Brain International School
Vikas Puri, New Delhi

ASSIGNMENT NO. 1

SUBJECT: INFORMATICS PRACTICES CLASS-XII APRIL-MAY '2026

CH 1: Data Handling Using Pandas

1. What is Pandas in Python? How is it different from NumPy?
2. Differentiate between a Series and a DataFrame with examples.
3. What do you understand by 'index' in a Pandas Series and DataFrame? How is it useful?
4. Write the output of the following code:
```
import pandas as pd
s = pd.Series([10, 20, 30], index=['a', 'b', 'c'])
print(s[1])
```
5. Explain the difference between loc[] and iloc[] with examples.
6. Create a Pandas Series to store the names of five fruits. Set custom indexes as the first letters of each fruit. Print the series.
7. Given a list of student names and their marks, create a Series and display the students who scored more than 80.
```
names = ['Ankit', 'Priya', 'Rahul', 'Sneha', 'Divya']
marks = [76, 89, 92, 67, 85]
```
8. Create a DataFrame using a dictionary with the following data and display it:
```
{'Name': ['Amit', 'Riya'], 'Age': [17, 18], 'Class': ['XII', 'XII']}
```
9. Write a program to create a DataFrame from a list of dictionaries as shown below:
```
data = [{'Product': 'Pen', 'Price': 20}, {'Product': 'Pencil', 'Price': 10}]
```
10. Given the following DataFrame:
```
import pandas as pd
df = pd.DataFrame({ 'Name': ['Ali', 'Sara', 'Ravi'],'Marks': [85, 90, 78]})
```
a) Display only the "Name" column.
b) Add a new column "Grade" with values 'A', 'A+', 'B'.
11. Write a program to create a Series using a dictionary of subject marks and print only the keys (subjects).
```
{'Maths': 90, 'English': 85, 'CS': 95}
```
12. Given a DataFrame of students:
```
df = pd.DataFrame({
    'RollNo': [1, 2, 3],
    'Name': ['Anu', 'Vikram', 'Neha'],
    'Marks': [87, 91, 76] })
```
Write code to:
(a) Display the second row using iloc.
(b) Display names of students who scored more than 80.

CH 3 : Data visualization using matplotlib

1. What is the purpose of the pyplot module in Python? Name any two functions commonly used from this module.
2. Differentiate between a line chart and a bar chart. Mention one situation where a histogram is more appropriate than a bar chart.

3. What is the role of the following functions in a plot?
   (i) xlabel()
   (ii) ylabel()
   (iii) title()
4. Write a Python program using matplotlib to plot a line chart for the following data:
   Years = [2018, 2019, 2020, 2021]
   Sales = [250, 270, 300, 310]
5. Write a program to create a bar chart showing the number of students in different streams of Class XII:
   Streams = ['Science', 'Commerce', 'Humanities']
   Students = [70, 50, 40]
6. What is the difference between plt.bar() and plt.hist()? Give examples of use cases for each.
7. Write a Python program to plot a histogram for the following marks scored by students in a test:
   Marks = [45, 36, 75, 62, 50, 90, 82, 56, 70, 68, 55]
   Use appropriate bin ranges.
8. Using pandas and matplotlib, write a program to plot a line chart from the following DataFrame:

```
import pandas as pd
import matplotlib.pyplot as plt
data = {'Month': ['Jan', 'Feb', 'Mar', 'Apr'], 'Profit': [2000, 2200, 2500, 2300]}
df = pd.DataFrame(data)
```

9. Write a Python program to plot a bar chart from the following DataFrame:

```
import pandas as pd
data = {'Product': ['Pen', 'Notebook', 'Pencil'], 'Sales': [150, 120, 180]}
df = pd.DataFrame(data)
```

10. What will the following code output as a plot? Explain briefly.

```
import matplotlib.pyplot as plt
x = [1, 2, 3, 4]
y = [10, 20, 25, 30]
plt.plot(x, y, marker='o', linestyle='--', color='g')
plt.title('Demo Chart')
plt.show()
```