#### WEEK 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 facili es 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.

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1	Language Lan

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balance + = amount;
System-out-perinth: (Deposited | Current
balance: + balance); public usid display Balance () {
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if (balance > = amount) &

balance - = amount .

System out print In " nith drawal Successful!

werent balance: "+ balance); &

else {
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Savings account: ");
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             account = new SavAcet Customer Name,
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              ciovent auaint: "
                double initial Reposit = scanner neut Dady
            account = new Curtact Coustomer Manne, account Numbi,
                 initial Deposit);
        4 else {
              System out printh "Invalid");
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System out println (" I. Deposit ");

System out println (" 2. hithdraw ");

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

System out println (" 4. Compute Intenst");
         System out point In [" 5. Chick and apply minimum balance penalty "];

System out print In [" 6. Enit [" );
          System out print ("Enter your choice: ");
          in choice = scanner nenttut ();
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break;
break;
System-out printh ("Invalid!");
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          scanner-ulose ();
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Enter initial deposit jor sawings aucount: 5000
Borne operations:
       1. Deposit
       2. withdraw
me
        3. Diplay Balance
       4. Compute Inforest
5. Check and apply balance penalty
       Enter jour choice:
       Enter deposit amount: 3000
        Deposited ! werent balane: $ 8000.0
         Mp
```

Enter mitholeanal amount: 4000 o mitholeanal summful! balance: 4000 o me Account balance: 4000.0 me, Interest of 160.0 has been added ? Me minimum balance cheek can only be applied to current allout me Enter withdrawal amount: 5000 Tusupicient bollonce / withdrawal pailed ! Me Enited1

Enter initial deposit jour current account: 50000 Enter deposit amount 100 Deposited l'aurrent balance: 50100.0 Me Enter mithdrawal amount 50000 mithdrawal successful current balance: 100 me Balance is below minimum. A penalty has been charged / deducted New balance: 50 me 6 Enited

```
import java.util.Scanner;
class Account {
  protected String customerName;
  protected String accountNumber;
  protected double balance;
  protected String accountType;
public Account(String customerName, String accountNumber, String
accountType, double initialBalance) {
    this.customerName = customerName;
    this.accountNumber = accountNumber;
    this.accountType = accountType;
    this.balance = initialBalance;
  }
  public void deposit(double amount) {
    balance += amount;
    System.out.println("Deposit successful! Current balance: " +
balance);
  }
  public void displayBalance() {
    System.out.println("Account balance: " + balance);
public void withdraw(double amount) {
    if (balance >= amount) {
```

```
balance -= amount;
       System.out.println("Withdrawal successful! Current balance: " +
balance);
     } else {
       System.out.println("Insufficient balance! Withdrawal failed.");
     }
  }
  public String getAccountType() {
    return accountType;
  }
class SavAcct extends Account {
  private static final double interestRate = 0.04; // 4% interest rate for
savings account
  public SavAcct(String customerName, String accountNumber, double
initialBalance) {
    super(customerName, accountNumber, "Savings", initialBalance);
  }
public void computeInterest() {
     double interest = balance * interestRate;
    balance += interest;
    System.out.println("Interest of " + interest + " has been added to your
account. New balance: " + balance);
class CurAcct extends Account {
  private static final double MIN_BALANCE = 500; // Minimum balance
required for Current Account
```

```
private static final double PENALTY = 50; // Penalty fee for falling
below minimum balance
  public CurAcct(String customerName, String accountNumber, double
initialBalance) {
    super(customerName, accountNumber, "Current", initialBalance);
  }
  public void checkMinimumBalance() {
    if (balance < MIN BALANCE) {
       balance -= PENALTY;
       System.out.println("Balance is below minimum. A penalty of " +
PENALTY + " has been charged. New balance: " + balance);
     }
public class Bank1 {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter customer name: ");
    String customerName = scanner.nextLine();
    System.out.print("Enter account type (1 for Savings, 2 for Current):
");
    int accountChoice = scanner.nextInt();
    scanner.nextLine();
    System.out.print("Enter account number: ");
```

