

```
In [ ]: import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

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

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force\_remount=True).

```
In [ ]: netflix_dataset1 = pd.read_csv('/content/drive/MyDrive/Netflix csv/combined_data_1.txt'  
netflix_dataset1.head()
```

```
Out[ ]: 1:
```

1488844	3.0	2005-09-06
822109	5.0	2005-05-13
885013	4.0	2005-10-19
30878	4.0	2005-12-26
823519	3.0	2004-05-03

```
In [ ]: # Reading dataset file  
netflix_dataset = pd.read_csv('/content/drive/MyDrive/Netflix csv/combined_data_1.txt'  
netflix_dataset.head()
```

```
Out[ ]: Cust_Id Rating
```

0	1:	NaN
1	1488844	3.0
2	822109	5.0
3	885013	4.0
4	30878	4.0

```
In [ ]: netflix_dataset
```

Out[ ]:

	Cust_Id	Rating
<b>0</b>	1:	NaN
<b>1</b>	1488844	3.0
<b>2</b>	822109	5.0
<b>3</b>	885013	4.0
<b>4</b>	30878	4.0
...	...	...
<b>24058258</b>	2591364	2.0
<b>24058259</b>	1791000	2.0
<b>24058260</b>	512536	5.0
<b>24058261</b>	988963	3.0
<b>24058262</b>	1704416	3.0

24058263 rows × 2 columns

In [ ]: netflix\_dataset.tail()

Out[ ]:

	Cust_Id	Rating
<b>24058258</b>	2591364	2.0
<b>24058259</b>	1791000	2.0
<b>24058260</b>	512536	5.0
<b>24058261</b>	988963	3.0
<b>24058262</b>	1704416	3.0

In [ ]: netflix\_dataset.dtypes

Out[ ]: Cust\_Id object  
Rating float64  
dtype: object

In [ ]: netflix\_dataset.isnull()

Out[ ]: Cust\_Id Rating

0	False	True
1	False	False
2	False	False
3	False	False
4	False	False
...	...	...
<b>24058258</b>	False	False
<b>24058259</b>	False	False
<b>24058260</b>	False	False
<b>24058261</b>	False	False
<b>24058262</b>	False	False

24058263 rows × 2 columns

In [ ]: netflix\_dataset.isnull().sum()

Out[ ]: Cust\_Id 0  
Rating 4499  
dtype: int64

In [ ]: netflix\_dataset.shape

Out[ ]: (24058263, 2)

In [ ]: #Get the customer count with NaN values  
movie\_count=netflix\_dataset.isnull().sum()  
movie\_count=movie\_count["Rating"]

In [ ]: movie\_count

Out[ ]: 4499

In [ ]: #To calculate how many customers we are having in the dataset  
customer\_count=netflix\_dataset['Cust\_Id'].nunique()

In [ ]: customer\_count #This count also includes unique movies id's

Out[ ]: 475257

In [ ]: #Count Without NaN values  
customer\_count= customer\_count-movie\_count  
customer\_count

Out[ ]: 470758

In [ ]: netflix\_dataset['Cust\_Id'].count() # these are the number of times ratings given

```
Out[ ]: 24058263
```

```
In [ ]: #get the total number of ratings given by the customers  
rating_count=netflix_dataset['Cust_Id'].count()-movie_count  
rating_count
```

