**Bank management system**

**一．**Task description

1. Use WPF App (NET Framework) technology to complete the bank management system

2. Microsoft Visual Studio Community 2022 (64-bit)

3. Database: PostgreSql

4.Functional modules: login, account opening, deposit, withdrawal, transfer, loss reporting and other functions

二．Database design

CREATE TABLE bank\_account (

account\_number SERIAL PRIMARY KEY,

account\_holder\_name VARCHAR(255) NOT NULL,

account\_type VARCHAR(50) NOT NULL,

balance DECIMAL(10, 2) DEFAULT 0.00,

opened\_date DATE NOT NULL,

branch\_location VARCHAR(255),

is\_active BOOLEAN DEFAULT true,

UNIQUE (account\_number)

);

CREATE TABLE transaction (

transaction\_id SERIAL PRIMARY KEY,

account\_number INT REFERENCES bank\_account(account\_number),

transaction\_date TIMESTAMP NOT NULL,

transaction\_type VARCHAR(50) NOT NULL,

amount DECIMAL(10, 2) NOT NULL,

balance\_after DECIMAL(10, 2) NOT NULL,

FOREIGN KEY (account\_number) REFERENCES bank\_account(account\_number)

);

|  |  |  |
| --- | --- | --- |
| User table | | |
| Field | Description | Notes |
| ID | Primary key, autoincrement |  |
| User name |  |  |
| User type | Used to distinguish between bank administrators and ordinary users |  |
| password |  |  |
| gender |  |  |
| ID number |  |  |
| birthday |  |  |
| Mobile phone number |  |  |

|  |  |  |
| --- | --- | --- |
| Bank account form | | |
| field | Description | Notes |
| ID | Primary key, autoincrement |  |
| User ID | Foreign key, the ID in the associated user table |  |
| Card number |  |  |
| Bank card password |  |  |
| balance |  |  |
| Whether to report the loss |  |  |
| Card opening date |  |  |

|  |  |  |
| --- | --- | --- |
| Operational log tables | | |
| field | Description | Notes |
| ID | Primary key, autoincrement |  |
| Log type | Deposits, withdrawals, transfers, loss reporting |  |
| Record the user ID | Foreign key, associated user ID |  |
| User name |  |  |
| Operation details |  | For example, when making a deposit, record: Deposit:8000.00 |
| Date of operation |  |  |
| IP address |  |  |

**三.** Task detailed requirements:

1.Login module:

Enter the user name and password, match, match successfully, jump to different interfaces according to different user types; ordinary users jump to the home page of ordinary users, and administrators jump to the home page of administrators;

A screenshot of a login screen

Description automatically generated

2.Account Opening Module (Administrator)：

User management module

Display the user list, in the list, by clicking the user name, you can link to the user information editing page; provide a link, can link to view all the bank card information of the user, and in the user's bank card list page, provide account opening (new bank card), loss reporting (logging) and other functions,

Provides the ability to add new users.

A screenshot of a computer

Description automatically generated

3.Card List (Admin)：

List all card information

Including card number, username, ID number, card opening date, and whether it is frozen

And can use the ID number, user name, bank card number for retrieval function;

Provide loss reporting function (logging);

4. Deposit Module (Regular Users)：

Log in to the user, select your bank card number (drop-down box lists accounts that have not been reported lost), enter the amount, and deposit the money into the account (simulated deposit only); and keep logs;

5. Withdrawal module (ordinary users):

Log in to the user, select one of their bank card numbers (drop-down box lists accounts that have not been reported lost), enter the withdrawal amount, and before withdrawing money, determine whether there is enough money in the account; if it is sufficient, withdraw money (and record the log), otherwise make corresponding prompts;

6.Transfer module (regular users):

Log in to the user, select one of their bank card numbers (drop-down box lists accounts that have not been reported lost), enter the transfer amount and the other party's account number, use AJAX to determine whether there is enough money in the account and whether the other party's account is not reported as lost;

7.Log List (Administrator)