CS 202 Database Management Systems

Homework Report

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1   Description

In this homework, I designed and developed a Bank Management System (BMS) using MySQL database involving querying the database via Java JDBC. The application includes a console (terminal) menu-driven interface implemented using Java and JDBC for database interactions. The system manages core banking functionalities, such as account management, transactions, loans, investments, and employees. nine main tables are created according to 9 entities. Please refer to ER diagram at ER Diagram section below for specific attributes.

2   ER Diagram

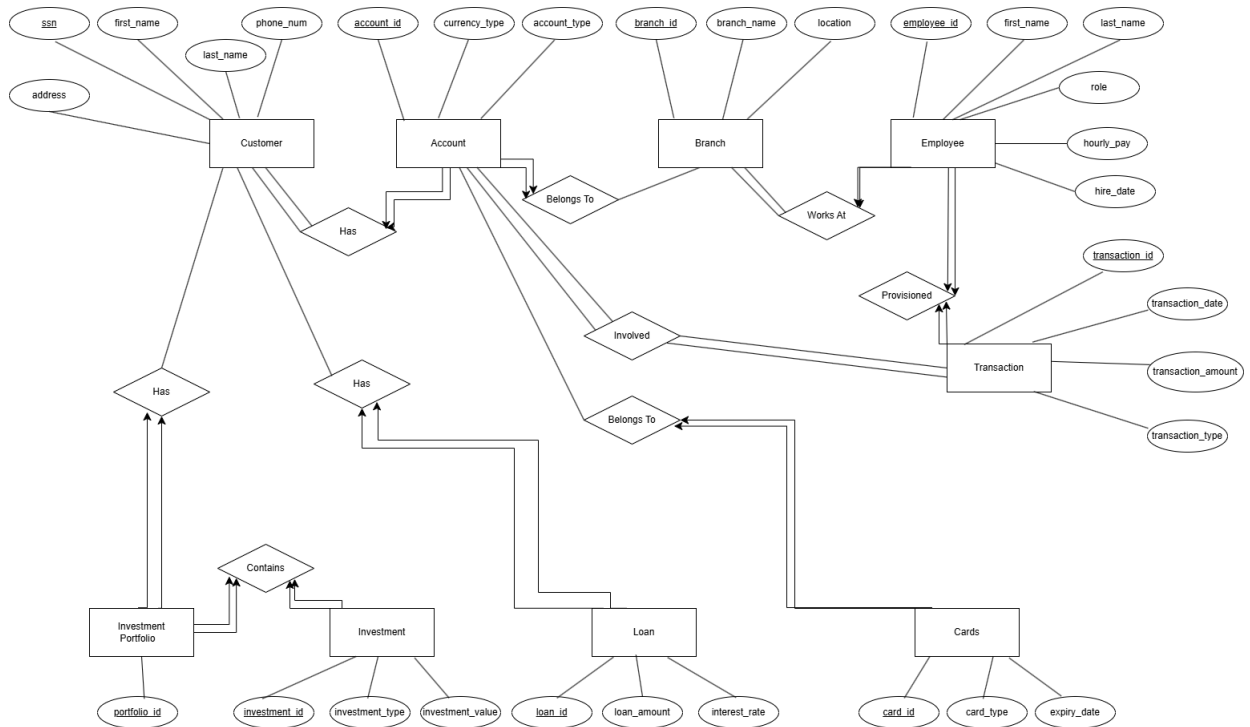

Figure 1: ER Diagram of the Database

Here above is the ER diagram of the database.Primary key attributes are underlined cleary. For account table foreign keys of customer-ssn and branch-id used from customer and branch table respectively. For employee table branch-id from branch table used as foreign key. For card table account-id from account used as foreign key. For loan table customer-ssn and employee-id from customer and employee table used as foreign key. For transaction table foreign keys of employee-id from-account-id to-account-id from employee and account table used as foreign keys. Lastly for investment portfolio relation customer-ssn from customer table used as foreign key. For Investment table portfolio-id from investment portfolio table used as foreign key. Diamond Shaped relationships are just for showing there is a simple relationship exist between entities. These relationships are NOT represented as tables/relations in the database. Throughout the design. String varchar size restricted with 80 and doubles as decimals are 15 spaces with 2 decimals point precision. Only monthly salary is different with 11 spaces and 2 decimals point precision since there won't be any employee worth showing earning more than 11 figures.

3   DDL and DML

Please refer to the DDL and DML scripts for more information. DML script only used for populating the database with initial samples. Every other necessary insertion,deletion,etc. are done by Console menu via Java/JDBC. Names in the samples are me and celebrities that I like. They offer no real information.

4   Quick Notes

Deletion integrity rules are not implied because there is no specific right way to implement it. It can be easily done with CASCADE operations.