DB Project

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Bank Management System

Design and implement a Bank Management System using SQL for database management. The system should allow users to perform basic banking operations such as creating customer profiles, managing accounts, and conducting transactions.

Requirements

- ER design for database structure and relations to specify the tables. **(8%)**
- Migration files to create sql tables **(8%)**
- SQL injection prevention to improve security **(10%)**
- Functionality implementation with a programming language to satisfy the scenarios
- Token authentication based for authenticating each user (any functionality is accepted) **(8%)**

do not use ORM as query handler. write all queries with raw sql.

Scenarios

- [ ] **User Authentication and Authorization (16%)**

users should be able to login and register using their username and password, each user contains a `username, password, id, createdAt, firstName, lastName, birthDate, phoneNumber`

users can update their profile and usernames are considered unique.

include permission management as roles **admin**, **user**, **employee** to manage each users permission

- [ ] **Account implementation (16%)**

each user can have multiple accounts that includes `accountNumber, balance, name, userId, createdAt`. these accounts can have transactions for deposit or withdrawing money. each account should contain a history of transactions executed.

Create or modifying account is only permitted by **employee** role.

Transactions are permitted by **account owners or employees**.

A transaction cannot be commited if the transaction amount is more than account balance.

- [ ] **Loan management (20%)**

Users can get loan for their account for amount of their transactions, if an account has more than 10 million toman income each month it can request for a loan. a loan will be maximum of 200% of the sum of income transactions of the last month in total and it has 20% profit for 12 months. if the employee confirms the loan the amount will be added to account.

user can pay a loan installment each month if he has one due.

no need to consider the conditions that the user will not pay the loan installment.

in summary:

user → loan request → employee accept the loan → user pays loan installment till the amount → loan is finished

- [ ] **Admin management (16%)**

admins can see and preform CRUD operation (Create, Read, Update, Delete) for all these entites:

loan, loan installment, user, account

ability to search and filter the users based on phone number, username

ability to search an account with accountNumber or userId

ability to sort the loan installments by date

Total Grade: 100%

you can implement these scenarios as functions in your program and the output should be the expected result. however implementing **backend apis | GUI or TUI | documenting** | **deployment | any improvement to the system** is considered a bonus for the project implementation. feel free to add, modify the project structure by your design improvements.

Best Regards

Gradering Team.