64
```

In [18]:
```
# 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()
```

```
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2821: 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:2680: RuntimeWarning: divide by zero encount
ered in true_divide
  c *= np.true_divide(1, fact)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2821: 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:2680: RuntimeWarning: divide by zero encount
ered in true_divide
  c *= np.true_divide(1, fact)
```

Out[18]:

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
187 (1997)	0.027398

In [19]:
```
# 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 = False).head()
```

Out[19]:

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

In [20]:
```
# 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 = False).head()
```

Out[20]:

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

In [ ]:
```
from google.colab import drive
drive.mount('/content/drive')
```