Bank Management System

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Presentation Agenda

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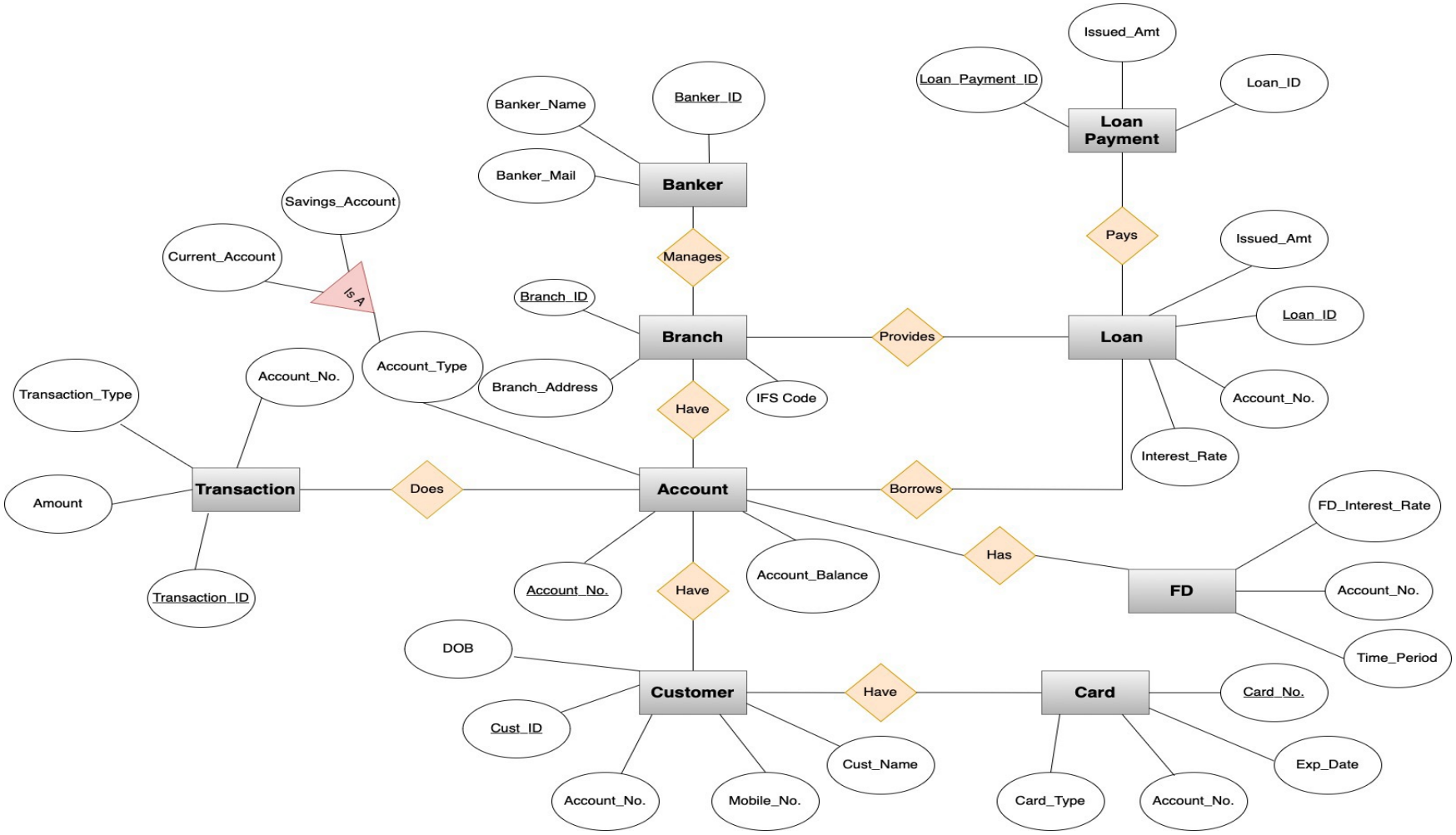
Introduction

The bank management system database is like a big storage room where the bank keeps all important information. This includes things like details about customers, their accounts, transactions, loans, and cards. It helps the bank do its job smoothly by managing things like opening accounts, handling transactions, giving out loans, and managing cards. The database also makes sure that all the information is kept safe and follows the rules set by the government. It can also create useful reports and analyse data to help the bank make smart decisions and keep everything running smoothly and safely.

