

# CFP Project Report

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# Bank Account Management System

## **Objective:**

The primary objectives of our project are outlined as follows:

- Account Opening: The system allows users to open bank accounts by assigning a unique account number to each user.
- Deposit and Withdrawal Management: It provides functionality for users to deposit and withdraw money from their accounts securely.
- PIN Security: Each user is allotted a personal identification number (PIN) to ensure security, enabling them to access their accounts and perform transactions safely.
- Account Information Access: Users can view their account information only upon entering the correct PIN, safeguarding sensitive details.
- Invalid Input Handling: The system is programmed to handle invalid inputs and prompts the user to enter valid information.



# Methodology

## Algorithm

### 1) Main menu:

Program displays a few options to the user.

- ❖ Open New Account
- ❖ Deposit Money
- ❖ Withdraw Money
- ❖ Search Account
- ❖ Display Account Details
- ❖ Display All Account Details
- ❖ Exit

### 2) Open account:

Initially, the program verifies whether the maximum allowable number of accounts has been reached. If the limit is exceeded, it displays the message: "Account limit reached." Otherwise, it prompts the user to provide personal information, including the account type, account holder's name, CNIC, and a PIN, to proceed with opening a new account. Additionally, the system assigns a unique account number to the user for future transactions and identification.

### 3) Deposit money:

The system prompts the user to enter their account number. If the entered account number is invalid, an error message is displayed. If the account number is valid, the system requests the user to provide their PIN. Upon successful PIN verification, the user is prompted to enter the deposit amount. If the entered amount is greater than zero, it is added to the initial balance. The system then displays the deposited amount along with the updated account balance.

### 4) Withdraw money:

The system prompts the user for their account number and PIN. Upon successful verification, the user is asked to enter

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a withdrawal amount. If the amount is valid and within the available balance, it is deducted, and the updated balance is

displayed. If the amount exceeds the balance, an "Insufficient balance" message is shown. For invalid amounts, the system displays "Invalid withdrawal amount" and cancels the transaction.

5) Search account:

The system prompts the user to enter their account number. If the account number is invalid, an error message is displayed. If the account number is valid, the system outputs the account holder's name. The user is then prompted to enter their PIN. Upon entering the correct PIN, the system displays the complete account information.

6) Display Account details:

If the user requests to view account details, the system prompts them to enter their account number. If the account exists, the user is asked to provide their PIN. Upon successful PIN verification, the system displays the account details. If the account is not found, the system displays the message: "Account not found."

7) Display all accounts:

If no accounts are available, the system displays the message: "No account available." Otherwise, it retrieves and displays the details of all accounts stored in the CurrentAccount[] array.

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## Implementation

The program is designed using a structured approach, incorporating multiple functions, each tailored to perform a specific task. For instance, the Open Account function collects essential details from the user, such as the type of account, account holder's name, CNIC, and initial balance.

Additionally, separate functions are implemented for key operations, including depositing funds, withdrawing funds, searching for an account, displaying the details of a specific account, and presenting information for all accounts. This modular design ensures clarity, efficiency, and easy of maintenance..



## Output

1) Display program title using Title() function:

```
"Welcome to the Bank Al-PIEAS Limited!"
```

2) Display Main Menu using OptionsMenu() function and then Get choice as input from the user. After that, a function is called depending on what option the user has chosen.

```
===== Bank Menu =====  
-----  
| 1. Open New Account      |  
| 2. Deposit               |  
| 3. Withdraw              |  
| 4. Search Account        |  
| 5. Display Account Details |  
| 6. Display All Accounts Info |  
| 7. Exit                  |  
-----  
  
Please enter your choice (1-7):
```

3) When the user has chosen option 1:

- Check if accounts are available, then prompt the user for account type. Account type is a bool (either Savings Acc or Current Acc) that is the part of the struct BankAccount. If user enters a number other than 0 or 1, display error and ask for input again.

```
Please enter your choice (1-7): 1  
  
Select the account type (Savings/Current):  
Press 0 for Current OR 1 for Savings:
```

- Next, prompt the user for Account holder's name. Store this name in the string that is the part of the struct BankAccount.

```
Enter Account Holder's Name: Musa Ch
```

- Next, prompt the user for CNIC. Display an error until the user enters the CNIC in correct format (with dashes).

```
Enter CNIC (format: *****-*****-*): 1234
```

```
Invalid format!
```

```
Enter CNIC (format: *****-*****-*): |
```

- After the CNIC is entered, ask the user to enter a 4 digit PIN.

```
Enter CNIC (format: *****-*****-*): 61101-2709235-7
```

```
Please set 4-digit PIN. (This PIN will be used to access your account): |
```

```
Please set 4-digit PIN. (This PIN will be used to access your account): 1234
```

```
Your PIN has been created.Do not share your PIN with anyone!
```

- Display error if the PIN is not 4 digit or not a number.

```
Please set 4-digit PIN. (This PIN will be used to access your account): Ab43
```

```
Error! The PIN you have entered is not of 4-digits:
```

- Enter the initial balance and display error if the amount entered is less than 5000.

```
Enter Initial Balance (minimum Rs. 5000/-): 400
```

```
Invalid amount!
```

```
Enter Initial Balance (minimum Rs. 5000/-): 6000
```

```
Amount has been added to you account.
```

```
Current amount in your account is: Rs. 6000
```

- Display a randomly generated account number.

