18/06/2024 LAB-5

Q. Develop a java program to create a Bank class 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

e) Check for the minimum balance, impose penalty if necessary and update the balance.

```
import java.util.Scanner;
class Account {
    private String customer_name;
    private int acc_no;
    protected double balance;
    public Account(String customer_name, int acc_no, double balance) {
        this.customer_name = customer_name;
        this.acc_no = acc_no;
        this.balance = balance;
    }
    public double getBalance() {
        return Balance;
    }
    public void deposit(double amount) {
        if(amount > 0) {
            balance += amount;
            System.out.println("Deposited: "+amount);
        }
        else {
            System.out.println("Deposit amount must be positive.");
        }
```

```
    }
    public void withdraw(double amount)
    {
     if (amount<=getBalance()) {
        balance -= amount;
        System.out.println("Withdraw : " + amount + "Balance: " + balance);
     }
     else {
        System.out.println("Insufficient funds!");
     }
    }
    public void displayBalance() {
        System.out.println("Current Balance = " + balance);
    }
}

class SavingsAccount extends Account {
    private double interestRate;
    public SavingsAccount(String customersName, int accountNumber, double
                          initialBalance, double interestRate) {
        super(customersName, accountNumber, initialBalance);
        this.interestRate = interestRate;
    }
    public void computeAndDepositInterest() {
        double interest = getBalance() * interestRate/100;
        deposit(interest);
    }
}
class CurrentAccount extends Account {
    private double minimumBalance;
    private double serviceCharge;
    public CurrentAccount(String customersName, int accountNumber, double
                          initialBalance, double minimumBalance, double
                          serviceCharge) {
        super(customersName, accountNumber, initialBalance);
        this.minimumBalance = minimumBalance;
        this.serviceCharge = serviceCharge;
    }
    public void checkMinimumBalance() {
```

```
        if (getBalance() < minimumBalance) {
            s.o.p("Balance is below minimum");
            balance -= serviceCharge;
            s.o.p("Deducted service charge " + serviceCharge);
            s.o.p("Balance after deduction is " + balance);
        }
    }
}

public class Bank {
    public static void main (String[] args) {
        Scanner sc = new Scanner (System.in);
        s.o.p("Enter customer name: ");
        String name = sc.nextLine();
        s.o.p("Enter account number: ");
        int acc_no = sc.nextInt();
        s.o.p("Enter initial balance: ");
        double balance = sc.nextDouble();
        s.o.p("Enter minimum balance: ");
        double minimum_balance = sc.nextDouble();
        s.o.p("Enter interest rate: ");
        int double interest_rate = sc.nextDouble();
        s.o.p("Enter service charge: ");
        double service_charge = sc.nextDouble();
        s.o.p("Enter choice: \n 1. Current \n 2. Savings");
        int ch = sc.nextInt();
        s.o.p("Customer name is: " + customer name + "\nAccount number: " + acc_no
            + "\nShreya Raj - 1BM23CS317");
        switch(ch) {
            case 1: s.o.p("Account is current type");
                CurrentAccount ca = new CurrentAccount(name, acc_no, balance,
                                                       minimum_balance, service_ch
                                                       -arge);
                do{s.o.p("Enter choice: \n 1. Deposit \n 2. Withdraw \n 3. Display
                                                                    balance");
                int c = sc.nextInt();
                ca.checkMinimumBalance();
                if (c == 1) {
                    s.o.p("Enter amount to be deposited: ");
                    double amt = sc.nextDouble();
                    ca.deposit(amt);
                }
```

```
        else if (c==2) {
            S.O.P("Enter amount to withdraw: ");
            double amt = sc.nextDouble();
            ca.withdraw(amt);
        }
        else if (c==3) {
            ca.displayBalance();
        }
        else {
            System.exit(0);
        } while (true);

case 2 : S.O.P("Account is savings type");
        SavingsAccount sa=new SavingsAccount(name,acc_no, balance, interestrate);
        do {S.O.P("Enter choice :\n1. Deposit\n2. Withdraw\n3. Display Balance");
        int c1=sc.nextInt();
        if (c1==1) {
            S.O.P("Enter amount to be deposited :");
            double amt=sc.nextDouble();
            sa.deposit(amt);
        }
        else if (c1==2) {
            S.O.P("Enter amount to withdraw: ");
            double amt = sc.nextDouble();
            sa.withdraw(amt);
        }
        else if (c1==3) {
            sa.computeAndDepositInterest();
            sa.displayBalance();
        }
        else {
            System.exit(0);
        } while true)
    } while (true);
  }
}
}
```

