Matplotlib Assignment:

Scipy:

We have the min and max temperatures in a city In India for each months of the year.

We would like to find a function to describe this and show it graphically, the dataset

given below.

Task:

1.fitting it to the periodic function

2.plot the fit

Data

Max = 39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25

Min = 21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18

Solution:

Fitting it to a periodic function:

```
from scipy import optimize
def yearly_temps(times, avg, ampl, time_offset):
    return (avg
            + ampl * np.cos((times + time_offset) * 1.8 * np.pi /
times.max()))

res_max, cov_max = optimize.curve_fit(yearly_temps, months,
                                      temp_max, [40, 20, 0])
res_min, cov_min = optimize.curve_fit(yearly_temps, months,
                                      temp_min, [-40, 20, 0])
```

Plot the fit:

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

max = np.array([39, 41, 43, 47, 49, 51, 45, 38, 37, 29, 27, 25])
min = np.array([21, 23, 27, 28, 32, 35, 31, 28, 21, 19, 17, 18])
months=np.arange(12)
from scipy import optimize
def yearly_temps(times, avg, ampl, time_offset):
    return (avg
            + ampl * np.cos((times + time_offset) * 1.8 * np.pi /
times.max()))
```

```
res_max, cov_max = optimize.curve_fit(yearly_temps, months,
                                      max, [40, 20, 0])
res_min, cov_min = optimize.curve_fit(yearly_temps, months,
                                      min, [-40, 20, 0])



days = np.linspace(0, 12, num=365)

plt.figure()
plt.plot(months, max, 'go')
plt.plot(days, yearly_temps(days, *res_max), 'm-')
plt.plot(months, min, 'co')
plt.plot(days, yearly_temps(days, *res_min), 'y-')
plt.xlabel('Month')
plt.ylabel('Temperature')
plt.show()
```

Matplotlib:

This assignment is for visualization using matplotlib:

data to use:

url=https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-Data/master/titanic_original.csv

titanic = pd.read_csv(url)

Charts to plot:

1. Create a pie chart presenting the male/female proportion

2. Create a scatterplot with the Fare paid and the Age, differ the plot color by gender

Solution:

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

titanic=pd.read_csv('https://raw.githubusercontent.com/Geoyi/Cleaning-Titanic-
Data/master/titanic_original.csv')

# print(titanic.head())

count=titanic['sex'].value_counts()
colors = ['blue', 'orange']
```

```
plt.pie(count,colors=colors,labels=count.index.values.tolist(),autopct='%.1f%%
')
plt.title('Male/Female Proportion')
plt.show()
```