📌 Assignment: Introduction to Python Pandas 🐍

🎯 **Objective:** The purpose of this assignment is to introduce students to the basics of the Pandas library, focusing on data structures and fundamental operations.

📜 **Instructions:**

1. Write Python scripts for each task.
2. Use appropriate comments in your code.
3. Save your code in a Notebook (.ipynb) file.

📝 Task 1: Introduction to Pandas Data Structures

- 📌 Import the Pandas library.
- 📌 Create a Pandas Series with at least 5 elements (e.g., numerical or string values).
- 📌 Display the Series.
- 📌 Create a Pandas DataFrame with at least 3 columns and 5 rows (you can manually enter data).
- 📌 Display the DataFrame.

🛠️ Task 2: Basic DataFrame Operations

- 🔍 Retrieve the first 3 rows of the DataFrame.
- 🔍 Retrieve the last 2 rows of the DataFrame.
- 🔍 Display the column names and index values.
- 🔍 Select a specific column and display its values.
- 🔍 Select a specific row using `.loc[]` and `.iloc[]`.

📊 Task 3: DataFrame Descriptive Statistics

- 📌 Find the shape (number of rows and columns) of the DataFrame.
- 📌 Display summary statistics using `.describe()`.
- 📌 Check the data types of each column using `.dtypes`.
- 📌 Find the mean of a numerical column.

🔄 Task 4: Data Manipulation

- ➕ Add a new column to the DataFrame.
- ❌ Remove a column from the DataFrame.
- 🔄 Rename any one column.
- 🔼 Sort the DataFrame based on a column in ascending order.
- 🔽 Sort the DataFrame based on a column in descending order.

📂 Task 5: Grouping and Filtering Data

- 🔹 Use `.groupby()` to group data based on a categorical column and display aggregate values.
- 🔎 Filter the DataFrame to display rows where a numerical column has a value greater than a specified number.
- 🔎 Filter the DataFrame to display rows where a string column contains a specific word or letter.

📌 Submission Guidelines:

- ✅ Ensure your code is well-commented and properly formatted.
- ✅ Save your file as `pandas_assignment.ipynb` (if using Jupyter Notebook).
- ✅ Submit your screenshot of the tasks before the deadline.

🌟 Bonus Task (Optional):

- 🔗 Merge two DataFrames based on a common column.

🚀 Happy Coding! 🎉