# MIS 443 Group Project 1: SQL Challenge

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## Project: Data Bank Case Study Analysis

The objective of this project is to apply SQL skills to analyze real-world datasets by addressing practical business questions from the Data Bank case study. The project involves writing SQL queries, extracting meaningful insights, and presenting findings.

## Case Study Overview: Data Bank

Data Bank is a digital-only banking platform that integrates banking activities and cloud data storage allocation. Customers’ storage limits are linked to their account balances.

### Data Sources

1. Regions Table - Contains information about banking nodes worldwide.
2. Customer Nodes Table - Tracks customer allocations to banking nodes.
3. Customer Transactions Table - Stores deposits, withdrawals, and purchases.

## Deliverables

### A. Customer Nodes Exploration

#### How many unique nodes are there on the Data Bank system?

SQL Query:

A close-up of a computer code

AI-generated content may be incorrect.A close up of a computer screen

AI-generated content may be incorrect.

Insight: The system operates with 5 distinct banking nodes globally, likely corresponding to regional divisions for data security and customer distribution. This is crucial as it ensures financial data protection and balanced customer distribution across regions.

#### What is the number of nodes per region?

SQL Query:

A computer code with text

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.

Insight: This suggests a balanced infrastructure, ensuring redundancy and security across all regions. If the regions are misnamed, it could lead to issues in tracking financial activities properly, which should be corrected for accurate data analysis.

#### How many customers are allocated to each region?

SQL Query:

A computer code with text

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AI-generated content may be incorrect.

Insight: The customer distribution across regions is balanced, with Australia (Oceania) having the highest count at 770, while Europe has the lowest at 616. This suggests that while overall distribution is even, there may be stronger engagement in Australia, and an opportunity exists to implement targeted marketing strategies in Europe to boost customer acquisition and retention.

#### How many days on average are customers reallocated to a different node?

SQL Query:

A screenshot of a computer code

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.

Insight: An average of 24 days for customer reallocation to a different node suggests that customers are moved regularly, likely for security and system optimization. This frequency helps protect customer data from being stored in one location for too long but might cause minor disruptions for customers if they rely on a stable node for their banking activities.

#### What is the median, 80th, and 95th percentile for reallocation days per region?

SQL Query:

A screenshot of a computer code

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.

Insight An average of 24 days for customer reallocation indicates that customers are moved to a new node regularly, likely for security and system optimization. This ensures that data is not stored in one location for too long, but it may cause minor disruptions for customers who prefer stability in their banking services.

### B. Customer Transactions Exploration

#### What is the unique count and total amount for each transaction type?

SQL Query:

A computer code with text

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Insight: Deposits are the most common transaction type, making up the largest share of total transaction volume. This suggests that customers primarily use Data Bank as a savings or funding account. Since purchases and withdrawals are relatively lower, customers may be holding their funds in the system rather than spending frequently. This trend could indicate opportunities to encourage more spending activity, such as cashback promotions or rewards for purchases.

#### What is the average historical deposit count and amount for all customers?

SQL Query:

A computer code with text

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AI-generated content may be incorrect.

Insight: On average, customers deposit 5 times with an average deposit amount of $509. This indicates that customers deposit money regularly, likely in alignment with payroll cycles (monthly or bi-weekly). If Data Bank wants to increase deposit frequency or amounts, they could consider offering higher interest rates for larger balances, automatic deposit incentives, or tiered savings plans.

#### How many customers make more than one deposit and at least one purchase/withdrawal per month?

SQL Query:

A screenshot of a computer code

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

Insight: The number of customers making multiple deposits and transactions peaked in the first three months but declined in month 4. This could indicate seasonal trends, economic factors, or changes in promotional incentives.

## Final Summary

The analysis reveals customer behavior trends, security policies, and banking behaviors, revealing areas for improvement. It also presents growth strategies through customer engagement, marketing, and financial forecasting. The report emphasizes the business impact of SQL-based data analysis and suggests Data Bank should focus on understanding regional policies, addressing security concerns, and catering to customer preferences for effective improvements.