Data Toolkit

Assignment Questions

PW SKILLS

Data Toolkit

1. What is NumPy, and why is it widely used in Python?
2. How does broadcasting work in NumPy?
3. What is a Pandas DataFrame?
4. Explain the use of the groupby() method in Pandas.
5. Why is Seaborn preferred for statistical visualizations?
6. What are the differences between NumPy arrays and Python lists?
7. What is a heatmap, and when should it be used?
8. What does the term “vectorized operation” mean in NumPy?
9. How does Matplotlib differ from Plotly?
10. What is the significance of hierarchical indexing in Pandas?
11. What is the role of Seaborn’s pairplot() function?
12. What is the purpose of the describe() function in Pandas?
13. Why is handling missing data important in Pandas?
14. What are the benefits of using Plotly for data visualization?
15. How does NumPy handle multidimensional arrays?
16. What is the role of Bokeh in data visualization?
17. Explain the difference between apply() and map() in Pandas.
18. What are some advanced features of NumPy?
19. How does Pandas simplify time series analysis?
20. What is the role of a pivot table in Pandas?
21. Why is NumPy’s array slicing faster than Python’s list slicing?
22. What are some common use cases for Seaborn?

Practical

1. How do you create a 2D NumPy array and calculate the sum of each row?
2. Write a Pandas script to find the mean of a specific column in a DataFrame.
3. Create a scatter plot using Matplotlib.
4. How do you calculate the correlation matrix using Seaborn and visualize it with a heatmap?
5. Generate a bar plot using Plotly.
6. Create a DataFrame and add a new column based on an existing column.
7. Write a program to perform element-wise multiplication of two NumPy arrays.
8. Create a line plot with multiple lines using Matplotlib.
9. Generate a Pandas DataFrame and filter rows where a column value is greater than a threshold.
10. Create a histogram using Seaborn to visualize a distribution.
11. Perform matrix multiplication using NumPy.
12. Use Pandas to load a CSV file and display its first 5 rows.
13. Create a 3D scatter plot using Plotly.