```
# Load the Drive helper and mount
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```
import pandas as pd
```

```
ratings=pd.read_csv("/content/drive/MyDrive/FSDS @Kodi Senapati/Datasets/MovieLens 20M/rating.csv")
```

```
ratings.shape
```

```
(20000263, 4)
```

```
ratings.columns
```

```
Index(['userId', 'movieId', 'rating', 'timestamp'], dtype='object')
```

```
ratings.head()
```

	userId	movieId	rating	timestamp
0	1	2	3.5	2005-04-02 23:53:47
1	1	29	3.5	2005-04-02 23:31:16
2	1	32	3.5	2005-04-02 23:33:39
3	1	47	3.5	2005-04-02 23:32:07
4	1	50	3.5	2005-04-02 23:29:40

```
movies = pd.read_csv('/content/drive/MyDrive/FSDS @Kodi Senapati/Datasets/MovieLens 20M/movie.csv', sep=',')
tags = pd.read_csv('/content/drive/MyDrive/FSDS @Kodi Senapati/Datasets/MovieLens 20M/tag.csv', sep=',')
```

```
print(movies.shape)
print(tags.shape)
print(ratings.shape)
```

```
(27278, 3)
(465564, 4)
(20000263, 4)
```

```
print(movies.columns)
print(tags.columns)
print(ratings.columns)
```

```
Index(['movieId', 'title', 'genres'], dtype='object')
Index(['userId', 'movieId', 'tag', 'timestamp'], dtype='object')
Index(['userId', 'movieId', 'rating', 'timestamp'], dtype='object')
```

For current analysis, we will remove timestamp

```
del tags['timestamp']
del ratings['timestamp']
```

```
print(movies.columns)
print(tags.columns)
print(ratings.columns)
```

```
Index(['movieId', 'title', 'genres'], dtype='object')
Index(['userId', 'movieId', 'tag'], dtype='object')
Index(['userId', 'movieId', 'rating'], dtype='object')
```

iloc

Python's iloc() function is an important tool in Pandas for data manipulation. It allows the selection and retrieval of specific rows and columns in DataFrames or Series using integer-based indexing. iloc() allows to identification data by specifying row and column indices numerically. For instance, df.iloc[0] retrieves the first row, while df.iloc[:, 2] fetches the third column for all rows.

```
tags.iloc[0]
```

	0
userId	18
movieId	4141
tag	Mark Waters

```
# Assign 1st row value to row_0
row_0 = tags.iloc[0]
print(type(row_0))
print(row_0)
```

```
<class 'pandas.core.series.Series'>
userId              18
movieId           4141
tag        Mark Waters
Name: 0, dtype: object
```

```
# Assign 2nd row value to row_1
row_1=tags.iloc[1]
print(row_1)
```

```
userId            65
movieId          208
tag        dark hero
Name: 1, dtype: object
```

```
row_0.index
```

```
Index(['userId', 'movieId', 'tag'], dtype='object')
```

```
row_0['userId']
```

```
18
```

```
print(row_0.name) # defaultly prints 0

#Assign name
row_0=row_0.rename('FirstRow')

print(row_0.name)
```

```
0
FirstRow
```

DataFrames

```
tags.head()
```

	userId	movieId	tag
0	18	4141	Mark Waters
1	65	208	dark hero
2	65	353	dark hero
3	65	521	noir thriller
4	65	592	dark hero

```
tags.index
```

```
RangeIndex(start=0, stop=465564, step=1)
```

```
# add multiple square brackets to get data of indexes mentioned
tags.iloc[[0,11,500]]
```

	userId	movieId	tag
0	18	4141	Mark Waters
11	65	1783	noir thriller
500	342	55908	entirely dialogue

