Data Analytics with SQL

(Capstone Project)

1.

Database Design for a Microfinance Bank

Background:

Amdor Microfinance Bank is a leading financial institution in Lagos, Nigeria, dedicated to providing financial services to small businesses and individuals. The bank aims to support financial inclusion by offering savings accounts, loans, and transaction services to its customers. As the bank expands, it requires a robust database system to manage its customer information, bank transactions, and loan details efficiently.

Objective:

The objective of this capstone project is to design and implement a PostgreSQL database for Amdor Microfinance Bank. The database will store customer information, track bank transactions, manage loans, and record loan payments.

1.

Database Structure

- Create a database named amdor_microfinance_bank.
- Create tables to store customers, bank transactions, loans, and loan payments information.

Customers Table: customer_id, name, gender, date_of_birth, location, email, phone_number, registration_date, exit_date

Bank Transactions Table: transaction_id , customer_id , transaction_date, transaction_type (credit or debit), transaction_detail (incoming transfer, bill payment, or outgoing transfer), amount, status (failed or successful)

Loans Table: loan_id, loan_date, customer_id , amount, due_date

Loan Payments Table: payment_id, loan_id, payment_date

1.

Deliverables

- A well created database having the necessary tables, constraints and information. Tables should contain a good number of entries
- An entity relationship (ER) diagram
- A separate sql script for database creation and database query/analysis
- At least 5 queries, which includes a query to see the status of loans (on time payment, late payment or overdue)
    - Hint: Using CASE WHEN, set conditions for the loan status
    - On time payment: when the payment date is not greater than the due date
    - Late payment: when the payment that is greater than the due date
    - Overdue: when the payment date is null and the current date is greater than the due date

1.

Deliverables

- Write a query to get the total number of customers based on the their loan status
- At least 2 views, which includes a view to see only credit transactions
- At least 2 procedures, which includes a procedure to update customer phone number
- At least 2 functions, which includes a function that returns results for customers living in a specified city (e.g. Ikeja)
- A neat script
- Add comments where needed
- A well detailed report covering the data dictionary, reason for using specific constraints, methodology, and explanation of queries

2.

Motor Vehicle Thefts in New Zealand

Background:

The New Zealand Police Department maintains a Vehicle of Interest database, which includes records of stolen vehicles. This case study involves analyzing six months of data to identify patterns and insights about vehicle thefts. Each record in the database represents a single stolen vehicle and includes information about the vehicle type, make, year, color, date stolen, and the region where it was stolen.

Objective:

The objective of this case study is to perform a comprehensive analysis of the stolen vehicle data to answer the following questions:

- On what day of the week are vehicles most often and least often stolen?

2.

Motor Vehicle Thefts in New Zealand

- What types of vehicles are most often and least often stolen? Does this vary by region?
- What is the average age of the vehicles that are stolen? Does this vary based on the vehicle type?
- Which regions have the most and least number of stolen vehicles? What are the characteristics of these regions?

2.

Deliverables

- A well created databases with the necessary tables imported
- An entity relationship (ER) diagram
- Query the database for more insights that you think would be of help to the police department
- Although not a criteria, views, procedures, and functions are a plus
- Design a Power BI dashboard to visualize important findings
- A neat script
- Add comments where needed
- A well detailed report covering the data dictionary, reason for using specific constraints, methodology, and explanation of queries

Good luck champ!