```
Out[ ]: 24053764
```

```
In [ ]: #To find out how many people have rated the movies as 1,2,3,4,5 stars ratings to the movies  
stars=netflix_dataset.groupby('Rating')['Rating'].agg(['count'])
```

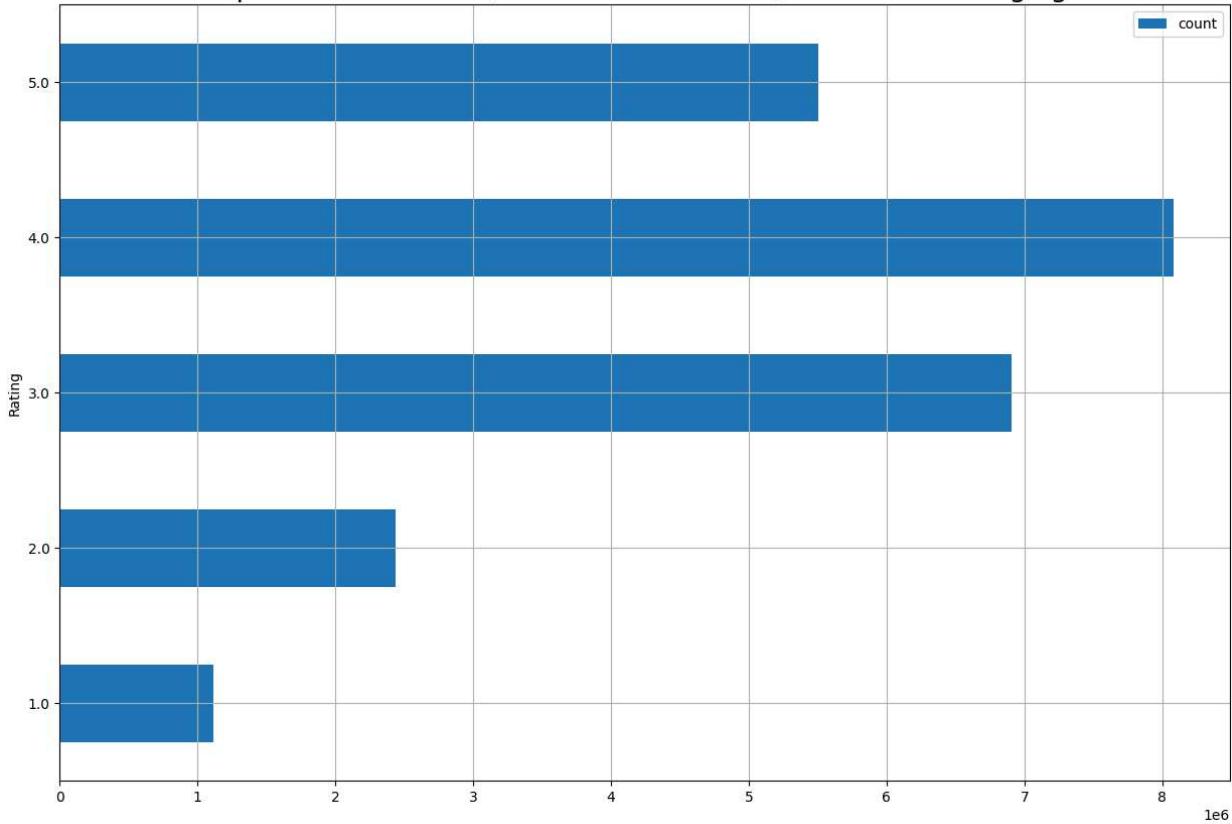
```
In [ ]: stars
```

```
Out[ ]: count
```

Rating	count
1.0	1118186
2.0	2439073
3.0	6904181
4.0	8085741
5.0	5506583

```
In [ ]: ax=stars.plot(kind='barh',figsize=(15,10))  
plt.title(f'Total pool: {movie_count} Movies, {customer_count} Customers, {rating_count} Ratings')  
plt.grid(True)
```

Total pool: 4499 Movies, 470758 Customers, 24053764 ratings given



```
In [ ]: pd.isnull(netflix_dataset.Rating)
```

```
Out[ ]:
0      True
1     False
2     False
3     False
4     False
...
24058258  False
24058259  False
24058260  False
24058261  False
24058262  False
Name: Rating, Length: 24058263, dtype: bool
```

```
In [ ]:
#Add another column that will have movie id
#First of all we have to calculate how many null values we are having in the ratings column
df_nan=pd.DataFrame(pd.isnull(netflix_dataset.Rating))
```

```
In [ ]: df_nan
```

Out[ ]:

Rating	
0	True
1	False
2	False
3	False
4	False
...	...
24058258	False
24058259	False
24058260	False
24058261	False
24058262	False

24058263 rows × 1 columns

In [ ]: df\_nan=df\_nan[df\_nan['Rating']==True]  
df\_nan

Out[ ]:

Rating	
0	True
548	True
694	True
2707	True
2850	True
...	...
24046714	True
24047329	True
24056849	True
24057564	True
24057834	True

4499 rows × 1 columns

In [ ]: df\_nan.shape

Out[ ]: (4499, 1)

In [ ]: df\_nan.head()

Out[ ]:

Rating	
<b>0</b>	True
<b>548</b>	True
<b>694</b>	True
<b>2707</b>	True
<b>2850</b>	True

In [ ]:

```
#now we have to reset the index as the column
df_nan=df_nan.reset_index()
```

In [ ]:

df\_nan

Out[ ]:

	index	Rating
<b>0</b>	0	True
<b>1</b>	548	True
<b>2</b>	694	True
<b>3</b>	2707	True
<b>4</b>	2850	True
...	...	...
<b>4494</b>	24046714	True
<b>4495</b>	24047329	True
<b>4496</b>	24056849	True
<b>4497</b>	24057564	True
<b>4498</b>	24057834	True

4499 rows × 2 columns

In [ ]:

```
#we have to extract all the records from the index column except for the last index--
df_nan['index'][:-1]
```

Out[ ]:

0	0
1	548
2	694
3	2707
4	2850
...	...
4493	24046583
4494	24046714
4495	24047329
4496	24056849
4497	24057564

Name: index, Length: 4498, dtype: int64

```
In [ ]: #This syntax will extract records from the index column from the 1st index  
df_nan['index'][1:]
```

```
Out[ ]: 1      548  
2      694  
3     2707  
4     2850  
5     3991  
...  
4494   24046714  
4495   24047329  
4496   24056849  
4497   24057564  
4498   24057834  
Name: index, Length: 4498, dtype: int64
```

```
In [ ]: #Working of full function  
np.full((2,4), '2.0')
```

```
Out[ ]: array([['2.0', '2.0', '2.0', '2.0'],  
               ['2.0', '2.0', '2.0', '2.0']], dtype='<U3')
```

```
In [ ]: #working  
x=zip(df_nan['index'][1:], df_nan['index'][:-1])  
x
```

```
Out[ ]: <zip at 0x79891929d0c0>
```

```
In [ ]: tuple(x)
```

```
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```

```
In [ ]: temp=np.full((1,547), 1)  
print(temp)
```

Varad\_Recommendation\_Engine\_using\_Netfilx

```
In [ ]: #now we will create a numpy array that will contain 1 from values 0 to 547, 2 from 548  
movie_np=[]  
movie_id=1  
for i, j in zip(df_nan['index'][1:], df_nan['index'][:-1]):  
    temp=np.full((1, i-j-1), movie_id)  
    movie_np.append(movie_np, temp)  
    movie_id+=1  
  
print(movie_np)  
  
#account for last record and corresponding length  
#numpy approach  
last_record=np.full((1, len(netflix_dataset)-df_nan.iloc[-1,0]-1) , movie_id)#movie id  
movie_np.append(movie_np, last_record)
```

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

```
# Create a dictionary with data
data = {
    'index': [10, 30, 50],
    'B': [20, 40, 60]
}

# Create the DataFrame
df_nan1 = pd.DataFrame(data)

# Print the DataFrame
print(df_nan1)
```

	index	B
0	10	20
1	30	40
2	50	60

```
In [ ]: df_nan1.iloc[-1, 0]
```

Out[1]: 50

```
In [ ]: netflix_dataset=netflix_dataset[pd.notnull(netflix_dataset['Rating'])]  
netflix_dataset['Movie Id']=movie_np.astype(int)
```

```
netflix_dataset['Cust_Id']=netflix_dataset['Cust_Id'].astype(int)
print("Now the dataset will look like: ")
netflix_dataset
```

<ipython-input-39-13537b305b64>:3: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: [https://pandas.pydata.org/pandas-docs/stable/user\\_guide/indexing.html#returning-a-view-versus-a-copy](https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy)

```
netflix_dataset['Movie_Id']=movie_np.astype(int)
```

Now the dataset will look like:

<ipython-input-39-13537b305b64>:4: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: [https://pandas.pydata.org/pandas-docs/stable/user\\_guide/indexing.html#returning-a-view-versus-a-copy](https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy)

```
netflix_dataset['Cust_Id']=netflix_dataset['Cust_Id'].astype(int)
```

Out[ ]:

	Cust_Id	Rating	Movie_Id
<b>1</b>	1488844	3.0	1
<b>2</b>	822109	5.0	1
<b>3</b>	885013	4.0	1
<b>4</b>	30878	4.0	1
<b>5</b>	823519	3.0	1
...	...	...	...
<b>24058258</b>	2591364	2.0	4499
<b>24058259</b>	1791000	2.0	4499
<b>24058260</b>	512536	5.0	4499
<b>24058261</b>	988963	3.0	4499
<b>24058262</b>	1704416	3.0	4499