Descriptive Statistics

```
movies.describe()
```

	movieId
count	27278.000000
mean	59855.480570
std	44429.314697
min	1.000000
25%	6931.250000
50%	68068.000000
75%	100293.250000
max	131262.000000

```
tags.describe()
```

	userId	movieId
count	465564.000000	465564.000000
mean	68712.354263	32627.762920
std	41877.674053	36080.241157
min	18.000000	1.000000
25%	28780.000000	2571.000000
50%	70201.000000	7373.000000
75%	107322.000000	62235.000000
max	138472.000000	131258.000000

```
print('Mean:',ratings['rating'].mean())
print('Max:',ratings['rating'].max())
print('Min:',ratings['rating'].min())
print('Standard Dev:',ratings['rating'].std())
print('Mode:',ratings['rating'].mode())
print('Correlation:',ratings.corr())
```

```
Mean: 3.5255285642993797
Max: 5.0
Min: 0.5
Standard Dev: 1.0519889192942424
Mode: 0    4.0
Name: rating, dtype: float64
Correlation:            userId   movieId    rating
userId   1.000000 -0.000850  0.001175
movieId -0.000850  1.000000  0.002606
rating   0.001175  0.002606  1.000000
```

```
# ratings above than 3.5
filter=ratings['rating']>3.5

print(filter)
```

```
0           False
1           False
2           False
3           False
4           False
            ...
20000258     True
20000259     True
20000260    False
20000261     True
20000262    False
Name: rating, Length: 20000263, dtype: bool
```

```
filter2 = ratings['rating'] > 0
filter2.all()
```

```
True
```

Data Cleaning: Handling Missing Data

```
# Find wether there are any Null values

print(tags.isnull().sum())
print(movies.isnull().sum())
print(ratings.isnull().sum())
```

```
userId      0
movieId     0
tag        16
dtype: int64
movieId    0
title      0
genres     0
dtype: int64
userId     0
movieId    0
rating     0
dtype: int64
```

```
# Find the Null Values with True/False
print(ratings.isnull().any().any())
print(tags.isnull().any().any())
print(movies.isnull().any().any())
```

```
False
True
False
```

```
# Tags have NULL Values we need cleaning

print(tags.shape)

tags=tags.dropna()

print(tags.shape)

print(tags.isnull().any().any())
```

