```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline

df1 = pd.read_csv(r"C:\Users\HP\Desktop\ps\movies.csv")
df1
```

```
      MovieID  Unnamed: 1                                Title Unnamed:
3  \
0           1         NaN                    Toy Story (1995)
NaN
1           2         NaN                      Jumanji (1995)
NaN
2           3         NaN             Grumpier Old Men (1995)
NaN
3           4         NaN            Waiting to Exhale (1995)
NaN
4           5         NaN  Father of the Bride Part II (1995)
NaN
...       ...         ...                                 ...        .
..
3878     3948         NaN             Meet the Parents (2000)
NaN
3879     3949         NaN          Requiem for a Dream (2000)
NaN
3880     3950         NaN                    Tigerland (2000)
NaN
3881     3951         NaN             Two Family House (2000)
NaN
3882     3952         NaN               Contender, The (2000)
NaN

                           Genres Unnamed: 5 Unnamed: 6
0      Animation|Children's|Comedy        NaN        NaN
1     Adventure|Children's|Fantasy        NaN        NaN
2                  Comedy|Romance        NaN        NaN
3                    Comedy|Drama        NaN        NaN
4                          Comedy        NaN        NaN
...                           ...        ...        ...
3878                       Comedy        NaN        NaN
3879                        Drama        NaN        NaN
3880                        Drama        NaN        NaN
3881                        Drama        NaN        NaN
3882               Drama|Thriller        NaN        NaN

[3883 rows x 7 columns]
```

```
df1.drop(['Unnamed: 1','Unnamed: 3','Unnamed: 5','Unnamed:
6'],axis=1,inplace=True)
df1
```

```
      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)
...       ...                                 ...
3878     3948             Meet the Parents (2000)
3879     3949          Requiem for a Dream (2000)
3880     3950                    Tigerland (2000)
3881     3951             Two Family House (2000)
3882     3952               Contender, The (2000)

                          Genres
0      Animation|Children's|Comedy
1     Adventure|Children's|Fantasy
2                   Comedy|Romance
3                     Comedy|Drama
4                           Comedy
...                            ...
3878                        Comedy
3879                         Drama
3880                         Drama
3881                         Drama
3882                Drama|Thriller

[3883 rows x 3 columns]
```

```
df2 = pd.read_csv(r"C:\Users\HP\Desktop\ps\rating.csv")
df2
```

```
         UserID  Unnamed: 1  MovieID  Unnamed: 3  Rating  Unnamed:
5  \
0             1         NaN     1193         NaN       5         NaN

1             1         NaN      661         NaN       3         NaN

2             1         NaN      914         NaN       3         NaN

3             1         NaN     3408         NaN       4         NaN

4             1         NaN     2355         NaN       5         NaN

...         ...         ...      ...         ...     ...         ...

1000204    6040         NaN     1091         NaN       1         NaN
```

```
1000205    6040         NaN     1094         NaN       5         NaN

1000206    6040         NaN      562         NaN       5         NaN

1000207    6040         NaN     1096         NaN       4         NaN

1000208    6040         NaN     1097         NaN       4         NaN


         Timestamp
0        978300760
1        978302109
2        978301968
3        978300275
4        978824291
...            ...
1000204  956716541
1000205  956704887
1000206  956704746
1000207  956715648
1000208  956715569

[1000209 rows x 7 columns]
```

```
df2.drop(['Unnamed: 1','Unnamed: 3','Unnamed: 5'],axis=1,inplace=True)
df2
```

```
         UserID  MovieID  Rating  Timestamp
0             1     1193       5  978300760
1             1      661       3  978302109
2             1      914       3  978301968
3             1     3408       4  978300275
4             1     2355       5  978824291
...         ...      ...     ...        ...
1000204    6040     1091       1  956716541
1000205    6040     1094       5  956704887
1000206    6040      562       5  956704746
1000207    6040     1096       4  956715648
1000208    6040     1097       4  956715569

[1000209 rows x 4 columns]
```

```
df3 = pd.read_csv(r"C:\Users\HP\Desktop\ps\user.csv")
df3
```

```
      UserID  Unnamed: 1 Gender  Unnamed: 3  Age  Unnamed: 5
Occupation  \
0          1         NaN      F         NaN    1         NaN
10
```

```
1          2         NaN      M         NaN   56         NaN
16
2          3         NaN      M         NaN   25         NaN
15
3          4         NaN      M         NaN   45         NaN
7
4          5         NaN      M         NaN   25         NaN
20
...      ...         ...    ...         ...  ...         ...         .