24053764 rows × 3 columns

In [ ]:

```
netflix_dataset.tail()
```

Out[ ]:

	Cust_Id	Rating	Movie_Id
<b>24058258</b>	2591364	2.0	4499
<b>24058259</b>	1791000	2.0	4499
<b>24058260</b>	512536	5.0	4499
<b>24058261</b>	988963	3.0	4499
<b>24058262</b>	1704416	3.0	4499

```
In [ ]: #now we will remove all the users that have rated less movies and  
#also all those movies that has been rated less in numbers
```

```
In [ ]: netflix_dataset
```

```
Out[ ]:
```

	Cust_Id	Rating	Movie_Id
<b>1</b>	1488844	3.0	1
<b>2</b>	822109	5.0	1
<b>3</b>	885013	4.0	1
<b>4</b>	30878	4.0	1
<b>5</b>	823519	3.0	1
...	...	...	...
<b>24058258</b>	2591364	2.0	4499
<b>24058259</b>	1791000	2.0	4499
<b>24058260</b>	512536	5.0	4499
<b>24058261</b>	988963	3.0	4499
<b>24058262</b>	1704416	3.0	4499

24053764 rows × 3 columns

```
In [ ]: dataset_movie_summary=netflix_dataset.groupby('Movie_Id')['Rating'].agg(["count"])
```

```
In [ ]: dataset_movie_summary
```

Out[ ]: count

Movie_Id	
1	547
2	145
3	2012
4	142
5	1140
...	...
4495	614
4496	9519
4497	714
4498	269
4499	428

4499 rows × 1 columns

In [ ]: #We have to create Benchmark for Ratings  
dataset\_movie\_summary["count"].quantile(0.7)

Out[ ]: 1798.6

In [ ]: #Now we will create a benchmark  
movie\_benchmark=round(dataset\_movie\_summary['count'].quantile(0.7),0)  
movie\_benchmark

Out[ ]: 1799.0

In [ ]: dataset\_movie\_summary['count']

Out[ ]: Movie\_Id  
1 547  
2 145  
3 2012  
4 142  
5 1140  
...  
4495 614  
4496 9519  
4497 714  
4498 269  
4499 428  
Name: count, Length: 4499, dtype: int64

In [ ]: #We have to drop movies which are less than Benchmark  
drop\_movie\_list=dataset\_movie\_summary[dataset\_movie\_summary['count']<movie\_benchmark].  
drop\_movie\_list

```
Out[ ]: Int64Index([ 1, 2, 4, 5, 6, 7, 9, 10, 11, 12,
... 4484, 4486, 4487, 4489, 4491, 4494, 4495, 4497, 4498, 4499],
dtype='int64', name='Movie_Id', length=3149)
```

```
In [ ]: len(drop_movie_list)
```

```
Out[ ]: 3149
```

```
In [ ]: #Now we will remove all the users that are in-active
dataset_cust_summary=netflix_dataset.groupby('Cust_Id')[ 'Rating'].agg(["count"])
dataset_cust_summary
```

```
Out[ ]: count
```

Cust_Id	
6	153
7	195
8	21
10	49
25	4
...	...
2649404	12
2649409	10
2649421	3
2649426	74
2649429	62

470758 rows × 1 columns

```
In [ ]: #We have to create same Benchmark for customer also
cust_benchmark=round(dataset_cust_summary['count'].quantile(0.7),0)
cust_benchmark
```

```
Out[ ]: 52.0
```

```
In [ ]: #We have to drop Customer which are Less than Benchmark
drop_cust_list=dataset_cust_summary[dataset_cust_summary['count']<cust_benchmark].index
drop_cust_list
```

```
Out[ ]: Int64Index([ 8, 10, 25, 33, 42, 59, 83,
87, 94, 116,
...
2649343, 2649351, 2649375, 2649376, 2649379, 2649384, 2649401,
2649404, 2649409, 2649421],
dtype='int64', name='Cust_Id', length=327300)
```

```
In [ ]: len(drop_cust_list)
```

```
Out[ ]: 327300
```

```
In [ ]: #We will remove all the customers and movies that are below the benchmark
print('The original dataframe has: ', netflix_dataset.shape)
```