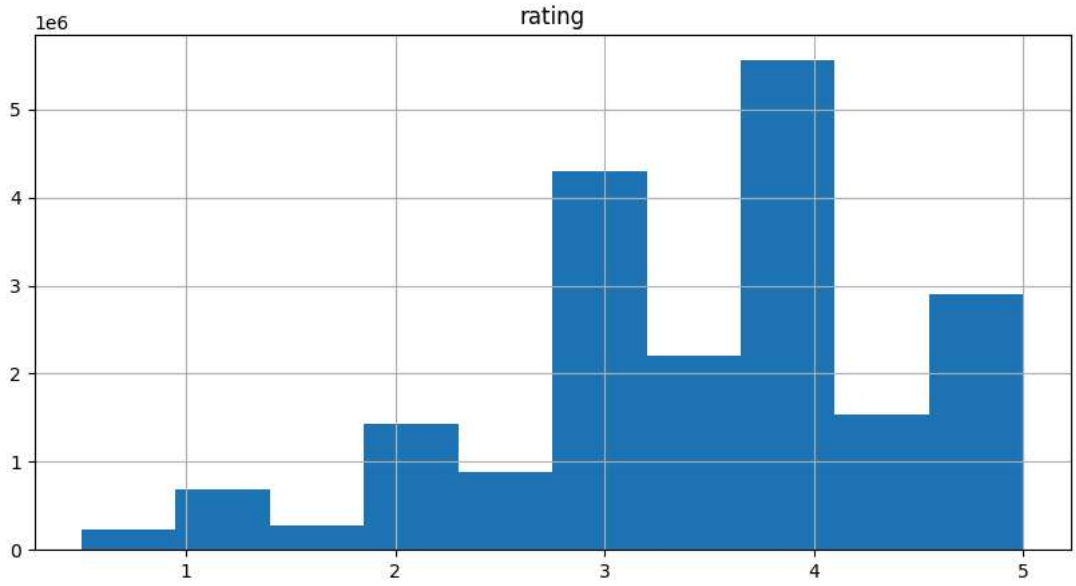
```
(465564, 3)
(465548, 3)
False
```

Data Visualization

```
import matplotlib.pyplot as plt
import numpy as np
```

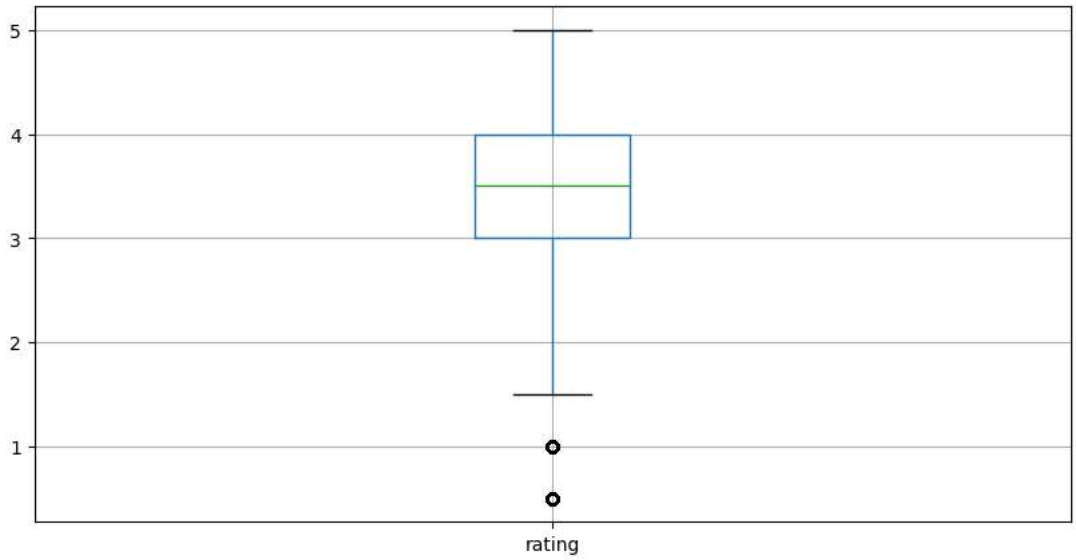
```
ratings.hist(column='rating', figsize=(10,5))
```

```
array([[<Axes: title={'center': 'rating'}>]], dtype=object)
```




```
ratings.boxplot(column='rating', figsize=(10,5))
```

```
<Axes: >
```



Slicing Out Columns

```
ratings['rating'].head()
```

	rating
0	3.5
1	3.5
2	3.5
3	3.5
4	3.5

dtype: float64

```
movies.columns
```

```
Index(['movieId', 'title', 'genres'], dtype='object')
```

```
movies[['movieId','title']].head()
```

	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)

```
movies[:10]
```

	movieId	title	genres
0	1	Toy Story (1995)	Adventure|Animation|Children|Comedy|Fantasy
1	2	Jumanji (1995)	Adventure|Children|Fantasy
2	3	Grumpier Old Men (1995)	Comedy|Romance
3	4	Waiting to Exhale (1995)	Comedy|Drama|Romance
4	5	Father of the Bride Part II (1995)	Comedy
5	6	Heat (1995)	Action|Crime|Thriller
6	7	Sabrina (1995)	Comedy|Romance
7	8	Tom and Huck (1995)	Adventure|Children
8	9	Sudden Death (1995)	Action
9	10	GoldenEye (1995)	Action|Adventure|Thriller

```
tag_counts=tags['tag'].value_counts()
tag_counts
```

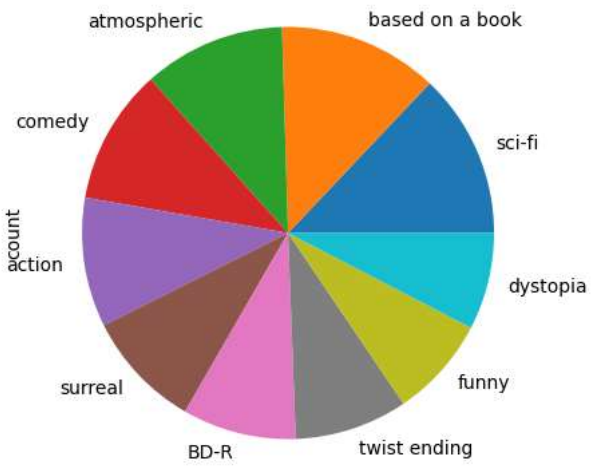
tag	count
sci-fi	3384
based on a book	3281
atmospheric	2917
comedy	2779
action	2657
...	...
Paul Adelstein	1
the wig	1
killer fish	1
genetically modified monsters	1
topless scene	1

38643 rows × 1 columns

dtype: int64

```
tag_counts[:10].plot(kind='pie', figsize=(10,5))
```

```
<Axes: ylabel='count'>
```




```
Start coding or generate with AI.
```