Lab Program

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.

Account.java | Savingsaccount.java | Currentaccount.java | Bank.java

```java
package bank;

class Account {
    String name;
    String accno;
    double balance;

    Account(String name, String accno) {
        this.name = name;
        this.accno = accno;
        this.balance = 0;
    }

    void deposit(double amt) {
        balance += amt;
        System.out.println("Amount deposited: " + amt);
    }

    void withdraw(double amt) {
        if (balance - amt >= 1000) {
            balance -= amt;
            System.out.println("Withdrawn amount: " + amt);
        } else {
            System.out.println("Below minimum balance!");
            imposePenalty();
        }
    }

    void display() {
        System.out.println("Name: " + name);
        System.out.println("Account Number: " + accno);
        System.out.println("Balance: " + balance);
    }

    void imposePenalty() {
        // Base Account: No penalty logic, overriden by CurrentAccount
    }
}
```

Account.java | Savingsaccount.java | Currentaccount.java | Bank.java

```java
package bank;

class SavingsAccount extends Account {
    SavingsAccount(String name, String accno) {
        super(name, accno);
    }

    void addInterest(int years) {
        double interest = balance * 0.05 * years;
        balance += interest;
        System.out.println("Interest added: " + interest);
        System.out.println("New Balance: " + balance);
    }
}
```

Account.java | Savingsaccount.java | Currentaccount.java | Bank.java

```java
package bank;
class Currentaccount extends Account {
    double minBalance;

    Currentaccount(String name, String accno) {
        super(name, accno);
        minBalance = 1000;
    }

    void imposePenalty() {
        System.out.println("Penalty of Rs.200 imposed!");
        balance -= 200;
    }
}

```

```
1. Current Account
2. Savings Account
Choose type:
1
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 10000
Invalid choice!
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 2
Amount: 200
Below minimum balance!
Penalty of Rs.200 imposed!
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 3
Name: Alice
Account Number: 1234
Balance: -200.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 4
Interest not applicable.
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
```

```
Penalty of Rs.200 imposed!
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 3
Name: Alice
Account Number: 1234
Balance: -200.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 4
Interest not applicable.
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 5
Thank you!
```

```
1. Current Account
2. Savings Account
Choose type:
2
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 1
Amount: 10000
Amount deposited: 10000.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 2
Amount: 200
Withdrawn amount: 200.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 3
Name: James
Account Number: 2345
Balance: 9800.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 4
Enter interest years: 2
Interest added: 980.0
New Balance: 10780.0
1. Deposit
2. Withdraw
```

```
Enter choice: 3
Name: James
Account Number: 2345
Balance: 9800.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 4
Enter interest years: 2
Interest added: 980.0
New Balance: 10780.0
1. Deposit
2. Withdraw
3. Display Balance
4. Add Interest (Savings only)
5. Exit
Enter choice: 5
Thank you!
```

```java
package bank;
import java.util.Scanner;
public class Bank {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("1. Current Account");
        System.out.println("2. Savings Account");
        System.out.println("Choose type:");
        int choice = sc.nextInt();
        Account acc;
        if (choice == 1)
            acc = new Currentaccount("Alice", "1234");
        else
            acc = new SavingsAccount("James", "2345");

        while (true) {
            System.out.println("1. Deposit");
            System.out.println("2. Withdraw");
            System.out.println("3. Display Balance");
            System.out.println("4. Add Interest (Savings only)");
            System.out.println("5. Exit");
            System.out.print("Enter choice: ");
            int c = sc.nextInt();

            switch (c) {
                case 1:
                    System.out.print("Amount: ");
                    acc.deposit(sc.nextDouble());
                    break;
                case 2:
                    System.out.print("Amount: ");
                    acc.withdraw(sc.nextDouble());
                    break;
                case 3:
                    acc.display();
                    break;
                case 4:
                    if (acc instanceof SavingsAccount) {
                        SavingsAccount sa = (SavingsAccount) acc;
                        System.out.print("Enter interest years: ");
                        int years = sc.nextInt();
                        sa.addInterest(years);
```

```
            int c = sc.nextInt();

            switch (c) {
                case 1:
                    System.out.print("Amount: ");
                    acc.deposit(sc.nextDouble());
                    break;
                case 2:
                    System.out.print("Amount: ");
                    acc.withdraw(sc.nextDouble());
                    break;
                case 3:
                    acc.display();
                    break;
                case 4:
                    if (acc instanceof SavingsAccount) {
                        SavingsAccount sa = (SavingsAccount) acc;
                        System.out.print("Enter interest years: ");
                        int years = sc.nextInt();
                        sa.addInterest(years);
                    } else {
                        System.out.println("Interest not applicable.");
                    }
                    break;
                case 5:
                    System.out.println("Thank you!");
                    sc.close();
                    return;
                default:
                    System.out.println("Invalid choice!");
            }
        }
    }
}
```