The original dataframe has: (24053764, 3) shape

```
In [ ]: netflix_dataset['Movie_Id'].isin(drop_movie_list)
```

```
Out[ ]:
1      True
2      True
3      True
4      True
5      True
...
24058258  True
24058259  True
24058260  True
24058261  True
24058262  True
Name: Movie_Id, Length: 24053764, dtype: bool
```

```
In [ ]: netflix_dataset=netflix_dataset[~netflix_dataset['Movie_Id'].isin(drop_movie_list)]
netflix_dataset=netflix_dataset[~netflix_dataset['Cust_Id'].isin(drop_cust_list)]
print('After the trimming, the shape is: {}'.format(netflix_dataset.shape))
```

After the trimming, the shape is: (17337458, 3)

```
In [ ]: netflix_dataset.head()
```

	Cust_Id	Rating	Movie_Id
<b>696</b>	712664	5.0	3
<b>697</b>	1331154	4.0	3
<b>698</b>	2632461	3.0	3
<b>699</b>	44937	5.0	3
<b>700</b>	656399	4.0	3

```
In [ ]: #Now we are adding Movies data set to work further
import pandas as pd
```

```
In [ ]: df_title = pd.read_csv("/content/drive/MyDrive/Netflix csv/movies.csv", encoding='ISO-8859-1')
df_title.set_index('Movie_Id', inplace=True)
```

```
In [ ]: df_title.head(10)
```

Out[ ]:

Year

Name

**Movie\_Id**

<b>moviedb</b>	<b>title</b>	<b>genres</b>
1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	Jumanji (1995)	Adventure Children Fantasy
3	Grumpier Old Men (1995)	Comedy Romance
4	Waiting to Exhale (1995)	Comedy Drama Romance
5	Father of the Bride Part II (1995)	Comedy
6	Heat (1995)	Action Crime Thriller
7	Sabrina (1995)	Comedy Romance
8	Tom and Huck (1995)	Adventure Children
9	Sudden Death (1995)	Action

In [ ]: df\_title.iloc[:4499,:]

Out[ ]:

Year

Name

**Movie\_Id**

<b>moviedb</b>	<b>title</b>	<b>genres</b>
1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	Jumanji (1995)	Adventure Children Fantasy
3	Grumpier Old Men (1995)	Comedy Romance
4	Waiting to Exhale (1995)	Comedy Drama Romance
...	...	...
4588	Eddie and the Cruisers II: Eddie Lives! (1989)	Drama Musical
4589	Eddie and the Cruisers (1983)	Drama Musical Mystery
4590	Enemies: A Love Story (1989)	Drama
4591	Erik the Viking (1989)	Adventure Comedy Fantasy
4592	Experts, The (1989)	Comedy

4499 rows × 2 columns

In [ ]: !pip install scikit-surprise

```

Collecting scikit-surprise
  Downloading scikit-surprise-1.1.3.tar.gz (771 kB)
    772.0/772.0 kB 14.6 MB/s eta 0:00:00
  Preparing metadata (setup.py) ... done
Requirement already satisfied: joblib>=1.0.0 in /usr/local/lib/python3.10/dist-packages (from scikit-surprise) (1.3.2)
Requirement already satisfied: numpy>=1.17.3 in /usr/local/lib/python3.10/dist-packages (from scikit-surprise) (1.25.2)
Requirement already satisfied: scipy>=1.3.2 in /usr/local/lib/python3.10/dist-packages (from scikit-surprise) (1.11.4)
Building wheels for collected packages: scikit-surprise
  Building wheel for scikit-surprise (setup.py) ... done
    Created wheel for scikit-surprise: filename=scikit_surprise-1.1.3-cp310-cp310-linux_x86_64.whl size=3163017 sha256=c31baa39a32f523bff3d984a057b736eedc258ec649198dd3ce32eabaf0a4ddb
    Stored in directory: /root/.cache/pip/wheels/a5/ca/a8/4e28def53797fdc4363ca4af740db15a9c2f1595ebc51fb445
Successfully built scikit-surprise
Installing collected packages: scikit-surprise
Successfully installed scikit-surprise-1.1.3

