Data Analysis Assessment Tasks (Revised for Excel)

Objective:

Assess your ability to understand, manipulate, analyze, and report on data using Python and Excel.

Background:

You will be working with an Excel dataset that tracks the addition, updating, and deletion of load records, each with timestamps. The dataset includes information about load origins, destinations, truck types, and price ranges. We are interested in identifying quick-selling loads as an indication of demand.

Tasks:

1. **Data Schema Understanding**:
    - Describe the structure of the Excel sheet.
    - Identify key fields and their roles in tracking load records.
2. **Data Manipulation and Analysis**:
    - Using Python, filter out all records representing new additions.
    - Write a Python script to extract all records marked as deleted after a specific date.
    - Analyze trends in data additions, updates, and deletions. Summarize your findings.
    - Identify patterns or anomalies in price updates and time spans of added and deleted loads. Explain these findings in the context of the data.
3. **Python Script Efficiency and Optimization**:
    - Demonstrate the efficiency of your Python scripts.
    - Explain any optimization techniques you used.
4. **Reporting and Visualization**:
    - Create a report or dashboard summarizing your analysis in Python.
    - Include visual representations of trends and patterns identified.
5. **Advanced Python Techniques (Optional)**:
    - If applicable, demonstrate your knowledge of advanced Python features in your scripts or analysis.

Deliverables:

- A document containing all Python scripts written for tasks 2 and 3, along with explanations of the logic behind each script.
- A summary report or dashboard as described in task 4.
- (Optional) A document explaining any advanced Python techniques used, with examples from the dataset.

Deadline:

- The assessment is due by December 14, 9 pm. The sooner you send your answers, the better.

Feel free to ask questions if you have any during the assessment.