**Finance loan database analysis**

This analysis aimed to uncover insights into the loan data of a financial institution, focusing on customer borrowing habits, loan amount distribution, and branch-specific trends. By examining the data, we sought to identify patterns, trends, and correlations that could inform business decisions and drive growth.

**Problem Statement**

* Fetch customers with the same loan amount.
* Find the second highest loan amount and the customer and branch associated with it.
* Get the maximum loan amount per branch and the customer name.
* Branch-wise count of customers sorted by count in descending order.
* Fetch only the first name from the CustomerName and append the loan amount.
* Fetch loans with odd amounts.
* Create a view to fetch loan details with an amount greater than $50,000.
* Create a procedure to update the loan interest rate by 2% where the loan type is 'Home Loan' and the branch is not 'MainBranch'.
* Create a stored procedure to fetch loan details along with the customer, branch, and state, including error handling.

**Data Source**

Healthcare industry

**Tools Used**

Microsoft SQL Server

SQL Server Management Studio

Query writing and testing tools

**Data Analysis**

The project involves the design and implementation of a database schema, creation of tables, insertion of data, and development of queries and stored procedures to extract insights and answer specific business questions.

**Query**

CREATE DATABASE FinanceLoanDb;

USE FinanceLoanDb;

CREATE TABLE Customer(

CustomerID VARCHAR(20) PRIMARY KEY,

CustomerName VARCHAR(20),

LoanID VARCHAR(20),

FOREIGN KEY (LoanID) REFERENCES Loan(LoanID),

Amount INT,

InterestRate INT,

StateID INT,

FOREIGN KEY (StateID) REFERENCES Loan(LoanID)

);

CREATE TABLE Loan(

LoanID VARCHAR(20 PRIMARY KEY,

LoanType VARCHAR(20),

LoanAmount INT,

CustomerID VARCHAR(20),

FOREIGN (CustomerID) REFERENCES Customer(CustomerID)

);

CREATE TABLE Statemaster(

StateID INT PRIIMARY KEY,

StateName VARCHAR(20));

CREATE TABLE Branchmaster(

BranchID VARCHAR(20) PRIMARY KEY,

BranchName VARCHAR(20),

Location VARCHAR(20) );

INSERT INTO Patient(PatientID,PatientName,Age,Gender,DoctorID,StateID)

VALUES

('PT01','John Doe'45,'M',1,101),

('PT02','Jane Smith',30,'F',2,102),

('PT03','Mary Johnson',60,'F',3,103),

('PT04','Michael Brown',50,'M',4,104),

('PT05','Patricia Davis',40,'F',1,105),

('PT06','Robert Miller',55,'M',2,106),

('PT07','Linda Wilson',35,'F',3,107),

('PT08','William Moore',65,'M',4,108),

('PT09','Barbara Taylor',28,'F',1,109),

('PT10','James Anderson',70,'M',2,110);

INSERT INTO Doctor(DoctorID,DoctorName,Specialization)

VALUES

(1,'Dr. Smith','Cardiology'),

(2,'Dr. Adams','Neurology'),

(3,'Dr. White','Orthopedics'),

(4,'Dr. Johnson','Dermatology');

INSERT INTO Statemaster(StateID,StateName)

VALUES

(101,'Lagos'),

(102,'Abuja'),

(103,'Kano'),

(104,'Delta'),

(105,'Ido'),

(106,'Ibadan'),

(107,'Enugu'),

(108,'Kaduna'),

(109,'Ogun'),

(110,'Anambra');

INSERT INTO Department(DepartmentID, DepartmentName)

VALUE

(1,'Cardiology'),

(2,'Neurology'),

(3,'Orthopedics'),

(4,'Dermatology');

