1. Analyzing temperature data stored in a NumPy array. The data contains missing values represented by np.nan. Which function can you use to replace these missing values with the average temperature?
2. You are working with a Pandas DataFrame that contains employee records. You want to find employees who have a salary greater than $50,000 and belong to the IT department. Which command should you use?
3. Rename the columns of a DataFrame df from ['A', 'B', 'C'] to ['X', 'Y', 'Z']. Which Pandas method should you use?
4. Which Python library provides a high-level interface for working with Web APIs to gather data?
5. Working on a project that requires downloading datasets from Open Data Portals like Kaggle or Data.gov. What should you check before using the data?
6. Extract job listings from a webpage that loads content dynamically with JavaScript. Which approach should you take?
7. Implement a Python program that performs the following NumPy operations:

a. Joins two arrays.

b. Splits an array into three parts and sorts an array in ascending order

1. Write a Pandas program that:

* Reads a dataset and selects specific columns
* Filters rows based on a condition
* Sorts the DataFrame based on a column

1. Describe about array slicing and do the following: (1 mark)
2. Given the array arr = np.array([10, 20, 30, 40, 50, 60, 70, 80]), extract elements from index 2 to 5
3. Negative Slicing: extract elements from index -2 to -5
4. Illustrate on column operations in pandas’ data frame with an example
5. Discuss in detail about stacking and its types. Justify how it is differentiated with an example.
6. Create a **DataFrame** with the following data and display it:

|  |  |  |
| --- | --- | --- |
| Name | Age | Marks |
| Alice | 22 | 85 |
| Bob | 24 | 90 |
| Charlie | 23 | 88 |

1. Select and display the "Marks" column and retrieve the row where the Name is "Bob".
2. From the DataFrame, filter students who scored more than 85 and sort them by Age in ascending order.
3. Assign grades based on the marks using the following criteria:
   * Marks >= 90 → "A"
   * Marks >= 85 and < 90 → "B"

Marks < 85 → "C"

1. You are working on a data science project and need to classify images of handwritten digits. Which phase of the data science process involves splitting the dataset into training and testing sets?
2. How would you reshape a NumPy array arr of shape (4, 3) into a shape of (2, 6)?
3. You have two NumPy arrays, a = np.array([1, 2, 3]) and b = np.array([4, 5, 6]). How would you join them into a single array [1, 2, 3, 4, 5, 6]?
4. Working with a 2D NumPy array and need to extract only the second column, which indexing technique should you use?