UNIT-3 (Data visualization & Matplotlib)

**MCA - III Semester**

**Subject: Data Science & Analytics using Python**

**Unit-III Assignment**

**Date of Release: 12/11/2022**

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**Part-A 10X1=10**

Q.1 (CO3) which library is the most used visulization library in python?

1. visual
2. matlibplot
3. matplotlib
4. matlab

Q.2 (CO3) recommanded way to load matplotlib library is

a) import matplotlib.pyplot as plt

(b) import matplotlib.pyplot

(c) import matplotlib as plt

(d) import matplotlib

Q.3 (CO3) which function of matplotlib can be used to create a line chart?

a) Line

b) Plot

c) Graph

d) Bar

Q.4 (CO3) which function can be used to export generated graph in matplotlib to png

a) savefigure

b) savefig

c) save

d) export

Q.5 (CO3) which one of these is not a valid line style in matplotlib

(a) '-'

(b) '--'

(c) '-.'

(d)'<'

Q.6 (CO3) which graph should be used if we want to show distribution of elements?

(a) pie

(b) basemap

(c) bar

(d) histogram

Q.7 (CO3) which graph should be used If we want to find patterns in data?

(a) bar

(b) histogram

(c) scatterplots

(d) basemap

Q.8 (CO3) which method can be used to get the shortest path in networkx library

(a) shortest\_path

(b) short\_path

(c) shortestPath

(d) sortPath

Q.9 (CO3) which one of these is not a type of network graph

(a) weighted graph

(b) directed graph

(c) undirected graph

(d) circular graph

Q.10 (CO3) The plot method on Series and DataFrame is just a simple wrapper around \_\_\_\_\_\_\_\_\_\_\_\_

a) gplt.plot()

b) plt.plot()

c) plt.plotgraph()

d) none of the mentioned

Q.11 (CO3) Point out the correct combination with regards to kind keyword for graph plotting.

a) ‘hist’ for histogram

b) ‘box’ for boxplot

c) ‘area’ for area plots

d) all of the mentioned

Q.12 (CO3) Which of the following value is provided by kind keyword for barplot?

a) bar

b) kde

c) hexbin

d) none of the mentioned

Q.13 (CO3) You can create a scatter plot matrix using the \_\_\_\_\_\_\_\_\_\_ method in pandas.tools.plotting.

a) sca\_matrix

b) scatter\_matrix

c) DataFrame.plot

d) all of the mentioned

Q.14 (CO3) Point out the wrong combination with regards to kind keyword for graph plotting.

a) ‘scatter’ for scatter plots

b) ‘kde’ for hexagonal bin plots

c) ‘pie’ for pie plots

d) none of the mentioned

Q.15 (CO3). Which of the following plots are used to check if a data set or time series is random?

a) Lag

b) Random

c) Lead

d) None of the mentioned

Q.16 (CO3). Which of the following plots are often used for checking randomness in time series?

a) Autocausation

b) Autorank

c) Autocorrelation

d) None of the mentioned

Q.17 (CO3). \_\_\_\_\_\_\_\_\_\_ plots are used to visually assess the uncertainty of a statistic.

a) Lag

b) RadViz

c) Bootstrap

d) None of the mentioned

Q.18 (CO3) \_\_\_\_\_\_\_\_\_\_ plots are used to visually assess the uncertainty of a statistic.

a) Lag

b) RadViz

c) Bootstrap

d) None of the mentioned

Q.19 (CO3). \_\_\_\_\_\_\_\_\_\_ plots are used to visually assess the uncertainty of a statistic.

a) Lag

b) RadViz

c) Bootstrap

d) None of the mentioned

Q.20 (CO3). \_\_\_\_\_\_\_\_\_\_ plots are used to visually assess the uncertainty of a statistic.

a) Lag

b) RadViz

c) Bootstrap

d) None of the mentioned

**Part-B 5X2=10**

Q.1(CO3) What is the concept of Data Visualization in Python?

The process of finding trends and correlations in our data by representing it pictorially is called Data Visualization. To perform data visualization in python, we can use various python data visualization modules such as **Matplotlib, Seaborn, Plotly**, etc

Q.2 (CO3) What do you understand by need of Plotting graphs in Python?

