Scenario 1: Understanding the Business Goal in EDA & Data Collection

Step 1: Understand the Business Goal

Business Case:

A retail company wants to analyze customer purchase behavior to improve its marketing strategy. The goal is to identify key factors that influence sales and customer retention.

Key Objectives:

1. Identify high-value customers based on purchase patterns.
2. Determine which product categories drive the most sales.
3. Understand seasonal trends in purchases.
4. Recommend personalized promotions to increase retention.

Step 2: Questions a Data Analyst Would Ask & Client Responses

Question	Client Response
What are the key performance indicators (KPIs) for sales success?	Total revenue, average order value, customer retention rate.
Do you have historical sales data?	Yes, for the past 3 years.
What customer details do you collect?	Name, age, gender, location, purchase history.
Do you track product categories and inventory?	Yes, we have SKU-level sales data.
Do you have any seasonal sales trends?	Yes, higher sales during holidays and discounts.
Are there any known issues in customer retention?	Yes, drop-offs after 3 months of inactivity.

Step 3: Sample Data Collection

Customer Information Table

customer_id	name	age	gender	location
101	Alice	29	Female	New York
102	Bob	35	Male	Los Angeles
103	Charlie	42	Male	Chicago
104	David	28	Male	San Francisco

Transaction Data Table

transaction_id	customer_id	date	product_category	amount
1	101	2024-01-10	Electronics	500
2	102	2024-02-15	Clothing	150
3	103	2024-03-05	Groceries	75
4	101	2024-04-20	Electronics	1200

Product Information Table

product_id	product_name	category	price
201	Laptop	Electronics	1000
202	T-Shirt	Clothing	50
203	Apples (1kg)	Groceries	5
204	Headphones	Electronics	200

Step 4: Next Steps

Once the business goal and data requirements are clear, the next steps involve:

1. **Data Cleaning:** Handling missing values, duplicates, and formatting inconsistencies.
2. **Exploratory Data Analysis (EDA):** Visualizing customer purchase patterns, sales trends, and retention rates.
3. **Feature Engineering:** Creating meaningful features such as "average purchase value per customer."
4. **Building Insights:** Identifying actionable recommendations based on data trends.