**Banking Database System (db\_bank)**

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**Overview**

The db\_bank database is designed to efficiently manage banking-related data, ensuring security, reliability, and scalability. It includes structured tables to handle user authentication, transactions, accounts, employees, and error logging, providing a well-organized system for banking operations.

**Database Structure**

**1. User Management**

* **UserLogins**: Stores login credentials of users. (*Primary Key: UserLoginID*)
* **UserSecurityQuestions**: Contains predefined security questions. (*Primary Key: UserSecurityQuestionID*)
* **UserSecurityAnswers**: Stores user-provided answers for security questions. (*Foreign Keys: UserLoginID, UserSecurityQuestionID*)

**2. Account Management**

* **AccountType**: Defines types of accounts (Savings, Checking, Business, etc.). (*Primary Key: AccountTypeID*)
* **SavingsInterestRates**: Stores different interest rates for savings accounts. (*Primary Key: InterestSavingRatesID*)
* **AccountStatusType**: Maintains different statuses for an account (Active, Inactive, Frozen, etc.). (*Primary Key: AccountStatusTypeID*)

**3. Transaction Management**

* **TransactionType**: Stores types of transactions (Deposit, Withdrawal, Transfer, etc.) along with fees. (*Primary Key: TransactionTypeID*)
* **FailedTransactionErrorType**: Lists reasons for failed transactions. (*Primary Key: FailedTransactionErrorTypeID*)
* **FailedTransactionLog**: Logs failed transactions with error details. (*Foreign Key: FailedTransactionErrorTypeID*)

**4. Employee & Customer Management**

* **Employee**: Stores details of bank employees, including managerial roles. (*Primary Key: EmployeeID*)
* **Customer**: Maintains customer details, including addresses, phone numbers, and linked accounts. (*Foreign Keys: AccountID, UserLoginID*)

**5. Account and Login Linking**

* **Account**: Stores account details, balances, and linked interest rates. (*Foreign Keys: AccountTypeID, AccountStatusTypeID, InterestSavingRatesID*)
* **LoginAccount**: Links user logins to their respective accounts. (*Foreign Keys: UserLoginID, AccountID*)

**6. Error Logging**

* **LoginErrorLog**: Tracks failed login attempts with error details. (*Primary Key: ErrorLogID*)

**Data Inserts**

To ensure the functionality of the system, sample data has been inserted into key tables. This includes:

* Sample users with login credentials and security answers.
* Various account types and interest rates.
* Employees, including managerial roles.
* Common transaction types and fees.
* Failed login and transaction logs for tracking errors.

**Conclusion**

The db\_bank database is a structured, secure, and scalable solution for handling banking data efficiently. It supports user authentication, account management, transactions, and error handling, making it a robust foundation for banking operations.