# Case Study 1: Exploring Customer Data for a Retail Company

### Problem Statement

# A retail company wants to explore its customer data to understand customer demographics and purchase patterns. The company has data related to customers’ age, gender, location, and purchase history, and they wish to analyze this data to identify key insights, such as:

# Who their most valuable customers are.

# What demographic group spends the most.

# How purchase patterns differ by age, gender, and location.

# Potential target groups for marketing campaigns.

# Opportunities for personalized marketing or product recommendations.

### Goal

# Using customer data, the retail company aims to:

# Segment customers based on demographics and purchasing behavior.

# Understand customer lifetime value (CLV) across different segments.

# Identify trends in purchasing patterns based on age, gender, and location.

# Drive data-driven decisions on marketing, customer engagement, and product development.

#### *The technologies to be used to solve this problem are Python, Pandas, data analysis, data visualization, and basic statistics.*

### Steps to solve the case study as follows:

# **Data Collection:** The retail company already has access to customer information such as:

# **Age**: Age group of the customer.

# **Gender**: Gender of the customer.

# **Location**: Customer’s geographical location (e.g., city).

# **Purchase History**: Information about purchase amount, frequency, and categories of products purchased.

# **Data Preprocessing:** Clean the data to handle any missing or erroneous values, and normalize formats where necessary (e.g., standardize location names).

# **Data Analysis:** Analyze the customer demographics, such as the distribution of customers by age, gender, and location, and their corresponding purchase behaviors. Key metrics to explore include:

# **Average Purchase Value** by age and gender.

# **Total Purchase Amount** by location.

# **Churn Rate** and customer loyalty based on purchase frequency.

# **Insights and Business Recommendations: (Your view points based on data analysis/report)**

# Create personalized offers for the most valuable customers.

# Identify geographic locations with high-value customers to focus marketing efforts.

# Target specific age or gender groups with tailored campaigns based on their spending habits.

#### Below is the sample answer(Insight 1) regarding “**Point: 4. Insights and Business Recommendations**”

***Answer:***

***Insight 1:*** *Gender-based Trends  
 Females show a higher frequency of purchases but spend less per transaction compared to males.*

* ***Recommendation****: Focus loyalty programs and discounts on female customers to encourage higher average spend per purchase.*

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