Assignment :05

Group no : 04

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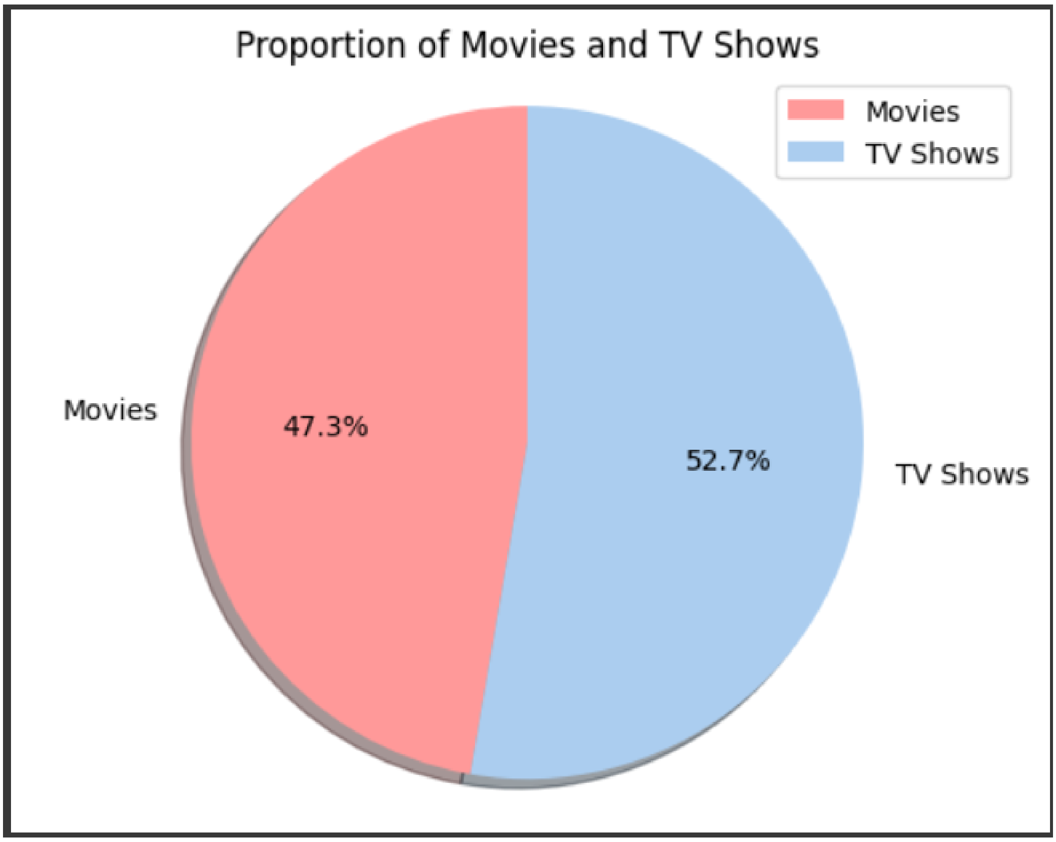
Dataset : Netflix

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
df = pd.read_csv('/content/netflix_list.csv')
df.head()

missing_values  = df.isnull().sum()

#1) Graph
df['startYear'] = df['startYear'].fillna('Unknown')
df['episodes'] = df['episodes'].fillna('No Data')
df['certificate'] = df['certificate'].fillna('No certificate')
df['numVotes'] = df['numVotes'].fillna('No rate')
df['rating'] = df['rating'].fillna('No rate')
df['plot'] = df['certificate'].fillna('No Data')
df['language'] = df['language'].fillna('Unknown')
df['genres'] = df['genres'].fillna('No Genre')
df['type'] = df['type'].fillna('No Type')
```

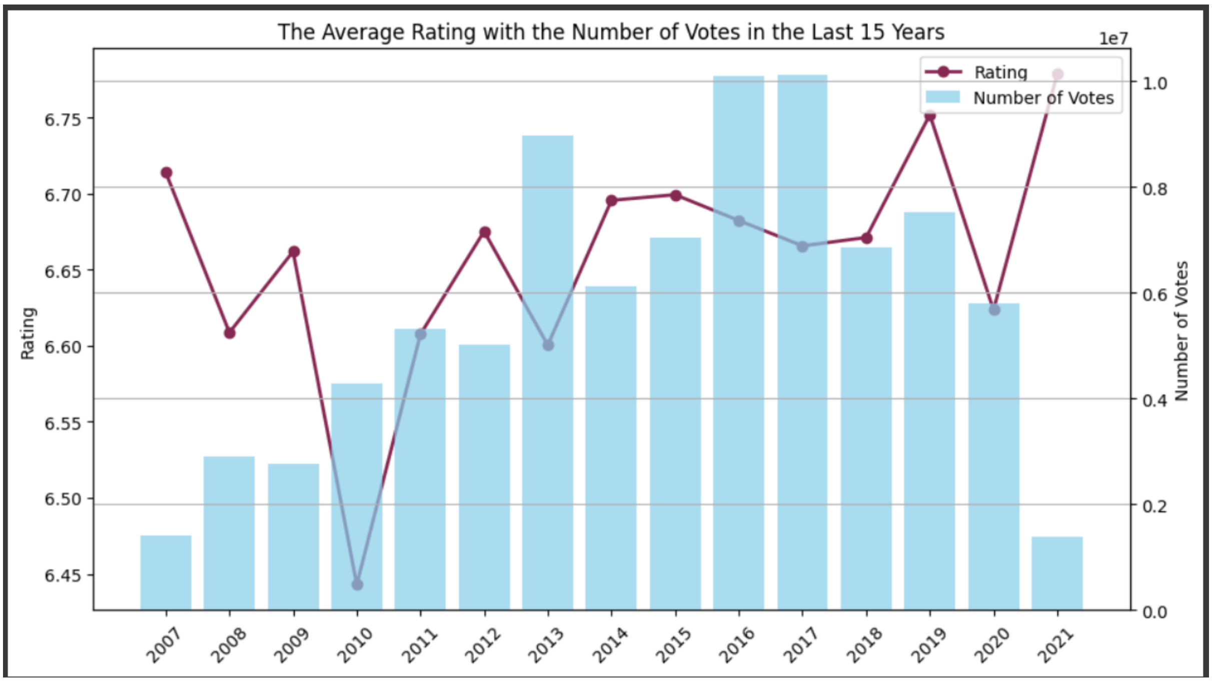
```
df['runtime'] = df['runtime'].fillna('Unknown')