Graphs are a common method to visually illustrate relationships in the data. The purpose of a graph is **to present data that are too numerous or complicated to be described adequately in the text and in less space**.

Q.3 (CO3) Write the name of different types of Plots in matplotlib library of python?

The six most commonly used Plots come under Matplotlib. These are:

* Line Plot
* Bar Plot
* Scatter Plot
* Pie Plot
* Area Plot
* Histogram Plot

Q.4(CO3) Write the statement for importing the matplotlib library in python?

import matplotlib.pyplot as plt

Q5 (CO3) What do you understand by Matplotlib library of python?

Matplotlib is **a comprehensive library for creating static, animated, and interactive visualizations in Python**. Matplotlib makes easy things easy and hard things possible. Create publication quality plots. Make interactive figures that can zoom, pan, update.

**Part-C 5X6=30**

Q.1 (CO3) Briefly enumerate the line properties with example in matplotlib using python.

Nahi mila

Q.2 (CO3) Describe concept of Data Visualization with example.

Data visualization is the graphical representation of information and data. By using v[isual elements like charts, graphs, and maps](https://www.tableau.com/data-insights/reference-library/visual-analytics), data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. Additionally, it provides an excellent way for employees or business owners to present data to non-technical audiences without confusion.

#### General Types of Visualizations:

**Chart,Table**,**Graph,Geospatial**,**Infographic,Dashboards**

#### More specific examples

**Area Map,Bar Chart,Box-and-whisker Plots,Bullet Graph,Gantt Chart,Heat Map,Highlight Table,Histogram,Pie Chart**,**Treemap**

Q.3 (CO3) What do you understand by Plot() function. Describe its functioning with the help of example.

The plot() function is used to **draw points (markers) in a diagram**. By default, the plot() function draws a line from point to point. The function takes parameters for specifying points in the diagram.

import matplotlib.pyplot as plt  
import numpy as np  
  
xpoints=np.array([1, 8])  
ypoints=np.array([3, 10])  
  
plt.plot(xpoints,ypoints)  
plt.show()

Q.4.(CO3) Describe the concept of Pairplot using Seaborn Library of python.

A pairplot plot a pairwise relationships in a dataset. The pairplot function creates a grid of Axes such that each variable in data will by shared in the y-axis across a single row and in the x-axis across a single column.

import seaborn as sns  
  
sns.set(style="ticks", color\_codes=True)  
iris = sns.load\_dataset("iris")  
g = sns.pairplot(iris)  
  
  
import matplotlib.pyplot as plt  
plt.show()

Q.5.(CO3) What do you understand by SubPlot() function. Describe its functioning with the help of example

The subplot() function takes three arguments that describes the layout of the figure.

The layout is organized in rows and columns, which are represented by the first and second argument.

The third argument represents the index of the current plot.

import matplotlib.pyplot as plt  
import numpy as np  
  
#plot1:  
x=np.array([0, 1, 2, 3])  
y=np.array([3, 8, 1, 10])  
  
plt.subplot(2, 1, 1)  
plt.plot(x,y)  
  
#plot2:  
x=np.array([0, 1, 2, 3])  
y=np.array([10, 20, 30, 40])  
  
plt.subplot(2, 1, 2)  
plt.plot(x,y)  
  
plt.show()

**Part-D 2X10=20**

Q.1 (CO3) Create a code in python using matplotlib library to draw a line from (1,3) to (2,8) , (6,1) and (8,10).

xpoints = np.array([1, 2, 6, 8])

ypoints = np.array([3, 8, 1, 10])

plt.plot(xpoints, ypoints)

plt.show()

Q.2 (CO3) Create a code in python using matplotlib library to draw a Bar graph with labeling of both x-axis and y-axis , tittle of graph, different colors of each bars.

import matplotlib.pyplot as plt

#data

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

h = [10, 8, 12, 4, 7]

c = ['red', 'yellow', 'black', 'blue', 'orange']

#bar plot

plt.bar(x, height = h, color = c)

plt.show()