output :

```
Enter customer name:
Shreya
enter accno:
6366
enter initial balance:
50000
enter minimum balance:
2000
enter interest rate:
4
enter service charge:
20
Enter choice:
1. Current acc
2. Savings acc
1
Customer name is:Shreya
Account number:6366
account is current type
enter choice:
1.Deposit
2.Withdraw
3.display balance
1
enter amount to be deposited;
3000
Deposited:3000.0
enter choice:
1.deposit
2.withdraw
3.display balance
2
enter amount to withdraw:
20000
withdrew:20000.0 balance is:33000.0
enter choice:
1.deposit
2.withdraw
3.display balance
3
Current balance:33000.0
```

```
enter choice:
1. deposit
2. withdraw
3. display balance

enter customer name:
Shreya
enter accno:
6366
enter initial balance:
5000
enter minimum balance:
2000
enter interest rate:
4
enter service charge:
20
Enter choice:
1. Current acc
2. Savings acc
2
Customer name is: Shreya
Account number: 6366
account is savings type
enter choice:
1. Deposit
2. Withdraw
3. display balance
1
enter amount to be deposited:
35000
Deposited: 35000.0
enter choice:
1. deposit
2. withdraw
3. display balance
2
enter amount to withdraw:
8000
withdrew: 8000.0 balance is: 32000.0
enter choice:
1. deposit
2. withdraw
```

3. display balance

3

Deposited: 1200.0

Current Balance : 33280.0

enter choice:

1. deposit

2. withdraw

3. display balance

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```
import java.util.Scanner;

class Account {
    private String customer_name;
    private int acc_no;
    protected double balance;

    public Account(String customer_name, int acc_no, double balance) {
        this.customer_name = customer_name;
        this.acc_no = acc_no;
        this.balance = balance;
    }

    public double getBalance() {
        return balance;
    }

    public void deposit(double amount) {
        if (amount > 0) {
            balance += amount;
            System.out.println("Deposited: " + amount);
        } else {
            System.out.println("Deposit amount must be positive.");
        }
    }
   public void withdraw(double amount)
     {
       if(amount<=getBalance()){
          balance-=amount;
          System.out.println("withdrew:"+amount + " balance is:"+ balance);
          }
       else
         System.out.println("Insufficient funds!!");
     }
    public void displayBalance(){
        System.out.println("Current Balance: " + balance);
    }
}

class SavingsAccount extends Account {
    private double interestRate;

    public SavingsAccount(String customerName, int accountNumber, double initialBalance,
double interestRate) {
        super(customerName, accountNumber, initialBalance);
        this.interestRate = interestRate;
    }

    public void computeAndDepositInterest() {
        double interest = getBalance() * interestRate / 100;
```

```
        deposit(interest);
    }
}
class CurrentAccount extends Account {
    private double minimumBalance;
    private double serviceCharge;

    public CurrentAccount(String customerName, int accountNumber, double initialBalance,
double minimumBalance, double serviceCharge) {
        super(customerName, accountNumber, initialBalance);
        this.minimumBalance = minimumBalance;
        this.serviceCharge = serviceCharge;
    }
    public void checkMinimumBalance() {
        if (getBalance() < minimumBalance) {
            System.out.println("Balance is below minimum");
            balance-=serviceCharge;
            System.out.println("Deducted service charge:" +serviceCharge);
            System.out.println("Balance after deduction is:"+balance);
        }
    }
}

