PROGRAM 5

Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks: a) Accept deposit from customer and update the balance. b) Display the balance. c) Compute and deposit interest d) Permit withdrawal and update the balance Check for the minimum balance, impose penalty if necessary and update the balance.

import java.util.Scanner;

class Account {

    String customerName;

    String accountNumber;

    String accountType;

    double balance;

    public Account(String customerName, String accountNumber, String accountType, double initialDeposit) {

        this.customerName = customerName;

        this.accountNumber = accountNumber;

        this.accountType = accountType;

        this.balance = initialDeposit;

    }

    public void deposit(double amount) {

        if (amount > 0) {

            balance += amount;

            System.out.println("Deposit successful. Updated balance: " + balance);

        } else {

            System.out.println("Invalid deposit amount.");

        }

    }

    public void displayBalance() {

        System.out.println("Balance: " + balance);

    }

}

class SavAcct extends Account {

    private static final double INTEREST\_RATE = 0.04;

    public SavAcct(String customerName, String accountNumber, double initialDeposit) {

        super(customerName, accountNumber, "Savings", initialDeposit);

    }

    public void computeAndDepositInterest() {

        double interest = balance \* INTEREST\_RATE;

        balance += interest;

        System.out.println("Interest of " + interest + " deposited. Updated balance: " + balance);

    }

    public void withdraw(double amount) {

        if (amount > balance) {

            System.out.println("Insufficient balance for withdrawal.");

        } else {

            balance -= amount;

            System.out.println("Withdrawal successful. Updated balance: " + balance);

        }

    }

}

class CurAcct extends Account {

    private static final double MINIMUM\_BALANCE = 1000.0;

    private static final double PENALTY = 100.0;

    public CurAcct(String customerName, String accountNumber, double initialDeposit) {

        super(customerName, accountNumber, "Current", initialDeposit);

    }

    public void withdraw(double amount) {

        if (amount > balance) {

            System.out.println("Insufficient balance for withdrawal.");

        } else {

            balance -= amount;

            System.out.println("Withdrawal successful. Updated balance: " + balance);

            if (balance < MINIMUM\_BALANCE) {

                imposePenalty();

            }

        }

    }

    private void imposePenalty() {

        balance -= PENALTY;

        System.out.println("Balance fell below minimum. Penalty of " + PENALTY + " imposed. Updated balance: " + balance);

    }

}

public class Bank {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter customer name for Savings Account: ");

        String savName = scanner.nextLine();

        System.out.print("Enter account number: ");

        String savAccNum = scanner.nextLine();

        System.out.print("Enter initial deposit: ");

        double savDeposit = scanner.nextDouble();

        SavAcct savings = new SavAcct(savName, savAccNum, savDeposit);

        scanner.nextLine();

        System.out.print("\nEnter customer name for Current Account: ");

        String curName = scanner.nextLine();

        System.out.print("Enter account number: ");

        String curAccNum = scanner.nextLine();

        System.out.print("Enter initial deposit: ");

        double curDeposit = scanner.nextDouble();

        CurAcct current = new CurAcct(curName, curAccNum, curDeposit);

        while (true) {

            System.out.println("\n--- Bank Menu ---");

            System.out.println("1. Deposit to Savings Account");

            System.out.println("2. Withdraw from Savings Account");

            System.out.println("3. Display Savings Account Balance");

            System.out.println("4. Compute and Deposit Interest to Savings Account");

            System.out.println("5. Deposit to Current Account");

            System.out.println("6. Withdraw from Current Account");

            System.out.println("7. Display Current Account Balance");

            System.out.println("8. Exit");

            System.out.print("Enter your choice: ");

            int choice = scanner.nextInt();

            switch (choice) {

                case 1:

                    System.out.print("Enter amount to deposit to Savings Account: ");

                    double savDepositAmt = scanner.nextDouble();

                    savings.deposit(savDepositAmt);

                    break;

                case 2:

                    System.out.print("Enter amount to withdraw from Savings Account: ");

                    double savWithdrawAmt = scanner.nextDouble();

                    savings.withdraw(savWithdrawAmt);

                    break;

                case 3:

                    System.out.println("Savings Account Balance: ");

                    savings.displayBalance();

                    break;

                case 4:

                    savings.computeAndDepositInterest();

                    break;

                case 5:

                    System.out.print("Enter amount to deposit to Current Account: ");

                    double curDepositAmt = scanner.nextDouble();

                    current.deposit(curDepositAmt);

                    break;

                case 6:

                    System.out.print("Enter amount to withdraw from Current Account: ");

                    double curWithdrawAmt = scanner.nextDouble();

                    current.withdraw(curWithdrawAmt);

                    break;

                case 7:

                    System.out.println("Current Account Balance: ");

                    current.displayBalance();

                    break;

                case 8:

                    System.out.println("Exiting program. Thank you!");

                    scanner.close();

                    return;

                default:

                    System.out.println("Invalid choice. Please try again.");

            }

        }

    }

}



