BANK ACCOUNT MANAGEMENT SYSTEM

DESIGN AND IMPLEMENTATION REPORT

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04-07-2024

Introduction

This Java program is designed to simulate a basic bank account management system. It utilizes fundamental Object-Oriented Programming (OOP) concepts such as classes, objects, inheritance, encapsulation, and methods. The program allows users to create bank accounts, deposit and withdraw money, check balances, and view all accounts in the bank.

Classes and Objects

The program is structured around three main classes:

- Main Class
- Account Class
- Bank Class

Main Class

The Main class contains the main method, which serves as the entry point of the program. It demonstrates the usage of the Bank and Account classes by creating instances, performing operations, and displaying results.

Account Class

The Account class represents a bank account. It has the following attributes:

- accountNo (String): The account number.
- accHolder (String): The account holder's name.
- balance (double): The current balance of the account.

The Account class includes the following methods:

Constructor: Initializes the account with an account number, account holder name, and balance.

Getters: Retrieve the values of account number, account holder, and balance.

depositAmount(double amount): Adds the specified amount to the account balance if the amount is positive.

withdrawAmount(double amount): Deducts the specified amount from the account balance if the amount is positive and does not exceed the current balance.

checkBalance(): Prints the current balance of the account.

Bank Class

The Bank class represents a collection of bank accounts. It has the following attribute:

accounts (List<Account>): A list to store multiple Account objects.

The Bank class includes the following methods:

Constructor: Initializes the accounts list.

addAccount(Account account): Adds a new account to the bank and prints the account details.

viewAccount(): Prints the details of all accounts in the bank.

findAccount(String accountNo): Searches for an account by account number and returns it if found; otherwise, prints a message indicating the account was not found.

Implementation

In the Main class, accounts are created and added to the bank. The following operations are performed on these accounts:

- Deposit an amount.
- Withdraw an amount.
- Check the balance.

Additionally, the program displays all accounts in the bank and attempts to find an account by its number.

Conclusion

This program demonstrates the basic principles of OOP, including encapsulation, by defining classes with attributes and methods to manage the state and behavior of objects. The Account class encapsulates the details of a bank account, while the Bank class manages a collection of accounts. The use of methods for deposit, withdrawal, and balance checking ensures that the internal state of the account is manipulated in a controlled manner.