Congratulations! Your bank account has been created.

Your Account Number is 1700834641. Remember it for future reference.

4) When the user has chosen option 2:

- If the user wants to deposit money in his account, ask for his 10 digit account number. Display error if account number is not of 10 digits

```
===== Bank Menu =====
```

```
-----  
| 1. Open New Account |  
| 2. Deposit          |  
| 3. Withdraw         |  
| 4. Search Account   |  
| 5. Display Account  |  
| 6. Display All      |  
| 7. Exit             |  
-----
```

Please enter your choice (1-7): 2

Enter your account number (10 digits): 1234567890

!!! Account not found !!!

Would you like to try again? (Y/N): |

- Limit the wrong attempts. Go back to main menu if user enters wrong account number 3 times.

You have 2 attempt(s) remaining.

Enter your account number (10 digits): 1700834641

Your account exists in our bank branch.

Account Holder: Musa Ch

Enter you 4-digit PIN:

- If account is found then display account holder's name and then ask the user to enter his personal PIN.

- Limit the wrong attempts. Go back to main menu if user enters PIN wrong 3 times.

```
Account Holder: Musa Ch
Enter you 4-digit PIN: 3333
!!! Incorrect PIN !!!
You have 2 attempt(s) remaining.
Enter you 4-digit PIN: |
```

- Prompt the user for deposit amount.

```
Enter you 4-digit PIN: 1234
Enter deposit amount:
```

- Display the deposited amount and current balance after transaction.

```
Enter deposit amount: 80
Rs. 80 deposited. New balance: 6080
```

5) When the user has chosen option 3:

- All the steps done in Deposit() are repeated in Withdraw() func

```
===== Bank Menu =====
-----
| 1. Open New Account      |
| 2. Deposit               |
| 3. Withdraw              |
| 4. Search Account        |
| 5. Display Account Details |
| 6. Display All Accounts Info |
| 7. Exit                  |
-----

Please enter your choice (1-7): 3

Enter your account number (10 digits): 1700834641

Your account exists in our bank branch.

Account Holder: Musa Ch

Enter your 4-digit PIN: 1234

Enter withdrawal amount: 400

Rs. 400/- have been withdrawn from your account. Remaining balance: 5680/-
```



6) When the user has chosen option 4:

- Prompt the user for his account number.
- Then call the SearchAccount() function.
- The search function displays error if no account exists with the entered account number.

```
===== Bank Menu =====  
-----  
| 1. Open New Account      |  
| 2. Deposit              |  
| 3. Withdraw             |  
| 4. Search Account       |  
| 5. Display Account Details |  
| 6. Display All Accounts Info |  
| 7. Exit                 |  
-----  
  
Please enter your choice (1-7): 4  
  
Enter the account number to search: 1234567890  
  
!!! Account not found !!!
```

- If account is found then ask for PIN. If PIN is correct then call the DisplayAccountDetails() func to display the account info of the user.

```
Enter your account number (10 digits): 1700834641  
Your account exists in our bank branch.  
  
Account Holder: Musa Ch  
Enter your 4-digit PIN: 1234  
  
Account Details:-  
-----  
Account Number: 1700834641  
Account Type: Current  
Account Holder: Musa Ch  
CNIC: 61101-2709235-7  
Balance: Rs. 5680  
-----  
Thank you for using our service.
```

7) When the user has chosen option 5:

- Display account info to the user if they enter a valid account number and PIN.

```
===== Bank Menu =====
```

```
-----  
| 1. Open New Account      |  
| 2. Deposit               |  
| 3. Withdraw              |  
| 4. Search Account        |  
| 5. Display Account Details |  
| 6. Display All Accounts Info |  
| 7. Exit                  |  
-----
```

Please enter your choice (1-7): 5

Enter your account number (10 digits): 1700834641  
Your account exists in our bank branch.

Account Holder: Musa Ch  
Enter your 4-digit PIN: 1234

Account Details:-

```
-----  
Account Number: 1700834641  
Account Type: Current  
Account Holder: Musa Ch  
CNIC: 61101-2709235-7  
Balance: Rs. 5680  
-----
```

Thank you for using our service.

8)When the user has chosen option 6:

```
===== Bank Menu =====
-----
| 1. Open New Account      |
| 2. Deposit               |
| 3. Withdraw              |
| 4. Search Account        |
| 5. Display Account Details |
| 6. Display All Accounts Info |
| 7. Exit                  |
-----

Please enter your choice (1-7): 6

Enter the Employee PIN: {The employee PIN is 1234 ;-)}1234

Employee PIN verified successfully.

Account Number: 1700834641
Account Type: Current
Account Holder: Musa Ch
CNIC: 61101-2709235-7
Balance: 5680
-----

Account Number: 1700834642
Account Type: Current
Account Holder: Umer
CNIC: 61101-2727277-4
Balance: 90000
-----
```

9)When the user has chosen option 7:

```
===== Bank Menu =====
-----
| 1. Open New Account      |
| 2. Deposit               |
| 3. Withdraw              |
| 4. Search Account        |
| 5. Display Account Details |
| 6. Display All Accounts Info |
| 7. Exit                  |
-----

Please enter your choice (1-7): 7

Thank you for using our services. If you need help, please contact support
at support@bank.com
```