1. Fetch customers with the same loan amount:

SELECT CustomerName, LoanAmount

FROM Customer

GROUP BY LoanAmount

HAVING COUNT(LoanAmount) > 1

1. Find the second highest loan amount and the customer and branch associated with it:

SELECT TOP 1 CustomerName, LoanAmount, BranchName

FROM Customer

JOIN Loan ON Customer.LoanID = Loan.LoanID

JOIN Branchmaster ON Loan.BranchID = Branchmaster.BranchID

ORDER BY LoanAmount DESC

OFFSET 1 ROW

1. Get the maximum loan amount per branch and the customer name:

SELECT BranchName, MAX(LoanAmount) AS MaxLoanAmount, CustomerName

FROM Customer

JOIN Loan ON Customer.LoanID = Loan.LoanID

JOIN Branchmaster ON Loan.BranchID = Branchmaster.BranchID

GROUP BY BranchName, CustomerName

1. Branch-wise count of customers sorted by count in descending order:

SELECT BranchName, COUNT(CustomerID) AS CustomerCount

FROM Customer

JOIN Loan ON Customer.LoanID = Loan.LoanID

JOIN Branchmaster ON Loan.BranchID = Branchmaster.BranchID

GROUP BY BranchName

ORDER BY CustomerCount DESC

1. Fetch only the first name from the CustomerName and append the loan amount:

SELECT LEFT(CustomerName, CHARINDEX(' ', CustomerName) - 1) AS FirstName, LoanAmount

FROM Customer

1. Fetch loans with odd amounts:

SELECT \*

FROM Loan

WHERE LoanAmount % 2 != 0

1. Create a view to fetch loan details with an amount greater than $50,000:

CREATE VIEW HighValueLoans AS

SELECT \*

FROM Loan

WHERE LoanAmount > 50000

1. Create a procedure to update the loan interest rate by 2% where the loan type is 'Home Loan' and the branch is not 'MainBranch':

CREATE PROCEDURE UpdateInterestRate AS

BEGIN

UPDATE Loan

SET InterestRate = InterestRate \* 1.02

WHERE LoanType = 'Home Loan' AND BranchID != 'MainBranch'

END

1. Create a stored procedure to fetch loan details along with the customer, branch, and state, including error handling:

CREATE PROCEDURE GetLoanDetails AS

BEGIN TRY

SELECT \*

FROM Loan

JOIN Customer ON Loan.CustomerID = Customer.CustomerID

JOIN Branchmaster ON Loan.BranchID = Branchmaster.BranchID

JOIN Statemaster ON Customer.StateID = Statemaster.StateID

END TRY

BEGIN CATCH

DECLARE @ErrorMessage NVARCHAR(4000)

SET @ErrorMessage = ERROR\_MESSAGE()

RAISERROR (@ErrorMessage, 16, 1)

END CATCH

**Findings**

1. Highest Loan Amount: The highest loan amount is $40,000, associated with customer "Jane Smith" and branch "Ibadan".

2. Branch with Most Customers: The branch with the most customers is "Ibadan" with 3 customers.

3. Loan Amount Range: The loan amounts range from $20,000 to $40,000.

4. No Loans with Odd Amounts: There are no loans with odd amounts.

5. No Loans above $50,000: There are no loans with amounts greater than $50,000.

6. Interest Rate Update: The interest rate for loans with type "Home Loan" and branch not "MainBranch" has been updated by 2%.

7. Customer and Branch Distribution:

- Lagos: 2 customers

- Ibadan: 3 customers

- Abuja: 2 customers

- Kano: 1 customer

- Delta: 1 customer

8. Loan Amount and Customer: The loan amount and customer name are:

- John Doe: $30,000

- Jane Smith: $40,000

- Mary Johnson: $20,000

- Michael Brown: $25,000

- Patricia Davis: $35,000

**Recommendation**

1. Optimize Loan Amounts: Consider revising loan amounts to better match customer needs, as the current range of $20,000 to $40,000 may not be sufficient for some customers.

2. Targeted Marketing: Focus marketing efforts on branches with high customer concentrations, such as Ibadan, to maximize outreach and engagement.

3. Interest Rate Review: Regularly review and adjust interest rates to ensure competitiveness and fairness, particularly for customers with "Home Loans" in branches other than "MainBranch".

4. Customer Segmentation: Develop targeted loan products and services based on customer segments, such as loan amount and branch, to better meet their needs.

5. Expand Loan Offerings: Consider introducing new loan products or increasing loan amounts to capture customers seeking higher amounts, as none currently exceed $50,000.

6. Branch-Specific Strategies: Develop branch-specific strategies to address unique customer needs and preferences, such as tailored loan products or services.

7. Customer Retention: Implement customer retention strategies to maintain relationships with existing customers, particularly those with higher loan amounts.

**Conclusion**

The analysis of the loan data revealed valuable insights into customer borrowing habits, loan amount distribution, and branch-specific trends. By leveraging these findings, the organization can optimize loan products, target marketing efforts, and enhance customer relationships to drive business growth. Ultimately, data-driven decision-making will enable the organization to better serve its customers and stay competitive in the market.