# Calculate the sizes
movies = df.loc[df['type'].isin(['movie', 'short', 'tvMovie', 'video', 'videoGame', 'tvShort'])].shape[0]
tv_shows = df.loc[df['type'].isin(['tvSeries', 'tvEpisode', 'tvSpecial', 'tvMiniSeries'])].shape[0]


# Define the labels and colors
labels = ['Movies', 'TV Shows']
sizes = [movies, tv_shows]
colors = ['#ff9999', '#abcdef']  # Custom colors for the pie slices


#Create the pie chart
plt.pie(sizes, labels=labels, colors=colors, autopct='%1.1f%%', startangle=90, shadow=True)


# Customize the chart appearance
plt.title('Proportion of Movies and TV Shows')
plt.axis('equal')  # Ensure the pie chart is circular


#Add a legend
plt.legend(loc='upper right')


# Show the chart
plt.show()
```



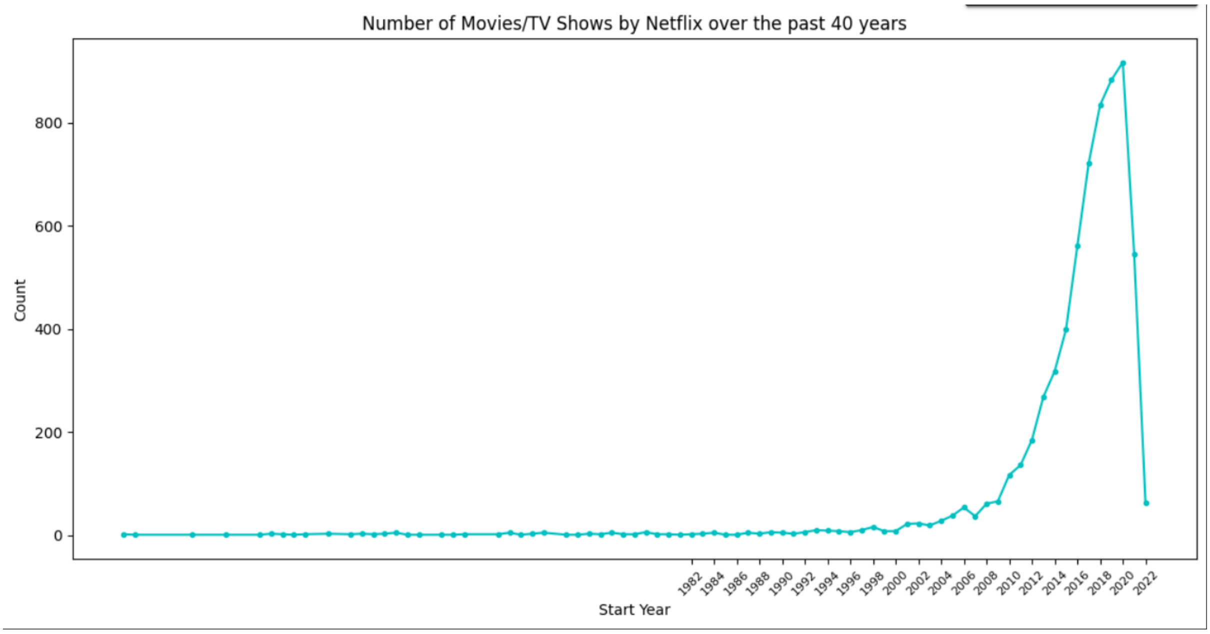
```
#2) Graph

# Filter and aggregate the data


# Filter out rows where the 'rating' column is 'No rate'

df.rating = df.rating[df.rating != 'No rate']


