**Data Analyst Assignment: Customer & Operations Analysis**

**Instructions**

* Use the provided datasets (orders1.csv, customers.csv, inventory.csv, delivery\_performance.csv, discount\_campaign.csv,sales\_data.csv).
* Solve the following tasks and submit a report with insights, visualizations, and SQL queries.
* Clearly explain your thought process and business implications of your findings.

**1. SQL Assignment: Customer Purchase & Delivery Analysis**

**Objective**

Understand customer retention, purchasing trends, and delivery performance.

**Tasks**

1. Identify customers who **haven't placed an order in the last 60 days** but had at least 2 orders before.
2. Calculate the **average time between consecutive orders** for repeat customers.
3. Determine the **top 10% of customers by total spend** and their average order value.
4. Analyze **delivery time efficiency** by calculating the percentage of on-time deliveries per region.

**Dataset: orders.csv, delivery\_performance.csv**

**2. Excel Assignment: Sales & Inventory Dashboard**

**Objective**

Analyze sales, inventory levels, and out-of-stock patterns.

**Tasks**

* Calculate **monthly revenue growth**, **average order value**, and **customer retention rate**.
* Identify **top-selling categories** and **most returned products**.
* Analyze **inventory levels** to find **products frequently out of stock**.
* Create a **dashboard** displaying revenue trends, product demand, and stock levels.

**Dataset: sales\_data.csv, inventory.csv**

**3. Python Assignment: Customer Segmentation & Demand Patterns**

**Objective**

Segment customers based on purchasing behavior and detect demand trends.

**Tasks**

* **Segment customers** into high-value, frequent, and occasional buyers using **K-Means clustering**.
* **Analyze sales trends** to identify peak ordering periods.
* **Visualize customer segments** and order patterns using graphs.

**Dataset: customers.csv, sales\_data.csv**

**4. Business Case Study: Discount Impact Analysis**

**Objective**

Analyze the impact of discount strategies on profitability and retention.

**Tasks**

* Compare **customer spending behavior before and after** discounts.
* Identify **customer segments most responsive** to discounts.
* Recommend a strategy to **maximize revenue while maintaining profitability**.

**Dataset: discount\_campaign.csv**

**Submission Guidelines**

1. **SQL Queries**: Submit a .sql file or a text document with your queries.
2. **Excel Analysis**: Submit an .xlsx file with pivot tables, charts, and a dashboard.
3. **Python Analysis**: Submit a .py script with your code and visualizations.
4. **Final Report**: A PDF report summarizing key insights, methodologies, and recommendations.