..
6035    6036         NaN      F         NaN   25         NaN
15
6036    6037         NaN      F         NaN   45         NaN
1
6037    6038         NaN      F         NaN   56         NaN
1
6038    6039         NaN      F         NaN   45         NaN
0
6039    6040         NaN      M         NaN   25         NaN
6
```

```
      Unnamed: 7 Zip-code
0            NaN    48067
1            NaN    70072
2            NaN    55117
3            NaN     2460
4            NaN    55455
...          ...      ...
6035         NaN    32603
6036         NaN    76006
6037         NaN    14706
6038         NaN     1060
6039         NaN    11106

[6040 rows x 9 columns]
```

```
df3.drop(['Unnamed: 1','Unnamed: 3','Unnamed: 5','Unnamed:
7'],axis=1,inplace=True)
df3
```

```
      UserID Gender  Age  Occupation Zip-code
0          1      F    1          10    48067
1          2      M   56          16    70072
2          3      M   25          15    55117
3          4      M   45           7     2460
4          5      M   25          20    55455
...      ...    ...  ...         ...      ...
6035    6036      F   25          15    32603
6036    6037      F   45           1    76006
6037    6038      F   56           1    14706
```

```
6038    6039      F   45           0     1060
6039    6040      M   25           6    11106

[6040 rows x 5 columns]
```

```
df11=pd.get_dummies(df1.Genres)
df11
```

```
       Miami Beach (1988)  Action  Action|Adventure  \
0                       0       0                 0
1                       0       0                 0
2                       0       0                 0
3                       0       0                 0
4                       0       0                 0
...                   ...     ...               ...
3878                    0       0                 0
3879                    0       0                 0
3880                    0       0                 0
3881                    0       0                 0
3882                    0       0                 0

      Action|Adventure|Animation  \
0                              0
1                              0
2                              0
3                              0
4                              0
...                          ...
3878                           0
3879                           0
3880                           0
3881                           0
3882                           0

      Action|Adventure|Animation|Children's|Fantasy  \
0                                                 0
1                                                 0
2                                                 0
3                                                 0
4                                                 0
...                                             ...
3878                                              0
3879                                              0
3880                                              0
3881                                              0
3882                                              0

      Action|Adventure|Animation|Horror|Sci-Fi  \
0                                            0
1                                            0
```

```
2                                                 0
3                                                 0
4                                                 0
...                                             ...
3878                                              0
3879                                              0
3880                                              0
3881                                              0
3882                                              0

      Action|Adventure|Children's|Comedy  Action|Adventure|Children's|
Fantasy  \
0                                                 0
0
1                                                 0
0
2                                                 0
0
3                                                 0
0
4                                                 0
0
...                                             ...
...
3878                                              0
0
3879                                              0
0
3880                                              0
0
3881                                              0
0
3882                                              0
0

      Action|Adventure|Children's|Sci-Fi  Action|Adventure|Comedy  ...
\
0                                                 0                        0  ...

1                                                 0                        0  ...

2                                                 0                        0  ...

3                                                 0                        0  ...

4                                                 0                        0  ...

...                                             ...                      ...  ...
```

```
3878                                0                       0  ...
3879                                0                       0  ...
3880                                0                       0  ...
3881                                0                       0  ...
3882                                0                       0  ...

      Romance  Romance|Thriller  Romance|War  Romance|Western  Sci-Fi
\
0           0                 0            0                0       0
1           0                 0            0                0       0
2           0                 0            0                0       0
3           0                 0            0                0       0
4           0                 0            0                0       0
...       ...               ...          ...              ...     ...
3878        0                 0            0                0       0
3879        0                 0            0                0       0
3880        0                 0            0                0       0
3881        0                 0            0                0       0
3882        0                 0            0                0       0

      Sci-Fi|Thriller  Sci-Fi|Thriller|War  Thriller  War  Western
0                   0                     0         0    0        0
1                   0                     0         0    0        0
2                   0                     0         0    0        0
3                   0                     0         0    0        0
4                   0                     0         0    0        0
...               ...                   ...       ...  ...      ...
3878                0                     0         0    0        0
3879                0                     0         0    0        0
3880                0                     0         0    0        0
3881                0                     0         0    0        0
3882                0                     0         0    0        0
```

```
[3883 rows x 294 columns]
```

```
df12=pd.concat([df1,df11],axis=1)
df12
```

```
      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)
...       ...                                  ...
