



OXZON.AI

AI/ML Interns Weekly Plan

Python Learning Map - Week -06

Week 06 - Data Manipulation and Analysis with Pandas

Day 1

User Story - 0039 - Grouping and Aggregation

- **Topics to Cover:**

- Understanding the `groupby` function in Pandas.
- Aggregation methods (sum, mean, count, etc.).
- Custom aggregation functions with `agg()`.

- **Learning Activities:**

Install Pandas (if not already installed):

bash

Copy code

`pip install pandas`

- Explore examples of grouping data by one or more columns.

- **Practice:**

- Load a sample dataset (e.g., sales data).
- Use `groupby()` to calculate the total sales per category.
- Experiment with different aggregation functions using `agg()`.

Day 2

User Story - 0040 -Merging and Joining DataFrames

- **Topics to Cover:**

- Understanding different types of joins (inner, outer, left, right).

- Using `merge()` and `join()` functions.
 - Concatenating DataFrames with `concat()`.
 - **Learning Activities:**
 - Explore how to combine multiple DataFrames to enrich data analysis.
 - Discuss use cases for merging vs. joining.
 - **Practice:**
 - Create two or more DataFrames with related data.
 - Perform different types of joins and concatenations.
 - Analyze the results to understand the impact of each method.
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Day 3

User Story - 0041 -Pivot Tables and Reshaping Data

- **Topics to Cover:**
 - Creating pivot tables using `pivot_table()`.
 - Understanding the difference between `pivot()` and `pivot_table()`.
 - Reshaping DataFrames with `melt()` and `stack()/unstack()`.
 - **Learning Activities:**
 - Explore real-world scenarios for using pivot tables (e.g., summarizing sales data).
 - Discuss the importance of reshaping data for analysis.
 - **Practice:**
 - Create a pivot table to summarize sales data by product and region.
 - Reshape a DataFrame using `melt()` to prepare data for analysis.
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Day 4

User Story - 0042 - Data Manipulation Project - Part 1

- **Project Tasks:**
 - **Choose a project topic:** Identify a dataset that requires data manipulation (e.g., sales data, survey data).
 - **Data cleaning:** Clean the dataset by handling missing values and correcting data types.
- **Planning:**
 - Outline the data manipulation steps needed for your analysis:
 - Grouping and aggregation.
 - Merging/joining additional datasets if needed.
 - Creating pivot tables for summarization.

- **Implementation:**
 - Begin implementing the data manipulation tasks as outlined in your plan.

Day 5

User Story - 0043 -Data Manipulation Project - Part 2

- **Project Tasks:**
 - **Complete the Data Manipulation:**
 - Finalize grouping, merging, and pivoting tasks.
 - Create visualizations (if applicable) to present the findings.
- **Documentation:**
 - Write a report or presentation that includes:
 - The purpose of the project.
 - Methodology: Steps taken during data manipulation.
 - Results: Key insights derived from the analysis.
- **Presentation:**
 - Present your project findings to peers or mentors, discussing challenges faced and insights gained from the data.

Thank You