**Project Brief: Instacart Market Basket Analysis**

**Overview:**

The Instacart Market Basket Analysis project aims to explore and analyze customer shopping behavior using transactional data from the Instacart platform. This dataset provides a rich source of information that can be used to derive valuable insights for optimizing operations and enhancing customer experiences.

**Dataset Description:**

The project utilizes the following datasets:

* **aisles.csv** - Contains information about different product categories (aisles).
* **departments.csv** - Provides details about various departments within the store.
* **order\_products\_\_prior.csv** - Includes information about products included in prior customer orders.
* **order\_products\_\_train.csv** - Contains details about products in the training set of customer orders.
* **orders.csv** - Provides information about individual orders and customers.
* **products.csv** - Contains details about products, including aisle and department IDs.

**Data Dictionary:**

Refer to the provided data dictionary for a detailed description of each dataset and its columns.

**Project Tasks:**

**Task 1**:

* Data Import and Cleaning
* Import the datasets into SQL Server.
* Identify and handle missing values.
* Ensure data consistency and integrity.
* Generate the ERD for the various tables showing the relationship between each table.
* Apply necessary data transformations.

**Task 2:**

* Exploratory Data Analysis (EDA) and Descriptive Statistics
* Conduct exploratory data analysis to understand the characteristics of the data.
* Generate descriptive statistics to gain initial insights.

**Task 3: Data Analysis and Insights**

**1. Market Basket Analysis:**

**Analysis:** Identify frequently co-occurring products in orders to improve store layout and marketing strategies.

**Questions:**

* What are the top 10 product pairs that are most frequently purchased together?
* What are the top 5 products that are most commonly added to the cart first?
* How many unique products are typically included in a single order?

**2. Customer Segmentation:**

**Analysis**: Group customers based on their purchasing behavior for targeted marketing efforts.

**Questions:**

* Can we categorize customers based on the total amount they've spent on orders?
* What are the different customer segments based on purchase frequency?
* How many orders have been placed by each customer?

**3. Seasonal Trends Analysis:**

**Analysis:** Identify seasonal patterns in customer behavior and product sales.

**Questions:**

* What is the distribution of orders placed on different days of the week?

**4. Customer Churn Prediction:**

**Analysis:** Predict which customers are most likely to stop using the service in the near future.

**Questions:**

* Can we identify customers who haven't placed an order in the last 30 days?

**5. Product Association Rules:**

**Analysis:** Identify rules or patterns in customer behavior indicating which products are frequently bought together.

**Questions:**

* What are the top 5 product combinations that are most frequently purchased together?
* Can we find products that are often bought together on weekends vs. weekdays?

**Task 4: Visualization and Reporting**

* Create visualizations to present key findings.
* Generate reports summarizing insights.
* Deliverables:
* SQL scripts for data import, cleaning, and analysis.
* Report summarizing key findings and insights.
* Optional: Visualizations to support the analysis.