```

```

In [ ]: #model building

import math
import seaborn as sns
from surprise import Reader, Dataset, SVD
from surprise.model_selection import cross_validate

In [ ]: #!pip install scikit-surprise

In [ ]: #Help us to read the dataset for svd algo
reader=Reader()

In [ ]: #We only work with top 100K rows for quick runtime
data=Dataset.load_from_df(netflix_dataset[['Cust_Id','Movie_Id','Rating']][:100000], r

In [ ]: data
Out[ ]: <surprise.dataset.DatasetAutoFolds at 0x798901a13fd0>

In [ ]: # cross_validate(svd, data, measures=['RMSE', 'MAE'], cv=3)
#for 1st fold- 1,2,3,4,5
model=SVD()

In [ ]: cross_validate(model, data, measures=['RMSE', 'MAE'], cv=4)

Out[ ]: {'test_rmse': array([0.99386251, 0.99324249, 0.99504583, 1.00788747]),
 'test_mae': array([0.79686912, 0.79624673, 0.7950658 , 0.79303899]),
 'fit_time': (2.293118476867676,
  1.4674701690673828,
  1.4886362552642822,
  1.6716058254241943),
 'test_time': (0.2630624771118164,
  0.26549339294433594,
  0.1284322738647461,
  0.26459240913391113)}

```

```
In [ ]: netflix_dataset.head()
```

```
Out[ ]:   Cust_Id  Rating  Movie_Id
```

<b>696</b>	712664	5.0	3
<b>697</b>	1331154	4.0	3
<b>698</b>	2632461	3.0	3
<b>699</b>	44937	5.0	3
<b>700</b>	656399	4.0	3

```
In [ ]: #so first we take user 1331154 and we try to recommend some movies based on the past a  
#He rated so many movies with 5 *  
dataset_1331154=netflix_dataset[(netflix_dataset['Cust_Id'] ==1331154)& (netflix_datas  
dataset_1331154
```

Out[ ]:

	Cust_Id	Rating	Movie_Id
<b>458308</b>	1331154	5.0	143
<b>1184450</b>	1331154	5.0	270
<b>1991774</b>	1331154	5.0	361
<b>2369367</b>	1331154	5.0	457
<b>2600328</b>	1331154	5.0	482
<b>3417458</b>	1331154	5.0	658
<b>4029215</b>	1331154	5.0	763
<b>5646194</b>	1331154	5.0	1144
<b>7075510</b>	1331154	5.0	1425
<b>7423467</b>	1331154	5.0	1476
<b>7468997</b>	1331154	5.0	1495
<b>8184220</b>	1331154	5.0	1642
<b>8257180</b>	1331154	5.0	1650
<b>8789450</b>	1331154	5.0	1754
<b>10165725</b>	1331154	5.0	1974
<b>10919877</b>	1331154	5.0	2128
<b>11519840</b>	1331154	5.0	2192
<b>12202244</b>	1331154	5.0	2372
<b>12746620</b>	1331154	5.0	2452
<b>14167769</b>	1331154	5.0	2743
<b>14525287</b>	1331154	5.0	2795
<b>15104095</b>	1331154	5.0	2913
<b>17319044</b>	1331154	5.0	3333
<b>17679853</b>	1331154	5.0	3379
<b>19254925</b>	1331154	5.0	3650
<b>19555314</b>	1331154	5.0	3730
<b>19992284</b>	1331154	5.0	3825
<b>20774457</b>	1331154	5.0	3925
<b>21174535</b>	1331154	5.0	3962
<b>21317452</b>	1331154	5.0	3966
<b>22718437</b>	1331154	5.0	4306

In [ ]: df\_title

Out[ ]:

Movie_Id	Year	Name
movieid	title	genres
1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	Jumanji (1995)	Adventure Children Fantasy
3	Grumpier Old Men (1995)	Comedy Romance
4	Waiting to Exhale (1995)	Comedy Drama Romance
...	...	...
131254	Kein Bund fÃ¼r's Leben (2007)	Comedy
131256	Feuer, Eis & Dosenbier (2002)	Comedy
131258	The Pirates (2014)	Adventure
131260	Rentun Ruusu (2001)	(no genres listed)
131262	Innocence (2014)	Adventure Fantasy Horror

27279 rows × 2 columns

In [ ]: *#now we will build the recommendation algorithm  
#first we will make a shallow copy of the movie\_titles.csv file so that we can change  
#the values in the copied dataset, not in the actual dataset*

```
user_1331154=df_title.copy()
user_1331154
```

Out[ ]:

Movie_Id	Year	Name
movieid	title	genres
1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	Jumanji (1995)	Adventure Children Fantasy
3	Grumpier Old Men (1995)	Comedy Romance
4	Waiting to Exhale (1995)	Comedy Drama Romance
...	...	...
131254	Kein Bund fÃ¼r's Leben (2007)	Comedy
131256	Feuer, Eis & Dosenbier (2002)	Comedy
131258	The Pirates (2014)	Adventure
131260	Rentun Ruusu (2001)	(no genres listed)
131262	Innocence (2014)	Adventure Fantasy Horror

27279 rows × 2 columns

```
In [ ]: user_1331154=user_1331154.reset_index()
user_1331154
```

Out[ ]:

	Movie_Id	Year	Name
0	movielid	title	genres
1	1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	2	Jumanji (1995)	Adventure Children Fantasy
3	3	Grumpier Old Men (1995)	Comedy Romance
4	4	Waiting to Exhale (1995)	Comedy Drama Romance
...	...	...	...
27274	131254	Kein Bund fÃ¼r's Leben (2007)	Comedy
27275	131256	Feuer, Eis & Dosenbier (2002)	Comedy
27276	131258	The Pirates (2014)	Adventure
27277	131260	Rentun Ruusu (2001)	(no genres listed)
27278	131262	Innocence (2014)	Adventure Fantasy Horror

27279 rows × 3 columns

```
In [ ]: user_1331154=user_1331154[~user_1331154['Movie_Id'].isin(drop_movie_list)]
user_1331154
```

Out[ ]:

	Movie_Id	Year	Name
0	movielid	title	genres
1	1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy
2	2	Jumanji (1995)	Adventure Children Fantasy
3	3	Grumpier Old Men (1995)	Comedy Romance
4	4	Waiting to Exhale (1995)	Comedy Drama Romance
...	...	...	...
27274	131254	Kein Bund fÃ¼r's Leben (2007)	Comedy
27275	131256	Feuer, Eis & Dosenbier (2002)	Comedy
27276	131258	The Pirates (2014)	Adventure
27277	131260	Rentun Ruusu (2001)	(no genres listed)
27278	131262	Innocence (2014)	Adventure Fantasy Horror

27279 rows × 3 columns

```
In [ ]: user_1331154['Estimate_Score']=user_1331154['Movie_Id'].apply(lambda x: model.predict(
```

```
In [ ]: user_1331154
```

Out[ ]:

	Movie_Id	Year	Name	Estimate_Score
0	movielid	title	genres	3.612475
1	1	Toy Story (1995)	Adventure Animation Children Comedy Fantasy	3.612475
2	2	Jumanji (1995)	Adventure Children Fantasy	3.612475
3	3	Grumpier Old Men (1995)	Comedy Romance	3.612475
4	4	Waiting to Exhale (1995)	Comedy Drama Romance	3.612475
...	...	...	...	...
27274	131254	Kein Bund fÃ¼r's Leben (2007)	Comedy	3.612475
27275	131256	Feuer, Eis & Dosenbier (2002)	Comedy	3.612475
27276	131258	The Pirates (2014)	Adventure	3.612475
27277	131260	Rentun Ruusu (2001)	(no genres listed)	3.612475
27278	131262	Innocence (2014)	Adventure Fantasy Horror	3.612475

27279 rows × 4 columns

In [ ]: user\_1331154=user\_1331154.sort\_values('Estimate\_Score', ascending=False)

In [ ]: print(user\_1331154)

	Movie_Id	Year	\
0	movieId		title
2	2	Jumanji	(1995)
4	4	Waiting to Exhale	(1995)
5	5	Father of the Bride Part II	(1995)
6	6	Heat	(1995)
...	...		...
27275	131256	Feuer, Eis & Dosenbier	(2002)
27276	131258	The Pirates	(2014)
27277	131260	Rentun Ruusu	(2001)
27267	131237	What Men Talk About	(2010)
27278	131262	Innocence	(2014)

	Name	Estimate_Score
0	genres	3.612475
2	Adventure Children Fantasy	3.612475
4	Comedy Drama Romance	3.612475
5	Comedy	3.612475
6	Action Crime Thriller	3.612475
...	...	...
27275	Comedy	3.612475
27276	Adventure	3.612475
27277	(no genres listed)	3.612475
27267	Comedy	3.612475
27278	Adventure Fantasy Horror	3.612475

[27279 rows x 4 columns]

In [ ]: