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. Running interface:

1.Login module:

The login interface (Login) provides filtering in the background, if it is the administrator's login account and password, it will jump to the administrator's home page, if it is an ordinary user, it will enter the ordinary user's home page.
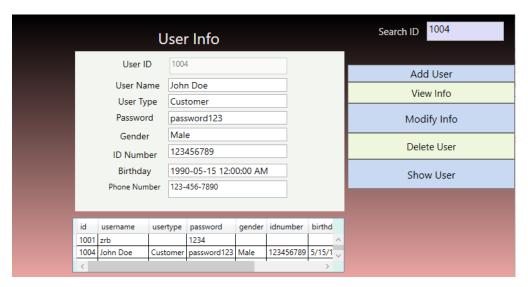

2. Administrator Index, which provides user information, bank card information (option switching), and jumps to add users and view logs. In the user management options, the function of modifying user information is provided under the user name, and the information of multiple cards owned by the user can be viewed under the customer card information. In the bank card information management option, you can query the card information, you can also freeze the card, and record the log.
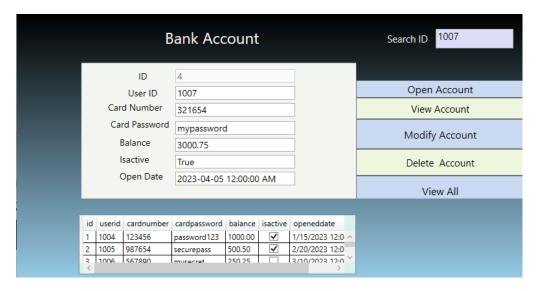
| | User info management | Card info management | | New User | | New Bank Account | | Review Logs | |

id	username	usertype	password	gender	idnumber	birthday	phonenumber
1000	admin		admin				
1001	zrb		1234				
1004	John Doe	Customer	password123	Male	123456789	5/15/1990 12:00:00 AM	123-456-7890
1005	Jane Smith	Customer	securepass	Female	987654321	2/20/1985 12:00:00 AM	987-654-3210
1006	Alice Johnson	Customer	mysecret	Female	567890123	3/10/1992 12:00:00 AM	567-890-1234
1007	Bob Johnson	Customer	mypassword	Male	321654987	4/5/1995 12:00:00 AM	321-654-9870
1008	Eve Johnson	Admin	pass1234	Female	135792468	6/12/1988 12:00:00 AM	135-792-4680
1009	Charlie Brown	Customer	secret123	Male	864209753	1/8/1982 12:00:00 AM	864-209-7531
1010	David White	Admin	passpass	Male	987654322	7/19/1983 12:00:00 AM	987-654-3220
1011	Emma Black	Customer	mypin123	Female	123450987	8/23/1998 12:00:00 AM	123-450-9876
1012	Grace Miller	Customer	security	Female	456789012	9/30/1994 12:00:00 AM	456-789-0123
1013	Frank Taylor	Admin	testpass	Male	111122223	10/14/1991 12:00:00 AM	111-122-2233

| | User info management | Card info management | | New User | | New Bank Account | | Review Logs | |

id	userid	cardnumber	cardpassword	balance	isactive	openeddate
1	1004	123456	password123	1000.00	☑	1/15/2023 12:00:00 AM
2	1005	987654	securepass	500.50	☑	2/20/2023 12:00:00 AM
3	1006	567890	mysecret	250.25	☐	3/10/2023 12:00:00 AM
4	1007	321654	mypassword	3000.75	☑	4/5/2023 12:00:00 AM
5	1008	135792	pass1234	800.20	☑	5/12/2023 12:00:00 AM
6	1009	864209	secret123	1234.56	☐	6/8/2023 12:00:00 AM
7	1010	987654	passpass	750.75	☑	7/19/2023 12:00:00 AM
8	1011	123450	mypin123	200.00	☑	8/23/2023 12:00:00 AM
9	1012	456789	security	900.30	☐	9/30/2023 12:00:00 AM
10	1013	111122	testpass	1500.00	☑	10/14/2023 12:00:00 AM

3. .New user interface

User Info

Search ID 1004

User ID	1004
User Name	John Doe
User Type	Customer
Password	password123
Gender	Male
ID Number	123456789
Birthday	1990-05-15 12:00:00 AM
Phone Number	123-456-7890

Add User
View Info
Modify Info
Delete User
Show User

id	username	usertype	password	gender	idnumber	birthd
1001	zrb		1234			
1004	John Doe	Customer	password123	Male	123456789	5/15/1

4. View the bank account

Bank Account

Search ID: 1007

ID	4
User ID	1007
Card Number	321654
Card Password	mypassword
Balance	3000.75
Isactive	True
Open Date	2023-04-05 12:00:00 AM

Open Account
View Account
Modify Account
Delete Account
View All

id	userid	cardnumber	cardpassword	balance	isactive	openeddate
1	1004	123456	password123	1000.00	✓	1/15/2023 12:0
2	1005	987654	securepass	500.50	✓	2/20/2023 12:0
3	1006	567890	mysecret	250.25	☐	3/10/2023 12:0

5. View the log page

Logs Book

Search ID: 1012

ID	9
Log Type	Transaction
User ID	1012
User Name	Grace Miller
Operation Detail	Money transfer
Operation Date	2023-09-30 12:00:00 AM
Isactive	
IP Address	192.168.1.9

Insert
Select
Update
Delete
Show

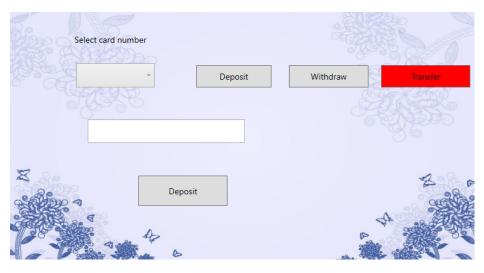| id	logtype	userid	username	operationdetail	operationdate
1	Login	1004	John Doe	User login	1/15/2023 12:00:0
2	Logout	1005	Jane Smith	User logout	2/20/2023 12:00:0

6. 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;

7. The user homepage (CustomerIndex) can make deposits, withdrawals, and transfers

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;

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.

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. Log List (Admin)

5. Deposit module (ordinary 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;

6. 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, before withdrawal, use AJAX to determine whether there is enough money in the account; if it is enough, withdraw money (and record the log), otherwise make corresponding prompts;

7. Transfer 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 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;

四. Database design

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		

	id [PK] integer	user_name character varying	user_type character varying	password character varying	gender character varying	id_number integer	birthday date	phone_number character varying
1	1000	admin	[null]	admin	[null]	[null]	[null]	[null]
2	1001	zrb	[null]	1234	[null]	[null]	[null]	[null]
3	1004	John Doe	Customer	password123	Male	123456789	1990-05-15	123-456-7890
4	1005	Jane Smith	Customer	securepass	Female	987654321	1985-02-20	987-654-3210
5	1006	Alice Johnson	Customer	mysecret	Female	567890123	1992-03-10	567-890-1234
6	1007	Bob Johnson	Customer	mypassword	Male	321654987	1995-04-05	321-654-9870
7	1008	Eve Johnson	Admin	pass1234	Female	135792468	1988-06-12	135-792-4680
8	1009	Charlie Brown	Customer	secret123	Male	864209753	1982-01-08	864-209-7531
9	1010	David White	Admin	passpass	Male	987654322	1983-07-19	987-654-3220
10	1011	Emma Black	Customer	mypin123	Female	123450987	1998-08-23	123-450-9876
11	1012	Grace Miller	Customer	security	Female	456789012	1994-09-30	456-789-0123
12	1013	Frank Taylor	Admin	testpass	Male	111122223	1991-10-14	111-122-2233

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		

	id [PK] integer	user_id integer	card_number integer	card_password character varying	balance numeric	isactive boolean	opened_date date
1	1	1004	123456	password123	4500	true	2023-01-15
2	2	1005	987654 Screenshot(Alt + A)		1000	true	2023-02-20
3	3	1006	567890	mysecret	250.25	false	2023-03-10
4	4	1007	321654	mypassword	3000.75	true	2023-04-05
5	5	1008	135792	pass1234	800.20	true	2023-05-12
6	6	1009	864209	secret123	1234.56	false	2023-06-08
7	7	1010	987654	passpass	988904.75	true	2023-07-19
8	8	1011	123450	mypin123	200.00	true	2023-08-23
9	9	1012	456789	security	900.30	false	2023-09-30
10	10	1013	111122	testpass	1500.00	true	2023-10-14

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		

id [PK] integer	log_type character varying	user_id integer	user_name character varying	operation_detail character varying	operation_date date	ip_address character varying
1	1	Login	1004	John Doe	User login	2023-01-15	192.168.1.1
2	2	Logout	1005	Jane Smith	User logout	2023-02-20	192.168.1.2
3	3	Transaction	1006	Alice Johnson	Money transfer	2023-03-10	192.168.1.3
4	4	Login	1007	Bob Johnson	User login	2023-04-05	192.168.1.4
5	5	Logout	1008	Eve Johnson	User logout	2023-05-12	192.168.1.5
6	6	Transaction	1009	Charlie Brown	Money transfer	2023-06-08	192.168.1.6
7	7	Login	1010	David White	User login	2023-07-19	192.168.1.7
8	8	Logout	1011	Emma Black	User logout	2023-08-23	192.168.1.8
9	9	Transaction	1012	Grace Miller	Money transfer	2023-09-30	192.168.1.9
10	10	Login	1013	Frank Taylor	User login	2023-10-14	192.168.1.10

BankAccount
- id
- userid
- cnumber
- cpassword
- balance
- islost
- opendate

Users
- id
- username
- usertype
- password
- sex
- userID
- birthday
- phone

Log
- id
- logtype
- ruserid
- username
- details
- operationdate
- ip