3878     3948             Meet the Parents (2000)
3879     3949          Requiem for a Dream (2000)
3880     3950                    Tigerland (2000)
3881     3951             Two Family House (2000)
3882     3952               Contender, The (2000)

                            Genres   Miami Beach (1988)  Action  \
0      Animation|Children's|Comedy                    0       0
1     Adventure|Children's|Fantasy                    0       0
2                  Comedy|Romance                     0       0
3                    Comedy|Drama                     0       0
4                          Comedy                     0       0
...                           ...                 ...     ...
3878                       Comedy                     0       0
3879                        Drama                     0       0
3880                        Drama                     0       0
3881                        Drama                     0       0
3882                Drama|Thriller                    0       0

      Action|Adventure  Action|Adventure|Animation  \
0                    0                           0
1                    0                           0
2                    0                           0
3                    0                           0
4                    0                           0
...                ...                         ...
3878                 0                           0
3879                 0                           0
3880                 0                           0
3881                 0                           0
3882                 0                           0

      Action|Adventure|Animation|Children's|Fantasy  \
0                                                 0
1                                                 0
2                                                 0
3                                                 0
```

```
4                                                    0
...                                                ...
3878                                                 0
3879                                                 0
3880                                                 0
3881                                                 0
3882                                                 0

      Action|Adventure|Animation|Horror|Sci-Fi  \
0                                                    0
1                                                    0
2                                                    0
3                                                    0
4                                                    0
...                                                ...
3878                                                 0
3879                                                 0
3880                                                 0
3881                                                 0
3882                                                 0

      Action|Adventure|Children's|Comedy  ...  Romance  Romance|
Thriller  \
0                                        0  ...        0
0
1                                        0  ...        0
0
2                                        0  ...        0
0
3                                        0  ...        0
0
4                                        0  ...        0
0
...                                    ...  ...      ...              .
..
3878                                     0  ...        0
0
3879                                     0  ...        0
0
3880                                     0  ...        0
0
3881                                     0  ...        0
0
3882                                     0  ...        0
0

      Romance|War  Romance|Western  Sci-Fi  Sci-Fi|Thriller  \
0              0                 0       0                 0
1              0                 0       0                 0
2              0                 0       0                 0
```

```
3               0                0       0                0
4               0                0       0                0
...           ...              ...     ...              ...
3878            0                0       0                0
3879            0                0       0                0
3880            0                0       0                0
3881            0                0       0                0
3882            0                0       0                0

      Sci-Fi|Thriller|War  Thriller  War  Western
0                        0         0    0        0
1                        0         0    0        0
2                        0         0    0        0
3                        0         0    0        0
4                        0         0    0        0
...                    ...       ...  ...      ...
3878                     0         0    0        0
3879                     0         0    0        0
3880                     0         0    0        0
3881                     0         0    0        0
3882                     0         0    0        0

[3883 rows x 297 columns]
```

```
df12.drop(["Genres"],axis=1,inplace=True)
df12
```

```
      MovieID                                Title   Miami Beach (1988)
\
0           1                    Toy Story (1995)                    0

1           2                      Jumanji (1995)                    0

2           3             Grumpier Old Men (1995)                    0

3           4            Waiting to Exhale (1995)                    0

4           5  Father of the Bride Part II (1995)                    0

...       ...                                 ...                  ...

3878     3948             Meet the Parents (2000)                    0

3879     3949          Requiem for a Dream (2000)                    0

3880     3950                    Tigerland (2000)                    0

3881     3951             Two Family House (2000)                    0
```

```
3882     3952                Contender, The (2000)                    0


      Action  Action|Adventure  Action|Adventure|Animation  \
0          0                 0                           0
1          0                 0                           0
2          0                 0                           0
3          0                 0                           0
4          0                 0                           0
...      ...               ...                         ...
3878       0                 0                           0
3879       0                 0                           0
3880       0                 0                           0
3881       0                 0                           0
3882       0                 0                           0

      Action|Adventure|Animation|Children's|Fantasy  \
0                                                  0
1                                                  0
2                                                  0
3                                                  0
4                                                  0
...                                              ...
3878                                               0
3879                                               0
3880                                               0
3881                                               0
3882                                               0

      Action|Adventure|Animation|Horror|Sci-Fi  \
0                                           0
1                                           0
2                                           0
3                                           0
4                                           0
...                                       ...
