WEEK 4

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;
import java.lang.Math;

class Account{

        String name = new String();
        int acc_no;
        double balance;

        void setd(){
                Scanner S = new Scanner(System.in);
                System.out.println("Enter your name : ");
                name = S.nextLine();
                System.out.println("Enter Account number : ");
                acc_no = S.nextInt();
                System.out.println("Enter balance: ");
                balance = S.nextDouble();
```

```
	}
	void display(){
		System.out.println("Name  :  " + name);
		System.out.println("Account number  :  " + acc_no);
		System.out.println("Balance  :  " + balance);
	}
	Account(){}
}

class Savings extends Account{
	Scanner S = new Scanner(System.in);
	Savings(){
		System.out.println("Facilities avilable are : ");
		System.out.println("1.Withdraawal \n 2.Compound Intrest \n 3.No Cheque");
		}

	void deposit(){
		int choice;
		double dep;
		double wd;
		System.out.println("Enter 1 to deposit : ");
		choice = S.nextInt();
		if(choice == 1){
			System.out.println("Enter the amount to deposit : ");
			dep = S.nextDouble();
			balance += dep;
		}
		else
			System.out.println("Invalid Input");
	}
	void intrest()
	{
		System.out.println("Enter rate of interest  : ");
		double r = S.nextDouble();
 r = r/100;
		System.out.println("Enter frequency of interest applied per time period  : ");
		int n = S.nextInt();
		System.out.println("Enter  time periods : ");
		int t = S.nextInt();
		double x = (1+(r/n));
		double compond_intrest = balance*Math.pow(x,n*t);
		System.out.println("Interest amount="+(compond_intrest-balance)+" \nBalance
amount without interest is"+balance);
 balance = compond_intrest;
```

```
                System.out.println("Available balance after updating is : "+balance);
        }
        void withdraw(){
           double wd;
           int choice;
                System.out.println("Enter 1 to withdraw : ");
                choice = S.nextInt();
                if(choice == 1){
                        System.out.println("Enter the amount you want : ");
                        wd = S.nextDouble();
                        if(wd < balance){
                                balance = balance - wd;
                                System.out.println("Avilable balance is : " + balance);
                        }
                        else
                            System.out.println("Insufficient balance");
                }
                else
                      System.out.println("Invalid Input");
        }
}

class Current extends Account{
        Scanner S = new Scanner(System.in);
        Current()
        {
                System.out.println("Cheque Facility available ");

        }
        void deposit()
        {
                int choice;
                double amount;
                System.out.println("Press 1 to deposit ");
                choice = S.nextInt();
                if(choice==1)
                {
                        System.out.println("Enter amount to be deposited ");
                        amount=S.nextDouble();
                        balance += amount;
                }
                else
                        System.out.println("Invalid Input");
        }
```

```
	void withdraw()
	{
		System.out.println("Press 1 to withdraw ammount");
		int choice=S.nextInt();
		if(choice==1)
		{
			System.out.println("Enter the amount to be withdrawn ");
			double wd=S.nextDouble();
			balance = balance - wd;
			System.out.println("Available Balance:"+balance);
		}
		else
			System.out.println("Invalid input");

		if(balance<1000)
		{
			System.out.println("You are running out of minimum balance \nAmount
of rs 500 has been debited as service charge for having low balance");
			balance =balance - 500;
			System.out.println("Your Available Balance:"+balance);
		}
	}
}

class Lab5
{
	public static void main(String xx[])
{
		Scanner S = new Scanner(System.in);
		int choice;
		System.out.println("\nPress\n 1. for Savings account \n2.for Current account");
		choice = S.nextInt();
		switch(choice)
	{
		case 1:
			Savings s1=new Savings();
			 s1.setd();
			 s1.display();
			 s1.deposit();
			 s1.intrest();
			 s1.withdraw();
			 break;
		case 2:
```

```
                        Current c1=new Current();
                         c1.setd();
                         c1.display();
                         c1.deposit();
                         c1.withdraw();
                         break;
                default : System.exit(0);
        }
}

}

import java.util.Scanner;
import java.lang.Math;

class Account{

        String name = new String();
        int acc_no;
        double balance;

        void setd(){
                Scanner S = new Scanner(System.in);
                System.out.println("Enter your name : ");
                name = S.nextLine();
                System.out.println("Enter Account number : ");
                acc_no = S.nextInt();
                System.out.println("Enter balance: ");
                balance = S.nextDouble();
        }
        void display(){
                System.out.println("Name  :  " + name);
                System.out.println("Account number  :  " + acc_no);
                System.out.println("Balance  :  " + balance);
        }
        Account(){}
}

class Savings extends Account{
        Scanner S = new Scanner(System.in);
        Savings(){
                System.out.println("Facilities avilable are : ");
                System.out.println("1.Withdraawal \n 2.Compound Intrest \n 3.No Cheque");
                }
```