Project Overview

- **Goal:** The Bank Management System aims to streamline banking operations by consolidating various services into a unified platform.
- **What it Does:** It handles tasks such as account management, transaction processing, loan approvals, customer support, and financial reporting.
- **For Customers:** It provides an easy way for customers to manage their accounts, transfer funds, apply for loans, and access banking services online or through mobile apps.
- **For Bank Staff:** It assists staff in handling customer requests, analyzing financial data, generating reports, monitoring transactions for fraud, and managing banking operations efficiently.
- **Using Tech:** Utilizing technologies like AI, machine learning, and data analytics, the system can improve decision-making, detect suspicious activities, automate routine tasks, and enhance overall customer experience.
- **Big Picture:** The system aims to transform banking operations, making them more convenient for customers, improving security measures, optimizing resource allocation, and driving better financial outcomes for both customers and the bank.

Project Workflow (EER)

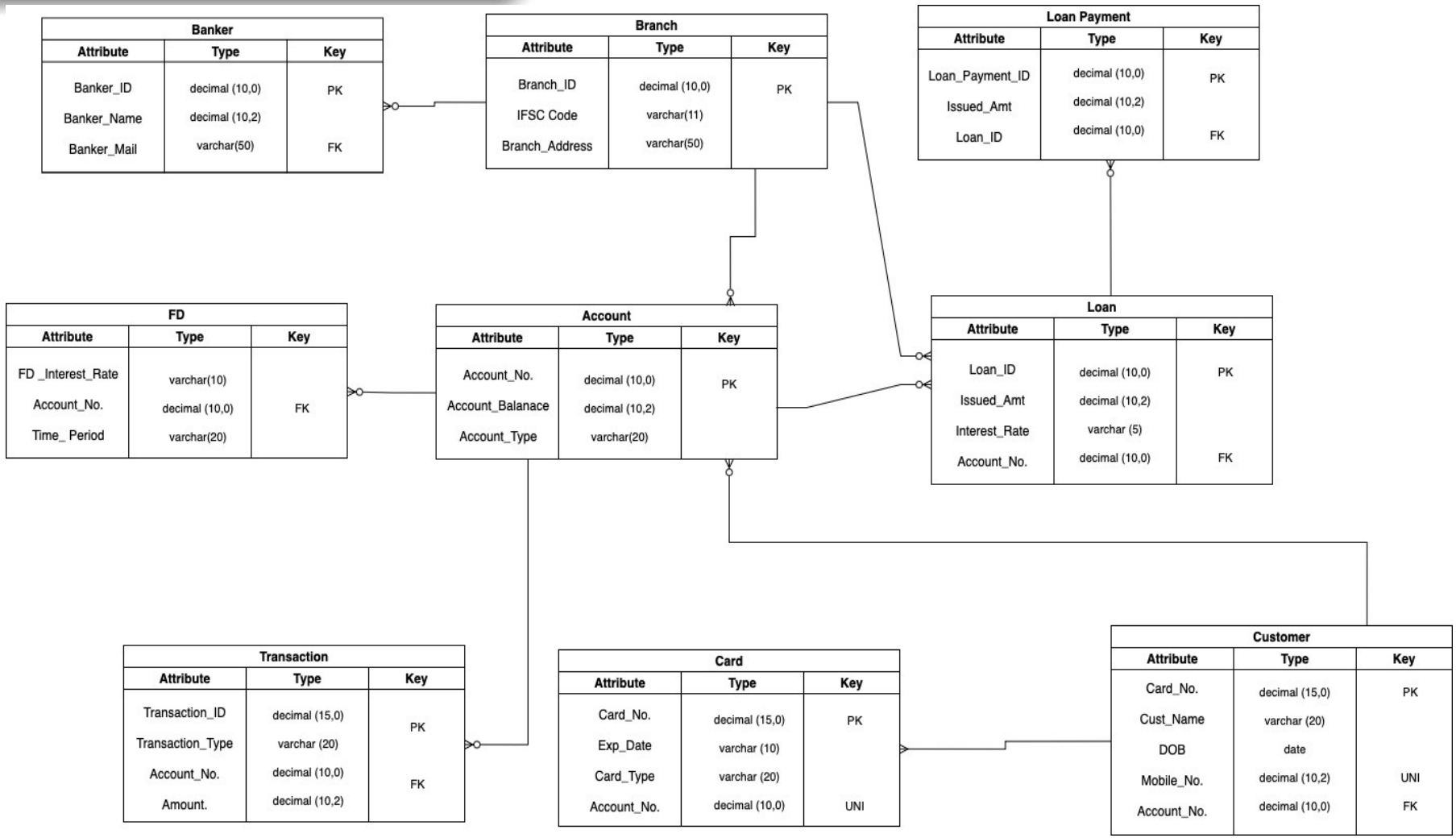


Technologies Used

- MySQL Workbench

- Draw.io

Schema Diagram



Query

- **Group customers by account type and calculate the average balance for each type.**

```
mysql> SELECT Account_Type, AVG(Account_Balance) AS Avg_Balance  FROM Customer  JOIN Account ON Customer.Account_No = Account.Ac
count_No  GROUP BY Account_Type;
+--------------+-----------------+
| Account_Type | Avg_Balance     |
+--------------+-----------------+
| Savings      |  9263749.000000 |
| Current      | 17387092.714286 |
+--------------+-----------------+
2 rows in set (0.00 sec)
```

- **Calculate the sum of issued amounts for all loans.**

```
mysql> SELECT SUM(Issued_Amt) AS Total_Loan_Amount FROM Loan;
+-------------------+
| Total_Loan_Amount |
+-------------------+
|         236022.00 |
+-------------------+
