**Functions**

1. Read the data and transform date time

import pandas as pd

unrate = pd.read\_csv('unrate.csv')

unrate['DATE'] = pd.to\_datetime(unrate['DATE'])

print(unrate.head(12))

1. Pyplot module from matplotlib for Line chart

import matplotlib.pyplot as plt

plt.plot()

plt.show()

# Assigned first 12 rows to a variable just for easy reference.

first\_twelve = unrate[0:12]

plt.plot(first\_twelve['DATE'], first\_twelve['VALUE'])

plt.show()

# We can rotate the x-axis tick labels by 90 degrees so they don't overlap. The xticks() function within pyplot lets you customize the behavior of the x-axis ticks.

plt.plot(first\_twelve['DATE'], first\_twelve['VALUE'])

plt.xticks(rotation=90)

plt.show()

1. Adding axis labels and a title.

plt.plot(first\_twelve['DATE'], first\_twelve['VALUE'])

plt.xticks(rotation=90)

plt.xlabel('Month')

plt.ylabel('Unemployment Rate')

plt.title('Monthly Unemployment Trends, 1948')

plt.show()

1. Manually creating a figure

fig = plt.figure()

##  To add a new subplot to an existing figure, use [Figure.add\_subplot](http://matplotlib.org/api/figure_api.html" \l "matplotlib.figure.Figure.add_subplot). This will return a new Axes object, which needs to be assigned to a variable:

axes\_obj = fig.add\_subplot(nrows, ncols, plot\_number)

import matplotlib.pyplot as plt

fig = plt.figure()

ax1 = fig.add\_subplot(2,1,1)

ax2 = fig.add\_subplot(2,1,2)

plt.show()

1. Multiple plots

fig = plt.figure()

ax1 = fig.add\_subplot(2,1,1)

ax2 = fig.add\_subplot(2,1,2)

ax1.plot(unrate[0:12]['DATE'], unrate[0:12]['VALUE'])

ax2.plot(unrate[12:24]['DATE'], unrate[12:24]['VALUE'])

plt.show()

#Specifying size

fig = plt.figure(figsize=(width, height))

fig = plt.figure(figsize=(12,5))

ax1 = fig.add\_subplot(2,1,1)

ax2 = fig.add\_subplot(2,1,2)

ax1.plot(unrate[0:12]['DATE'], unrate[0:12]['VALUE'])

ax1.set\_title('Monthly Unemployment Rate, 1948')

ax2.plot(unrate[12:24]['DATE'], unrate[12:24]['VALUE'])

ax2.set\_title('Monthly Unemployment Rate, 1949')

plt.show()

fig = plt.figure(figsize=(12,12))

for i in range(5):

ax = fig.add\_subplot(5,1,i+1)

start\_index = i\*12

end\_index = (i+1)\*12

subset = unrate[start\_index:end\_index]

ax.plot(subset['DATE'], subset['VALUE'])

plt.show()

1. On the same plot

unrate['MONTH'] = unrate['DATE'].dt.month# extracting month from date

fig = plt.figure(figsize=(6,3))

plt.plot(unrate[0:12]['MONTH'], unrate[0:12]['VALUE'], c='red')

plt.plot(unrate[12:24]['MONTH'], unrate[12:24]['VALUE'], c='blue')

plt.show()

fig = plt.figure(figsize=(10,6))

colors = ['red', 'blue', 'green', 'orange', 'black']

for i in range(5):

start\_index = i\*12

end\_index = (i+1)\*12

subset = unrate[start\_index:end\_index]

plt.plot(subset['MONTH'], subset['VALUE'], c=colors[i])

plt.show()

1. Label, title and legends

fig = plt.figure(figsize=(10,6))

colors = ['red', 'blue', 'green', 'orange', 'black']

for i in range(5):

start\_index = i\*12

end\_index = (i+1)\*12

subset = unrate[start\_index:end\_index]

label = str(1948 + i)

plt.plot(subset['MONTH'], subset['VALUE'], c=colors[i], label=label)

plt.legend(loc='upper left')

plt.xlabel('Month, Integer')

plt.ylabel('Unemployment Rate, Percent')

plt.title('Monthly Unemployment Trends, 1948-1952')

plt.show()

1. Bar and Scatter plots

import pandas as pd

reviews = pd.read\_csv('fandango\_scores.csv')

cols = ['FILM', 'RT\_user\_norm', 'Metacritic\_user\_nom', 'IMDB\_norm', 'Fandango\_Ratingvalue', 'Fandango\_Stars']

norm\_reviews = reviews[cols]

print(norm\_reviews[:1])

# creating bar plot

import matplotlib.pyplot as plt

from numpy import arange

num\_cols = ['RT\_user\_norm', 'Metacritic\_user\_nom', 'IMDB\_norm', 'Fandango\_Ratingvalue', 'Fandango\_Stars']

bar\_heights = norm\_reviews[num\_cols].iloc[0].values

bar\_positions = arange(5) + 0.75

fig, ax = plt.subplots()

ax.bar(bar\_positions, bar\_heights, 0.5)

plt.show()

#Xticks and Xticks labels

num\_cols = ['RT\_user\_norm', 'Metacritic\_user\_nom', 'IMDB\_norm', 'Fandango\_Ratingvalue', 'Fandango\_Stars']

bar\_heights = norm\_reviews[num\_cols].iloc[0].values

bar\_positions = arange(5) + 0.75

tick\_positions = range(1,6)

fig, ax = plt.subplots()

ax.bar(bar\_positions, bar\_heights, 0.5)

ax.set\_xticks(tick\_positions)

ax.set\_xticklabels(num\_cols, rotation=90)

ax.set\_xlabel('Rating Source')

ax.set\_ylabel('Average Rating')

ax.set\_title('Average User Rating For Avengers: Age of Ultron (2015)')

plt.show()

#Horizontal plot

import matplotlib.pyplot as plt

from numpy import arange

num\_cols = ['RT\_user\_norm', 'Metacritic\_user\_nom', 'IMDB\_norm', 'Fandango\_Ratingvalue', 'Fandango\_Stars']

bar\_widths = norm\_reviews[num\_cols].iloc[0].values

bar\_positions = arange(5) + 0.75

tick\_positions = range(1,6)

fig, ax = plt.subplots()

ax.barh(bar\_positions, bar\_widths, 0.5)

ax.set\_yticks(tick\_positions)

ax.set\_yticklabels(num\_cols)

ax.set\_ylabel('Rating Source')

ax.set\_xlabel('Average Rating')

ax.set\_title('Average User Rating For Avengers: Age of Ultron (2015)')

plt.show()

# Scatter Plots

fig, ax = plt.subplots()

ax.scatter(norm\_reviews['Fandango\_Ratingvalue'], norm\_reviews['RT\_user\_norm'])

ax.set\_xlabel('Fandango')

ax.set\_ylabel('Rotten Tomatoes')

plt.show()

## Axis limits

import matplotlib.pyplot as plt

fig = plt.figure(figsize=(5,10))

ax1 = fig.add\_subplot(3,1,1)

ax2 = fig.add\_subplot(3,1,2)

ax3 = fig.add\_subplot(3,1,3)

ax1.scatter(norm\_reviews['Fandango\_Ratingvalue'], norm\_reviews['RT\_user\_norm'])

ax1.set\_xlabel('Fandango')

ax1.set\_ylabel('Rotten Tomatoes')

ax1.set\_xlim(0, 5)

ax1.set\_ylim(0, 5)

ax2.scatter(norm\_reviews['Fandango\_Ratingvalue'], norm\_reviews['Metacritic\_user\_nom'])

ax2.set\_xlabel('Fandango')

ax2.set\_ylabel('Metacritic')

ax2.set\_xlim(0, 5)

ax2.set\_ylim(0, 5)

ax3.scatter(norm\_reviews['Fandango\_Ratingvalue'], norm\_reviews['IMDB\_norm'])

ax3.set\_xlabel('Fandango')

ax3.set\_ylabel('IMDB')

ax3.set\_xlim(0, 5)

ax3.set\_ylim(0, 5)

plt.show()

1. Histogram and box plot

fandango\_distribution = norm\_reviews['Fandango\_Ratingvalue'].value\_counts()

fandango\_distribution = fandango\_distribution.sort\_index()

imdb\_distribution = norm\_reviews['IMDB\_norm'].value\_counts()

imdb\_distribution = imdb\_distribution.sort\_index()

print(fandango\_distribution)

print(imdb\_distribution)

# Making range for X-axis

fig, ax = plt.subplots()

ax.hist(norm\_reviews['Fandango\_Ratingvalue'], range=(0, 5))

plt.show()

#

fig = plt.figure(figsize=(5,20))

ax1 = fig.add\_subplot(4,1,1)

ax2 = fig.add\_subplot(4,1,2)

ax3 = fig.add\_subplot(4,1,3)

ax4 = fig.add\_subplot(4,1,4)

ax1.hist(norm\_reviews['Fandango\_Ratingvalue'], bins=20, range=(0, 5))

ax1.set\_title('Distribution of Fandango Ratings')

ax1.set\_ylim(0, 50)

ax2.hist(norm\_reviews['RT\_user\_norm'], 20, range=(0, 5))

ax2.set\_title('Distribution of Rotten Tomatoes Ratings')

ax2.set\_ylim(0, 50)

ax3.hist(norm\_reviews['Metacritic\_user\_nom'], 20, range=(0, 5))

ax3.set\_title('Distribution of Metacritic Ratings')

ax3.set\_ylim(0, 50)

ax4.hist(norm\_reviews['IMDB\_norm'], 20, range=(0, 5))

ax4.set\_title('Distribution of IMDB Ratings')

ax4.set\_ylim(0, 50)

# Box plot

fig, ax = plt.subplots()

ax.boxplot(norm\_reviews['RT\_user\_norm'])

ax.set\_xticklabels(['Rotten Tomatoes'])

ax.set\_ylim(0, 5)

plt.show()

num\_cols = ['RT\_user\_norm', 'Metacritic\_user\_nom', 'IMDB\_norm', 'Fandango\_Ratingvalue']

fig, ax = plt.subplots()

ax.boxplot(norm\_reviews[num\_cols].values)

ax.set\_xticklabels(num\_cols, rotation=90)

ax.set\_ylim(0,5)

plt.show()