

# 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.
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## 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

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## 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

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## 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

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## 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

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### **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.