1 row in set (0.01 sec)
```

Query

- **Find the average account balance across all accounts.**

```
mysql> SELECT AVG(Account_Balance) AS Avg_Balance FROM Account;
+-----------------+
| Avg_Balance     |
+-----------------+
| 13054642.733333 |
+-----------------+
1 row in set (0.01 sec)
```

- **Find the total balance of all accounts held by customers born after 1985 from the view.**

```
mysql> SELECT SUM(Account_Balance) AS Total_Balance FROM Customer_Account_Balance WHERE DOB > '1985-01-01';
+--------------+
| Total_Balance |
+--------------+
|  178914480.00 |
+--------------+
1 row in set (0.00 sec)
```

Self Learning

- We learned how to organize data about accounts, transactions, loans, customers, staff, and financial reports using tables and relationships in a bank management system.
- We were able to integrate modern-day technology with long-standing banking challenges.
- We gained hands-on experience and practical knowledge about database management specific to banking operations.
- We now have a better understanding of how to create, manage, and use databases effectively in a banking environment.

Lessons Learned

- We learned how to ensure data is properly organized to prevent duplication and maintain accuracy in a bank management system.
- We also mastered techniques to optimize SQL queries for improved efficiency and faster data retrieval.
- The project enhanced our problem-solving skills as we tackled challenges and found effective solutions while working on database management tasks.

Challenges Faced

- In the bank management system project, the first challenge was designing an effective database schema to represent all necessary entities and their relationships accurately.
- The second challenge involved managing data consistency to ensure the database remained accurate and up-to-date.
- The third challenge was optimizing database performance, particularly when dealing with large datasets or complex queries.

References

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