**Business Problem Statement: Bank Customer Churn Analysis**

Customer churn is a significant challenge for financial institutions, impacting revenue and profitability. Understanding the key drivers of churn can help banks develop effective retention strategies. This project aims to analyze customer behavior, segment customers based on their banking activities, and uncover patterns that distinguish churned customers from retained ones.

Using SQL, students will perform **data exploration, advanced querying, and visualization in Power BI** to generate meaningful insights. They will apply **aggregate functions, conditional statements, subqueries, CTEs, window functions, and joins** to answer critical business questions.

**Key Business Questions to Solve:**

**1. Understanding Customer Churn**

✅ What attributes (e.g., credit score, balance, tenure, number of products) are most common among churners?  
✅ What is the overall churn rate? How does it vary across demographics?  
✅ Are customers with higher balances more likely to stay or leave?

**2. Customer Segmentation & Behavioral Analysis**

✅ Can customers be grouped into different segments based on their banking behavior?  
✅ How do high-value customers (e.g., high balance, multiple products) compare to low-value customers?  
✅ What proportion of churned customers had multiple products vs. single products?

**3. Geographic & Demographic Trends**

✅ How does churn rate differ by country (France, Spain, Germany)?  
✅ Do older customers have a lower churn rate compared to younger customers?  
✅ Is there a significant difference in churn between male and female customers?

**4. Customer Engagement & Activity Levels**

✅ Do inactive members have a higher churn rate than active members?  
✅ What is the relationship between credit score and churn?  
✅ Are customers with credit cards less likely to churn?

**5. Financial & Revenue Insights**

✅ What is the average balance and salary of churned vs. retained customers?  
✅ Are customers with lower credit scores more likely to churn?  
✅ Does tenure (years with the bank) influence churn rates?

**Technical SQL Applications Required:**

✔ **Basic SQL**: Aggregate functions (SUM, AVG, COUNT, MAX, MIN), CASE statements  
✔ **Intermediate SQL**: Joins, subqueries, filtering (WHERE, GROUP BY, HAVING)  
✔ **Advanced SQL**:

* **Common Table Expressions (CTEs)**: To break down complex queries
* **Window Functions**: To calculate rankings, moving averages, and churn trends over time
* **Nested Queries**: To compare active vs. inactive customers

**Final Deliverables:**

📌 **Database Setup**: Creating tables and loading data into a database  
📌 **SQL Queries & Insights**: Extracting meaningful insights using SQL  
📌 **Data Visualization**: Interactive Power BI dashboard to present findings  
📌 **Summary Report**: A well-documented report explaining key trends, insights, and recommendations