public class Bank {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter customer name:");
        String name=sc.nextLine();
        System.out.println("enter accno:");
        int acc_no=sc.nextInt();
        System.out.println("enter initial balance:");
        double balance=sc.nextDouble();
        System.out.println("enter minimum balance:");
        double minimum_balance=sc.nextDouble();
        System.out.println("enter interest rate:");
        double interest_rate=sc.nextDouble();
        System.out.println("enter service charge:");
        double service_charge=sc.nextDouble();
        System.out.println("Enter choice:\n 1.Current acc\n 2.Savings acc");
        int ch=sc.nextInt();
        System.out.println("Customer name is:"+ name+"\nAccount number:"+acc_no+"\n");

        switch(ch){
            case(1):
                System.out.println("account is current type");
                CurrentAccount ca = new
CurrentAccount(name,acc_no,balance,minimum_balance,service_charge);
                do{ System.out.println("enter choice:\n 1.deposit\n 2.withdraw\n 3.display
balance");
                int c=sc.nextInt();
                ca.checkMinimumBalance();
```

```
            if(c==1){
              System.out.println("enter amount to be deposited:");
              double amt=sc.nextDouble();
                ca.deposit(amt);}
            else if(c==2){
              System.out.println("enter amount to withdraw:");
              double amt=sc.nextDouble();
              ca.withdraw(amt);}
            else if(c==3){
              ca.displayBalance();}
            else
             System.exit(0);
             }while(true);

        case(2):
             System.out.println("account is savings type");
            SavingsAccount sa=new SavingsAccount(name,acc_no,balance,interest_rate);
            do{ System.out.println("enter choice:\n 1.deposit\n 2.withdraw\n 3.display
balance");
            int c1=sc.nextInt();
            if(c1==1){
              System.out.println("enter amount to be deposited:");
              double amt=sc.nextDouble();
                sa.deposit(amt);}
            else if(c1==2){
              System.out.println("enter amount to withdraw:");
              double amt=sc.nextDouble();
              sa.withdraw(amt);}
            else if(c1==3){
             sa.computeAndDepositInterest();
              sa.displayBalance();}
            else{
             System.exit(0);
                 }
            }while(true);
   }
}
}
```


C:\Windows\System32\cmd.e
C:\317>javac Bank.java
C:\317>java Bank
enter customer name:
Shreya
enter accno:
6366
enter initial balance:
50000
enter minimum balance:
2000
enter interest rate:
4
enter service charge:
20
Enter choice:
1.Current acc
2.Savings acc
1
Customer name is:Shreya
Account number:6366
account is current type
enter choice:
1.deposit
2.withdraw
3.display balance
1
enter amount to be deposited:
3000
Deposited: 3000.0
enter choice:
1.deposit
2.withdraw
3.display balance
2
enter amount to withdraw:
20000
withdrew:20000.0 balance is:33000.0
enter choice:
1.deposit
2.withdraw
3.display balance
3
Current Balance: 33000.0
enter choice:
1.deposit
2.withdraw
3.display balance


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.2861]
(c) Microsoft Corporation. All rights reserved.
C:\317>java Bank
enter customer name:
Shreya
enter accno:
6366
enter initial balance:
5000
enter minimum balance:
2000
enter interest rate:
4
enter service charge:
20
Enter choice:
1.Current acc
2.Savings acc
2
Customer name is:Shreya
Account number:6366
account is savings type
enter choice:
1.deposit
2.withdraw
3.display balance
1
enter amount to be deposited:
35000
Deposited: 35000.0
enter choice:
1.deposit
2.withdraw
3.display balance
2
enter amount to withdraw:
8000
withdrew:8000.0 balance is:32000.0
enter choice:
1.deposit
2.withdraw
3.display balance
3
Deposited: 1280.0
Current Balance: 33280.0
enter choice:
1.deposit
2.withdraw
3.display balance