3878                                        0
3879                                        0
3880                                        0
3881                                        0
3882                                        0

      Action|Adventure|Children's|Comedy  Action|Adventure|Children's|
Fantasy  \
0                                     0
0
1                                     0
0
2                                     0
0
```

```
3                                    0
0
4                                    0
0
...                                ...
...
3878                                 0
0
3879                                 0
0
3880                                 0
0
3881                                 0
0
3882                                 0
0

      ...  Romance  Romance|Thriller  Romance|War  Romance|Western
Sci-Fi  \
0     ...        0                 0           0                 0
0
1     ...        0                 0           0                 0
0
2     ...        0                 0           0                 0
0
3     ...        0                 0           0                 0
0
4     ...        0                 0           0                 0
0
...   ...      ...               ...         ...               ...
...
3878  ...        0                 0           0                 0
0
3879  ...        0                 0           0                 0
0
3880  ...        0                 0           0                 0
0
3881  ...        0                 0           0                 0
0
3882  ...        0                 0           0                 0
0

      Sci-Fi|Thriller  Sci-Fi|Thriller|War  Thriller  War  Western
0                   0                     0         0    0        0
1                   0                     0         0    0        0
2                   0                     0         0    0        0
3                   0                     0         0    0        0
4                   0                     0         0    0        0
...               ...                   ...       ...  ...      ...
3878                0                     0         0    0        0
```

```
3879                0                    0         0    0        0
3880                0                    0         0    0        0
3881                0                    0         0    0        0
3882                0                    0         0    0        0

[3883 rows x 296 columns]
```

```
df13= pd.merge(df2,df12,on='MovieID',how='inner')
df13
```

```
         UserID  MovieID  Rating  Timestamp  \
0             1     1193       5  978300760
1             2     1193       5  978298413
2            12     1193       4  978220179
3            15     1193       4  978199279
4            17     1193       5  978158471
...         ...      ...     ...        ...
1000204    5949     2198       5  958846401
1000205    5675     2703       3  976029116
1000206    5780     2845       1  958153068
1000207    5851     3607       5  957756608
1000208    5938     2909       4  957273353

                                                 Title   Miami Beach
(1988)  \
0             One Flew Over the Cuckoo's Nest (1975)
0
1             One Flew Over the Cuckoo's Nest (1975)
0
2             One Flew Over the Cuckoo's Nest (1975)
0
3             One Flew Over the Cuckoo's Nest (1975)
0
4             One Flew Over the Cuckoo's Nest (1975)
0
...                                              ...
...
1000204                        Modulations (1998)
0
1000205                      Broken Vessels (1998)
0
1000206                         White Boys (1999)
0
1000207                   One Little Indian (1973)
0
1000208  Five Wives, Three Secretaries and Me (1998)
0

         Action  Action|Adventure  Action|Adventure|Animation  \
0             0                 0                           0
```

```
1             0                 0                           0
2             0                 0                           0
3             0                 0                           0
4             0                 0                           0
...         ...               ...                         ...
1000204       0                 0                           0
1000205       0                 0                           0
1000206       0                 0                           0
1000207       0                 0                           0
1000208       0                 0                           0

         Action|Adventure|Animation|Children's|Fantasy  ...
Romance  \
0                                                      0  ...        0

1                                                      0  ...        0

2                                                      0  ...        0

3                                                      0  ...        0

4                                                      0  ...        0

...                                                  ...  ...      ...

1000204                                                0  ...        0

1000205                                                0  ...        0

1000206                                                0  ...        0

1000207                                                0  ...        0

1000208                                                0  ...        0


         Romance|Thriller  Romance|War  Romance|Western  Sci-Fi  \
0                       0            0                 0       0
1                       0            0                 0       0
2                       0            0                 0       0
3                       0            0                 0       0
4                       0            0                 0       0
...                   ...          ...               ...     ...
1000204                 0            0                 0       0
1000205                 0            0                 0       0
1000206                 0            0                 0       0
1000207                 0            0                 0       0
1000208                 0            0                 0       0
```

	Sci-Fi|Thriller	Sci-Fi|Thriller|War	Thriller	War	Western
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
...	...	...	...	...	...
1000204	0	0	0	0	0
1000205	0	0	0	0	0
1000206	0	0	0	0	0
1000207	0	0	0	0	0
1000208	0	0	0	0	0

[1000209 rows x 299 columns]

```
df13.drop(["UserID","Title","Timestamp"],axis=1,inplace=True)
df13
```

	MovieID	Rating	Miami Beach (1988)	Action	Action| Adventure
0	1193	5	0	0	0
1	1193	5	0	0	0
2	1193	4	0	0	0
3	1193	4	0	0	0
4	1193	5	0	0	0
...	...	...	...	...	..
