Code and Output Preview:

import pandas as pd

import matplotlib.pyplot as plt

#assign excel value to dataframe

df=pd.read\_excel("C:\\Users\\admin\\Desktop\\Sample Jupyter\\Dataset\_new.xlsx")

#preprocessing

df=df.replace('\\*','',regex=True)

df=df.replace('\#','',regex=True)

df=df.replace('\---','0',regex=True)

#Getting User Input for Location

inputlocation=str(input("Enter location from list(Hurn,Heathrow,Valley):"))

#introducing list to have average values of each column(sun,rainfall,Air Frost, Min and Max Temperature)

Month1=[1,2,3,4,5,6,7,8,9,10,11,12]

sun\_chart=[]

tmax\_chart=[]

tmin\_chart=[]

rain\_chart=[]

af\_chart=[]

#Methods for adding datalabels to the chart

def addlabelline(x=[],y=[]):

for x1,y1 in zip(x,y):

label = "{:.2f}".format(y1)

plt.annotate(label, # this is the text

(x1,y1), # these are the coordinates to position the label

textcoords="offset points", # how to position the text

xytext=(0,10), # distance from text to points (x,y)

ha='center') # horizontal alignment can be left, right or center

#Finding Avg value and creating chart of diferent styles

def sunchart():

for i in range(12):

df\_temp=df.loc[((df['Location']==inputlocation) & (df['mm']==i+1))]

df\_temp=pd.to\_numeric(df\_temp['sun'], downcast="float")

sun\_chart.append(df\_temp.mean())

print("Sun chart Average Value:\n",sun\_chart)

plt.subplots(1,1)

plt.plot(Month1,sun\_chart,color="green",marker='\*')

plt.fill\_between(Month1,sun\_chart,color="yellow")

plt.title('Chart for Sunlight -'+str(inputlocation))

plt.legend(['Sunlight'])

plt.xlabel('Months')

plt.ylabel('Monthly avarage value for Sunlight')

addlabelline(Month1,sun\_chart)

plt.grid()

def rainchart():

for i in range(12):

df\_temp=df.loc[((df['Location']==inputlocation) & (df['mm']==i+1))]

df\_temp=pd.to\_numeric(df\_temp['rain'], downcast="float")

rain\_chart.append(df\_temp.mean())

print("Rain chart Average Value:\n",rain\_chart)

plt.subplots(1,1)

plt.plot(Month1,rain\_chart,color="green")

plt.fill\_between(Month1,rain\_chart,color="blue")

plt.title('Chart for Rainfall -'+str(inputlocation))

plt.legend(['Precipitation'])

plt.xlabel('Months')

plt.ylabel('Monthly avarage value for Precipitation')

addlabelline(Month1,rain\_chart)

plt.grid()

def tminchart():

for i in range(12):

df\_temp=df.loc[((df['Location']==inputlocation) & (df['mm']==i+1))]

df\_temp=pd.to\_numeric(df\_temp['tmin'], downcast="float")

tmin\_chart.append(df\_temp.mean())

print("tmin chart Average Value:\n",tmin\_chart)

def tmaxchart():

for i in range(12):

df\_temp=df.loc[((df['Location']==inputlocation) & (df['mm']==i+1))]

df\_temp=pd.to\_numeric(df\_temp['tmax'], downcast="float")

tmax\_chart.append(df\_temp.mean())

print("tmax chart Average Value:\n",tmax\_chart)

plt.subplots(1,1)

plt.scatter(Month1,tmin\_chart,color="red")

plt.plot(Month1,tmax\_chart,color = 'blue',linestyle = 'solid', marker = 'o',markerfacecolor = 'green', markersize = 12)

plt.legend(['MinTemp','MaxTemp'])

plt.xlabel('Months')

plt.ylabel('Monthly avarage value for Min and Max Temperature')

plt.title('Chart for Min and Max Temperature-'+str(inputlocation))

addlabelline(Month1,tmin\_chart)

addlabelline(Month1,tmax\_chart)

plt.grid()

def afchart():

for i in range(12):

df\_temp=df.loc[((df['Location']==inputlocation) & (df['mm']==i+1))]

df\_temp=pd.to\_numeric(df\_temp['af'], downcast="float")

af\_chart.append(df\_temp.mean())

print("af chart Average Value:\n",af\_chart)

plt.subplots(1,1)

plt.plot(Month1,af\_chart,marker ='\*',color="brown")

plt.fill\_between(Month1,af\_chart,color="pink")

plt.title('Chart for Air Frost -'+str(inputlocation))

plt.legend(['af'])

plt.xlabel('Months')

plt.ylabel('Monthly avarage value for Air Frost')

addlabelline(Month1,af\_chart)

plt.grid()

# Function Calling to create chart

sunchart()

rainchart()

tminchart()

tmaxchart()

afchart()

plt.show()

Enter location from list(Hurn,Heathrow,Valley):Valley

Sun chart Average Value:

[57.06087, 83.74348, 137.2435, 180.4261, 217.69131, 204.65218, 190.40439, 169.16522, 135.51306, 95.852165, 54.86087, 43.952175]

Rain chart Average Value:

[74.030426, 65.49565, 52.96522, 49.043484, 54.721733, 51.973915, 60.173912, 71.00435, 79.05216, 116.921745, 105.38696, 98.26087]

tmin chart Average Value:

[3.9608696, 3.6739135, 4.3217397, 6.03913, 8.73913, 11.3, 13.047827, 13.213043, 11.860869, 9.6, 6.8304353, 4.582609]

tmax chart Average Value:

[8.46087, 8.569565, 9.982609, 12.260871, 15.008694, 17.469566, 18.91739, 18.70435, 17.38261, 14.573914, 11.421739, 9.234783]

af chart Average Value:

[4.7391305, 4.5652175, 3.0, 0.6086956, 0.0, 0.0, 0.0, 0.0, 0.0, 0.08695652, 0.6086956, 3.9130435]