# Filter out rows where the 'numVotes' column is 'No rate'

df.numVotes = df.numVotes[df.numVotes != 'No rate']


# Filter out rows where the 'startYear' column is 'Unknown'

df.startYear = df.startYear[df.startYear != 'Unknown']


# Group the filtered data by 'startYear' and calculate the mean of 'rating' and
the sum of 'numVotes'
```

```
rate_per_year = df.groupby('startYear').agg({'rating':'mean','numVotes':'sum'})

# Select just the last 15 years until 2021
rate_per_year = rate_per_year.iloc[:-1].tail(15)

# Create the figure object and plot the data
fig, ax1 = plt.subplots(figsize=(11, 6))

# Plot the 'rating' column as a line chart with label 'Rating'
ax1.plot(rate_per_year['rating'], label='Rating', color='#852852', marker='o', linestyle='-', linewidth=2)

# Set the y-axis label for the line chart
ax1.set_ylabel('Rating')

# Create a second y-axis for the bar chart
ax2 = ax1.twinx()

# Plot the 'numVotes' column as a bar chart with label 'Number of Votes'
ax2.bar(rate_per_year.index, rate_per_year['numVotes'], label='Number of Votes', color='skyblue', alpha=0.7)

# Set the y-axis label for the bar chart
ax2.set_ylabel('Number of Votes')

# Set x-axis tick labels to every other index from rate_per_year
ax1.set_xticks(rate_per_year.index)
```

```
ax1.set_xticklabels(rate_per_year.index.astype(int), rotation=45)

# Add a legend to the plot
lines, labels = ax1.get_legend_handles_labels()
bars, bar_labels = ax2.get_legend_handles_labels()
ax1.legend(lines + bars, labels + bar_labels, loc='upper right')

# Add a title
plt.title("The Average Rating with the Number of Votes in the Last 15 Years")

# Add grid lines
plt.grid(True)

# Show the plot
plt.show()
```



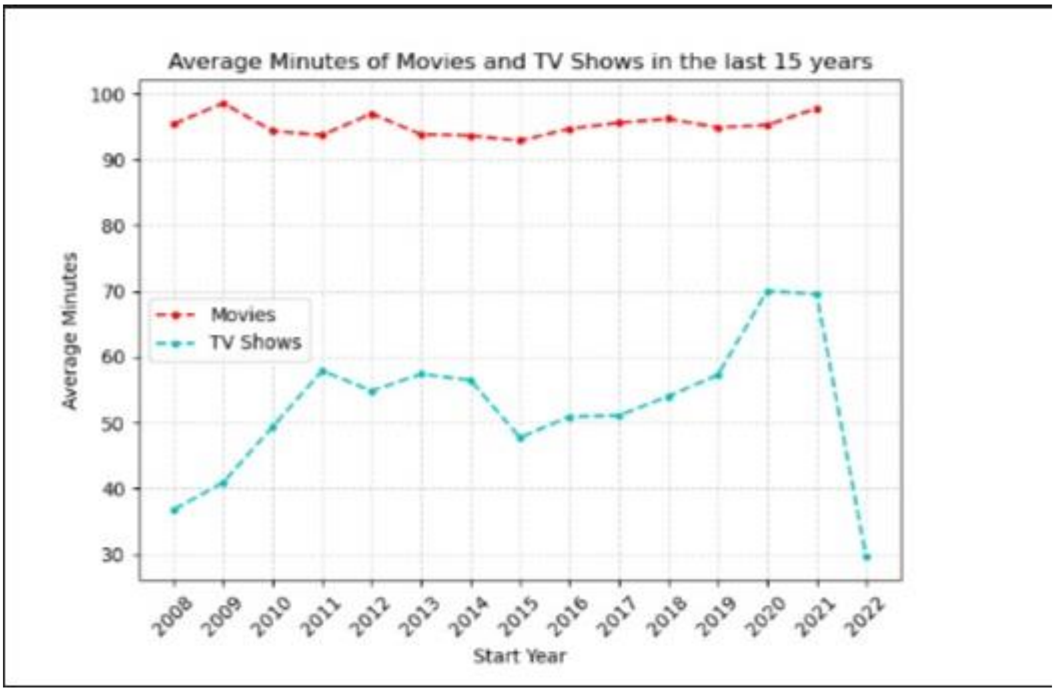
```
#3) Graph
#group the dataframe by start year ,and count how many rows we have for each year
df_StartYear = df.groupby('startYear')['imdb_id'].count()
#we can choose any columns instead of imdb_id column
# remove the rows where the start year is UNKNOWN
df_StartYear = df_StartYear[df_StartYear.index != 'Unknown']
#sort from the first year to last year
df_StartYear = df_StartYear.sort_index()
years = df_StartYear.index.to_list()