1000204	2198	5	0	0	0
1000205	2703	3	0	0	0
1000206	2845	1	0	0	

```
0
1000207     3607       5                    0       0
0
1000208     2909       4                    0       0
0

         Action|Adventure|Animation  \
0                                 0
1                                 0
2                                 0
3                                 0
4                                 0
...                             ...
1000204                           0
1000205                           0
1000206                           0
1000207                           0
1000208                           0

         Action|Adventure|Animation|Children's|Fantasy  \
0                                                    0
1                                                    0
2                                                    0
3                                                    0
4                                                    0
...                                                ...
1000204                                              0
1000205                                              0
1000206                                              0
1000207                                              0
1000208                                              0

         Action|Adventure|Animation|Horror|Sci-Fi  \
0                                                 0
1                                                 0
2                                                 0
3                                                 0
4                                                 0
...                                             ...
1000204                                           0
1000205                                           0
1000206                                           0
1000207                                           0
1000208                                           0

         Action|Adventure|Children's|Comedy  \
0                                         0
1                                         0
2                                         0
3                                         0
```

```
4                                       0
...                                   ...
1000204                                 0
1000205                                 0
1000206                                 0
1000207                                 0
1000208                                 0

         Action|Adventure|Children's|Fantasy  ...  Romance  Romance|
Thriller  \
0                                         0  ...        0
0
1                                         0  ...        0
0
2                                         0  ...        0
0
3                                         0  ...        0
0
4                                         0  ...        0
0
...                                     ...  ...      ...
...
1000204                                   0  ...        0
0
1000205                                   0  ...        0
0
1000206                                   0  ...        0
0
1000207                                   0  ...        0
0
1000208                                   0  ...        0
0

         Romance|War  Romance|Western  Sci-Fi  Sci-Fi|Thriller  \
0                  0                0       0                 0
1                  0                0       0                 0
2                  0                0       0                 0
3                  0                0       0                 0
4                  0                0       0                 0
...              ...              ...     ...               ...
1000204            0                0       0                 0
1000205            0                0       0                 0
1000206            0                0       0                 0
1000207            0                0       0                 0
1000208            0                0       0                 0

         Sci-Fi|Thriller|War  Thriller  War  Western
0                          0         0    0        0
1                          0         0    0        0
2                          0         0    0        0
```

```
3                          0         0    0        0
4                          0         0    0        0
...                      ...       ...  ...      ...
1000204                    0         0    0        0
1000205                    0         0    0        0
1000206                    0         0    0        0
1000207                    0         0    0        0
1000208                    0         0    0        0

[1000209 rows x 296 columns]
```

```
from sklearn.linear_model import LinearRegression
Lm=LinearRegression()
from sklearn.preprocessing import LabelEncoder
label = LabelEncoder
```

```
labeled = df13.iloc[:,0:6]
labeled.head()
```

```
   MovieID  Rating   Miami Beach (1988)  Action  Action|Adventure  \
0     1193       5                    0       0                  0
1     1193       5                    0       0                  0
2     1193       4                    0       0                  0
3     1193       4                    0       0                  0
4     1193       5                    0       0                  0

   Action|Adventure|Animation
0                           0
1                           0
2                           0
3                           0
4                           0
```

```
x=labeled[['MovieID','Action','Action|Adventure']].values
x
```

```
array([[1193,    0,    0],
       [1193,    0,    0],
       [1193,    0,    0],
       ...,
       [2845,    0,    0],
       [3607,    0,    0],
       [2909,    0,    0]], dtype=int64)
```

```
y=df13.Rating
y
```

```
0          5
1          5
2          4
3          4
```

```
4          5
          ..
1000204    5
1000205    3
1000206    1
1000207    5
1000208    4
Name: Rating, Length: 1000209, dtype: int64
```

```
Lm.fit(x,y)
```

```
LinearRegression()
```

```
Lm.predict([[1195,0,1]])
```

```
array([3.71132479])
```

```
Lm.predict([[5000,1,1]])
```

```
array([3.29110604])
```

```
Lm.predict([[3125,0,0]])
```

```
array([3.50239989])
```

```
Lm.predict([[1193,0,0]])
```

```
array([3.62575518])
```