```
String accountNumber = scanner.nextLine();
    Account account = null;
    if (accountChoice == 1) {
       System.out.print("Enter initial deposit for Savings account: ");
       double initialDeposit = scanner.nextDouble();
       account
                     new
                            SavAcct(customerName, accountNumber,
initialDeposit);
     } else if (accountChoice == 2) {
       System.out.print("Enter initial deposit for Current account: ");
       double initialDeposit = scanner.nextDouble();
       account
                     new CurAcct(customerName, accountNumber,
initialDeposit);
    } else {
       System.out.println("Invalid choice! Exiting program.");
       return;
    }
    boolean running = true;
    while (running) {
       System.out.println("\nBank Operations Menu:");
       System.out.println("1. Deposit");
       System.out.println("2. Withdraw");
       System.out.println("3. Display Balance");
       System.out.println("4. Compute Interest (Savings account only)");
       System.out.println("5. Check and apply minimum balance penalty
(Current account only)");
       System.out.println("6. Exit");
       System.out.print("Enter your choice: ");
       int choice = scanner.nextInt();
```

```
switch (choice) {
         case 1:
           System.out.print("Enter deposit amount: ");
           double depositAmount = scanner.nextDouble();
           account.deposit(depositAmount);
           break;
         case 2:
           System.out.print("Enter withdrawal amount: ");
           double withdrawAmount = scanner.nextDouble();
           account.withdraw(withdrawAmount);
           break;
         case 3:
           account.displayBalance();
           break;
         case 4:
           if (account instanceof SavAcct) {
              ((SavAcct) account).computeInterest();
            } else {
              System.out.println("Interest can only be computed for
Savings account.");
           break;
         case 5:
           if (account instanceof CurAcct) {
              ((CurAcct) account).checkMinimumBalance();
            } else {
```

```
System.out.println("Minimum balance check can only be applied to Current account.");

| break;
| case 6:
| System.out.println("Exiting program.");
| running = false;
| break;
| default:
| System.out.println("Invalid choice! Please select a valid option.");
| }
| scanner.close();
| }
```

C:\Windows\System32\cmd.exe Microsoft Windows [Version 10.0.19045.5247] (c) Microsoft Corporation. All rights reserved. C:\Users\Srinivas\OneDrive\Desktop\BMS\SEM 3\PROGRAMS>javac Bank1.java C:\Users\Srinivas\OneDrive\Desktop\BMS\SEM 3\PROGRAMS>java Bank1 Enter customer name: sameksha Enter account type (1 for Savings, 2 for Current): 1 Enter account number: 23nckak34 Enter initial deposit for Savings account: 20000 Bank Operations Menu: 1. Deposit 2. Withdraw 3. Display Balance Compute Interest (Savings account only) 5. Check and apply minimum balance penalty (Current account only) 6. Exit Enter your choice: 1 Enter deposit amount: 50000 Deposit successful! Current balance: 70000.0

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Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 3
Account balance: 70000.0

Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 2

Enter withdrawal amount: 200

Withdrawal successful! Current balance: 69800.0

Bank Operations Menu:



Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 3
Account balance: 69800.0

# Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 2

Enter withdrawal amount: 30000

Withdrawal successful! Current balance: 39800.0

#### Bank Operations Menu:



Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 3
Account balance: 39800.0

# Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 4

Interest of 1592.0 has been added to your account. New balance: 41392.

# Bank Operations Menu:

1. Deposit



Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 5

Minimum balance check can only be applied to Current account.

#### Bank Operations Menu:

- 1. Deposit
- 2. Withdraw
- 3. Display Balance
- Compute Interest (Savings account only)
- 5. Check and apply minimum balance penalty (Current account only)
- 6. Exit

Enter your choice: 6

Exiting program.

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