# Create the figure and set the figure size
plt.figure(figsize=(11.5, 6))

# Plot the data
plt.plot(df_StartYear[36:],'c-',marker='.')

# Customize the plot
plt.title('Number of Movies/TV Shows by Netflix over the past 40 years')
plt.xlabel('Start Year')
plt.ylabel('Count')

# Adjust x-axis tick spacing
plt.xticks( years[36::2], rotation=45, fontsize=8)

# Show the plot
plt.tight_layout()
plt.show()
```



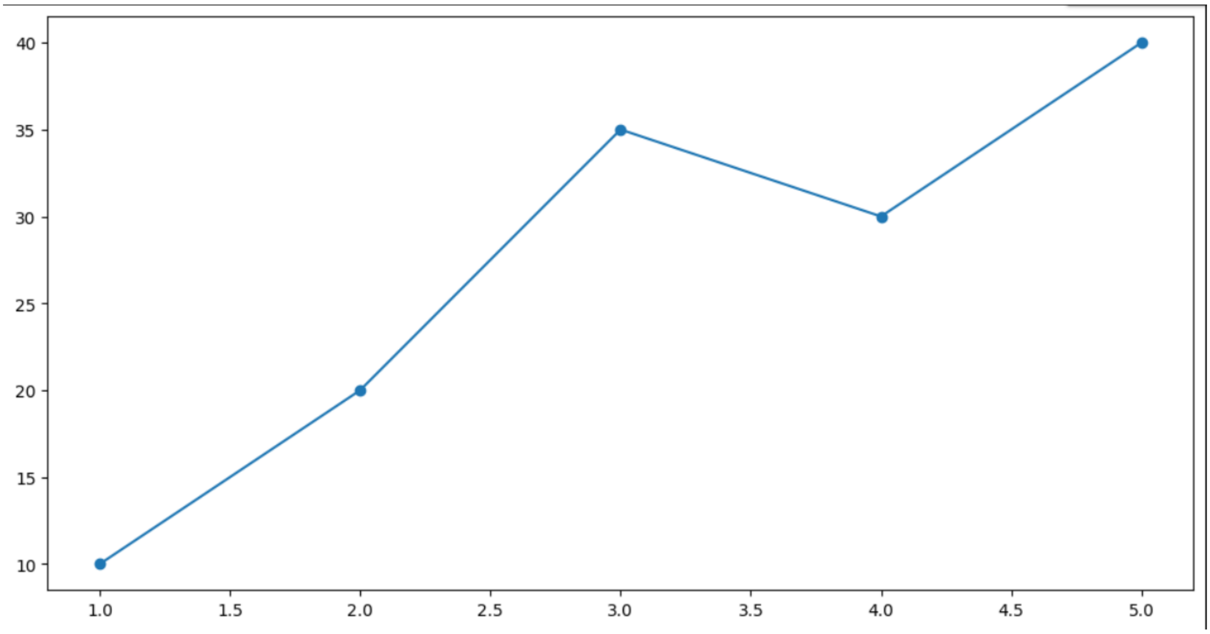
```
#4) Graph

# Remove the unknown runtime rows (we have just 2 rows; we can easily remove them without any change for our graph)

# +(Store movies and TV shows in a separate variable)

movies = df.loc[(df['runtime'] != 'Unknown') & (df['type'].isin(['movie', 'short', 'tvMovie', 'video', 'videoGame', 'tvShort']))]

tv_shows = df.loc[(df['runtime'] != 'Unknown') & (df['type'].isin(['tvSeries', 'tvEpisode', 'tvSpecial', 'tvMiniSeries']))]


# Convert the runtime column to float type using .loc

movies.loc[:, 'runtime'] = movies['runtime'].astype(float)

tv_shows.loc[:, 'runtime'] = tv_shows['runtime'].astype(float)


# Group the dataframe by start year and show the runtime for each year

movie_runtimeYear = movies.groupby('startYear')[['runtime']].mean()

tv_shows_runtimeYear = tv_shows.groupby('startYear')[['runtime']].mean()
```

```
# Remove the rows where there is no start year
movie_runtimeYear = movie_runtimeYear[movie_runtimeYear.index != 'Unknown']
tv_shows_runtimeYear = tv_shows_runtimeYear[tv_shows_runtimeYear.index != 'Unknown']

# Display just the last 15 years
last_fifteen_rows_movies = movie_runtimeYear.iloc[-15:]
last_fifteen_rows_tv_shows = tv_shows_runtimeYear.iloc[-15:]

# Plotting the data
plt.plot(last_fifteen_rows_movies, 'r--',marker=".", label='Movies')
plt.plot(last_fifteen_rows_tv_shows, 'c--',marker=".", label='TV Shows')

# Adding labels and title
plt.xlabel('Start Year')
plt.ylabel('Average Minutes')
plt.title('Average Minutes of Movies and TV Shows in the last 15 years')

# Adding grid lines
plt.grid(True, linestyle='--', alpha=0.5)

# Customizing tick labels
plt.xticks(last_fifteen_rows_movies.index.to_list(), rotation=45)

# Adding legend
```

```
plt.legend()

plt.tight_layout()

# Display the plot

plt.show()
```

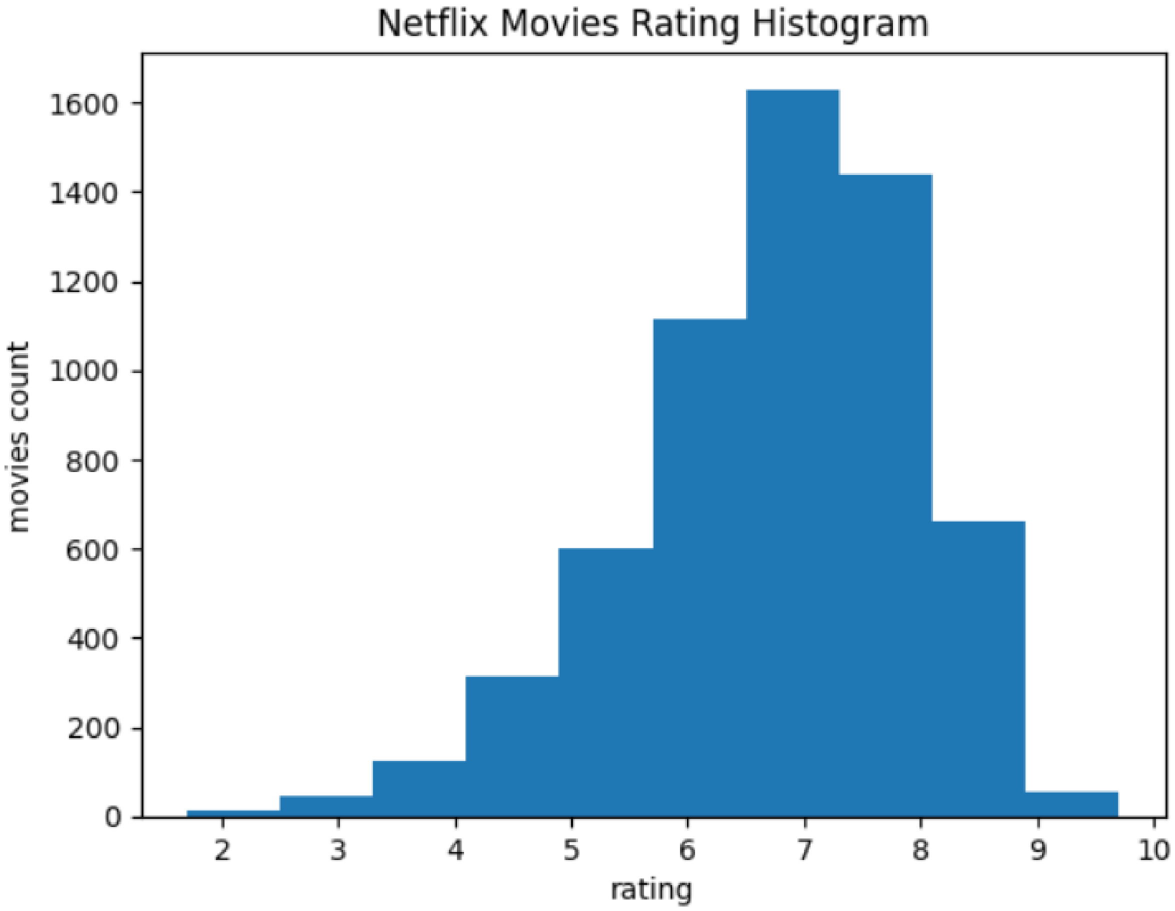


```
#5) Graph

df.info()

#Plot line chart

data=pd.DataFrame(df)

fig=plt.figure()

ax=fig.add_axes([0,0,1.5,1.0])

x=[1,2,3,4,5]

y=[10,20,35,30,40]

plt.plot(x,y,marker='o')

plt.show
```

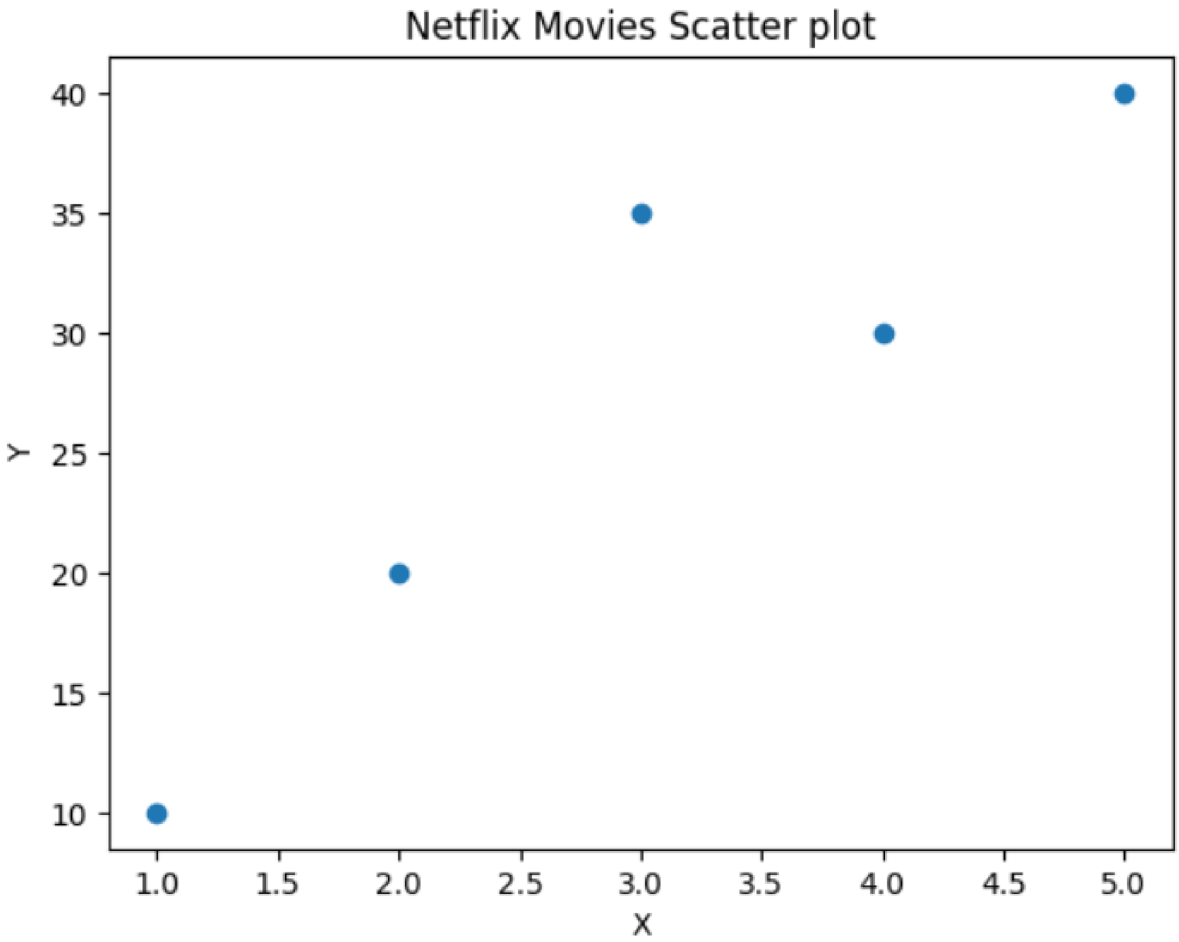


#6) Graph

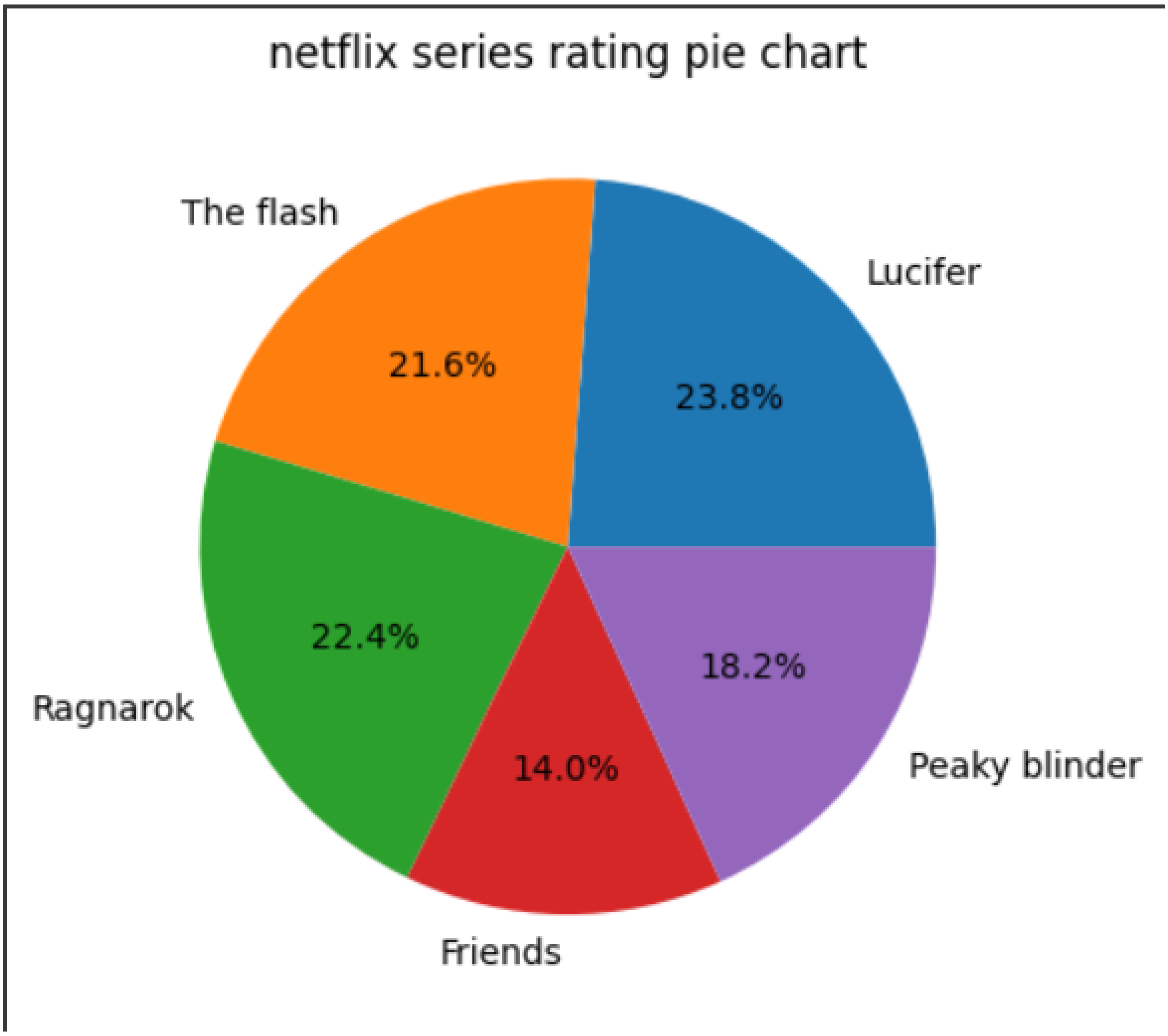
```
df1=df.dropna()

print(df1.head())

plt.xlabel('rating')

plt.ylabel('movies count')

plt. title('Netflix Movies Rating Histogram')

plt.hist(df['rating'])
```



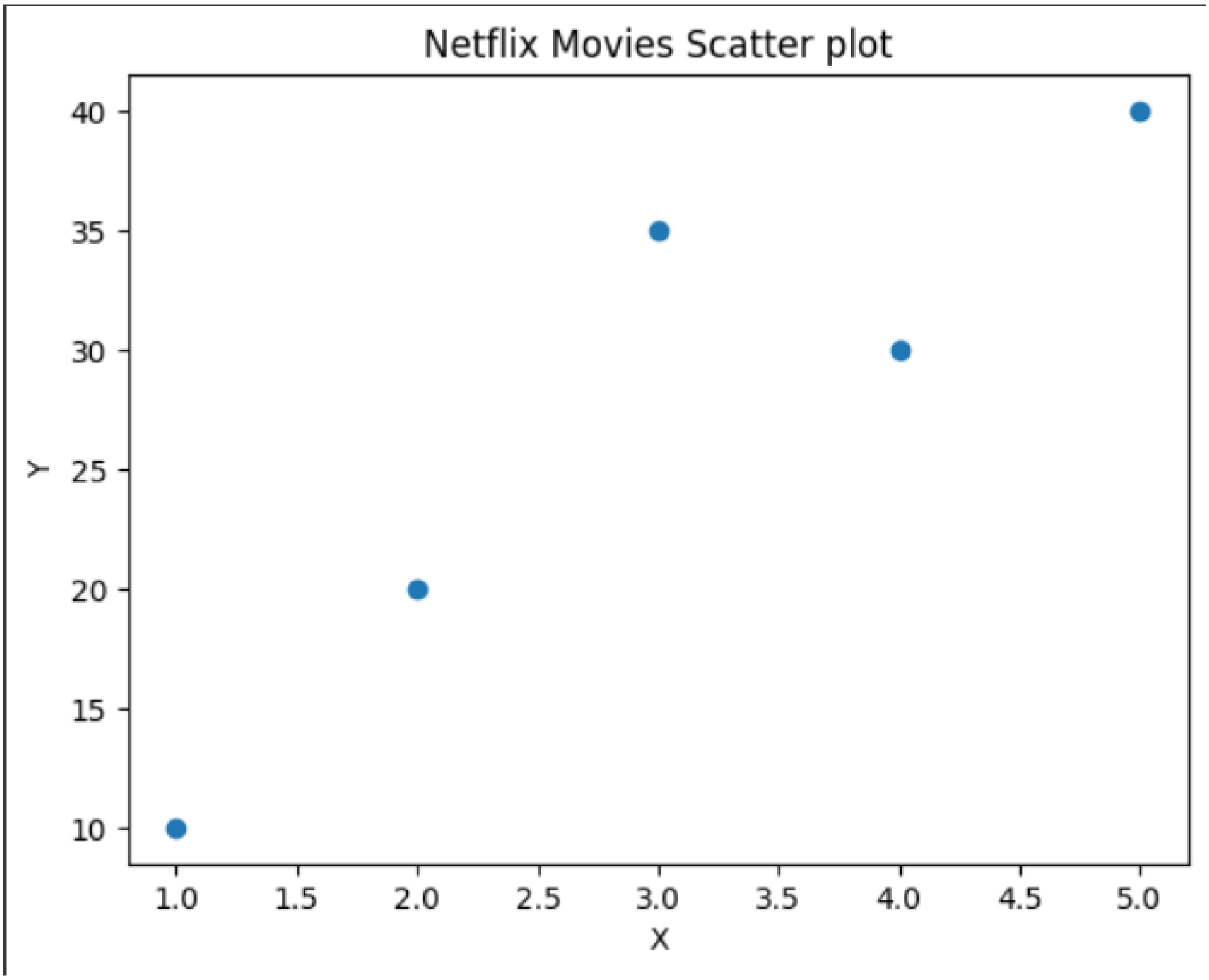
```
#7) Graph

df1=df.dropna()

print(df1.head())

plt.xlabel('X')

plt.ylabel('Y')

plt. title('Netflix Movies Scatter plot')

plt.scatter(x,y)
```



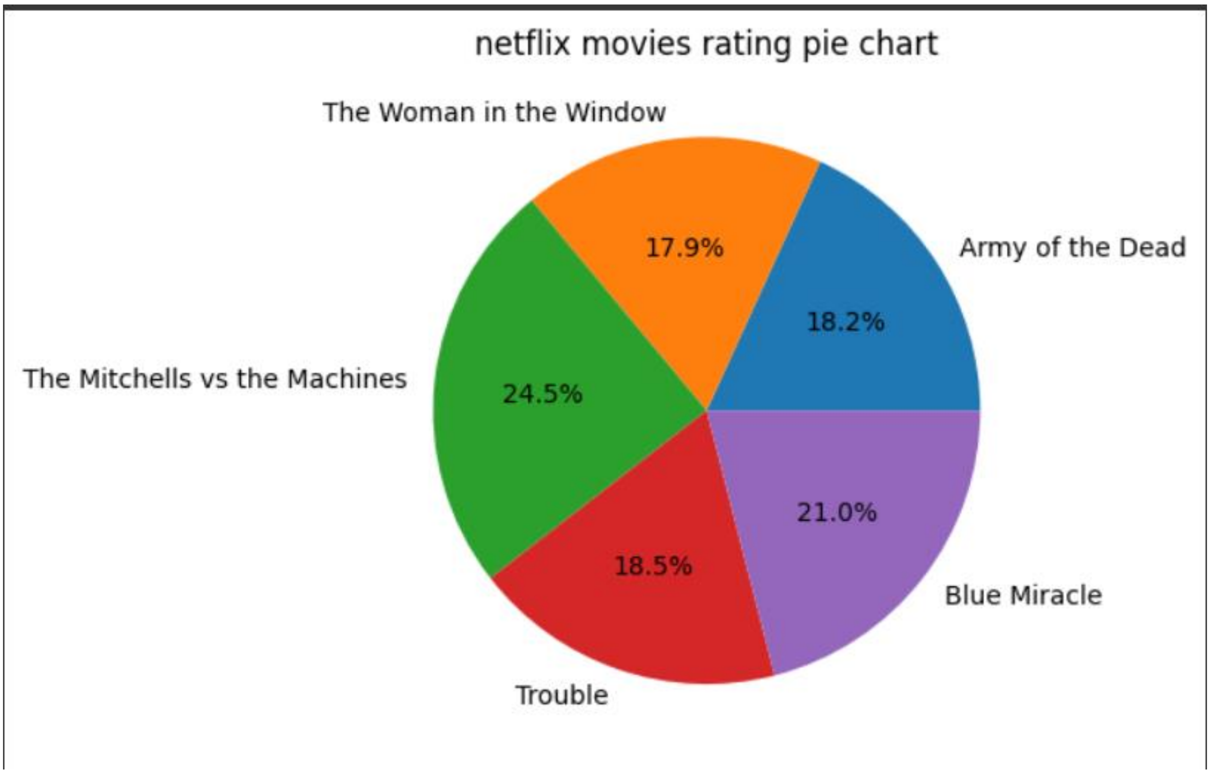
```
#8) Graph

title=['Lucifer','The flash','Ragnarok','Friends','Peaky blinder']

Rating=[8.5,7.7,8,5,6.5]

#plotting the pie chart

plt.title('netflix series rating pie chart')

plt.pie(Rating,labels=title,autopct='%1.1f%%')

plt.show()
```



```
#9) Graph

df1=df.dropna()

print(df1.head())

plt.xlabel('X')

plt.ylabel('Y')

plt. title('Netflix Movies Scatter plot')

plt.scatter(x,y)
```



```
#10) Graph

title=['Army of the Dead','The Woman in the Window','The Mitchells vs the Machines','Trouble','Blue Miracle']

Rating=[5.8,5.7,7.8,5.9,6.7]

#plotting the pie chart

plt.title('netflix movies rating pie chart')

plt.pie(Rating,labels=title,autopct='%1.1f%%')

plt.show()
```


netflix movies rating pie chart
The Woman in the Window
17.9%
Army of the Dead
18.2%
The Mitchells vs the Machines
24.5%
21.0%
18.5%
Blue Miracle
Trouble