```
	void deposit(){
		int choice;
		double dep;
		double wd;
		System.out.println("Enter 1 to deposit : ");
		choice = S.nextInt();
		if(choice == 1){
			System.out.println("Enter the amount to deposit : ");
			dep = S.nextDouble();
			balance += dep;
		}
		else
			System.out.println("Invalid Input");
	}
	void intrest()
	{
		System.out.println("Enter rate of interest  : ");
		double r = S.nextDouble();
 r = r/100;
		System.out.println("Enter frequency of interest applied per time period  : ");
		int n = S.nextInt();
		System.out.println("Enter  time periods : ");
		int t = S.nextInt();
		double x = (1+(r/n));
		double compond_intrest = balance*Math.pow(x,n*t);
		System.out.println("Interest amount="+(compond_intrest-balance)+" \nBalance
amount without interest is"+balance);
  balance = compond_intrest;
		System.out.println("Available balance after updating is : "+balance);
	}
	void withdraw(){
	   double wd;
	   int choice;
		System.out.println("Enter 1 to withdraw : ");
		choice = S.nextInt();
		if(choice == 1){
			System.out.println("Enter the amount you want : ");
			wd = S.nextDouble();
			if(wd < balance){
				balance = balance - wd;
				System.out.println("Avilable balance is : " + balance);
			}
			else
```

```
                        System.out.println("Insufficient balance");
                }
                else
                        System.out.println("Invalid Input");
        }
}

class Current extends Account{
        Scanner S = new Scanner(System.in);
        Current()
        {
                System.out.println("Cheque Facility available ");

        }
        void deposit()
        {
                int choice;
                double amount;
                System.out.println("Press 1 to deposit ");
                choice = S.nextInt();
                if(choice==1)
                {
                        System.out.println("Enter amount to be deposited ");
                        amount=S.nextDouble();
                        balance += amount;
                }
                else
                        System.out.println("Invalid Input");
        }

        void withdraw()
        {
                System.out.println("Press 1 to withdraw amount");
                int choice=S.nextInt();
                if(choice==1)
                {
                        System.out.println("Enter the amount to be withdrawn ");
                        double wd=S.nextDouble();
                        balance = balance - wd;
                        System.out.println("Available Balance:"+balance);
                }
                else
                        System.out.println("Invalid input");
```

```
                if(balance<1000)
                {
                        System.out.println("You are running out of minimum balance \nAmount
of rs 500 has been debited as service charge for having low balance");
                        balance =balance - 500;
                        System.out.println("Your Available Balance:"+balance);
                }
        }
}

class Lab5
{
        public static void main(String xx[])
{
                Scanner S = new Scanner(System.in);
                int choice;
                System.out.println("\nPress\n 1. for Savings account \n2.for Current account");
                choice = S.nextInt();
                switch(choice)
        {
                case 1:
                        Savings s1=new Savings();
                         s1.setd();
                         s1.display();
                         s1.deposit();
                         s1.intrest();
                         s1.withdraw();
                         break;
                case 2:
                        Current c1=new Current();
                         c1.setd();
                         c1.display();
                         c1.deposit();
                         c1.withdraw();
                         break;
                default : System.exit(0);
        }
}

}
```

```
Press
 1. for Savings account
2.for Current account
1
Facilities avilable are :
1.Withdraawal
 2.Compound Intrest
 3.No Cheque
Enter your name :
qwe
Enter Account number :
1
Enter balance:
1000
Name  :  qwe
Account number  :  1
Balance  :  1000.0
Enter 1 to deposit :
1
Enter the amount to deposit :
1000
Enter rate of interest  :
5
Enter frequency of interest applied per time period  :

1
Enter  time periods :
1
Interest amount=100.0
Balance amount without interest is2000.0
Available balance after updating is : 2100.0
Enter 1 to withdraw :
1
Enter the amount you want :
100
Avilable balance is : 2000.0
```

5. Develop Java program to create a class Bank that maintains two kinds of account - savings account and current account. Saving account provides compound interest and withdrawal facility but no checkbook facility. Current account should have minimum balance, a fine is imposed if balance is below a certain value, no check book facility and no interest.

A class account stores account number, account name, account type. It is the parent class.

(a) Accept deposit from customer to update balance.
(b) Display balance
(c) Compute and display interest
(d) Permit withdrawal and update balance.

```
import java.util.Scanner;
import java.lang.Math;

class Account{
    String name;
    int accno;
    double balance;
    void set (){
    Scanner s = new Scanner (System.in);
    System.out.println ("Enter name and accno");
    name = s.next();
    accno = s.nextInt();
    System.out.println("Enter bank balance");
    balance = s.nextDouble();
    }
void display(){
    System.out.println("Name: "+name+"\nAccount number: "+
accno+"\n Balance: " + balance);
}
```

```
        System.out.println("Insufficient funds");
    }
}
}

class Cur-acc extends Account{
    Scanner s= new Scanner (System.in);
    void deposit(){
        int choice System.out.println("Enter deposit amount balance");
        double amount = s.nextDouble();
            balance += amount;
    }

    void withdraw (){
    .int  double min_balance = 1000;
        System.out.println("Enter withdraw amount");
        double wa = s.nextDouble();
        if (balance - wa > min_balance){
            System.out.println("Now balance is " + (balance-wa));
                balance = balance - wa;
        } else {
            System.out.println("Insufficient funds,
    fine will be levied");
        balance = balance - wd - 0.05 * min_balance;
    }
}
}

class Lab5{
    public static void main(String args[]){
        Scanner s = new Scanner (System.in);
        int choice;
        System.out.println("1. Savings Account\n2. Current
    Account");
        choice = s.nextInt();
```

```
class savacc extends Account{
    Scanner s = new Scanner(System.in);
    System.out.println("1.Withdrawal \n2.
Compound interest");
  void deposit(){
  int choice;
  double deposite;
   double w;
  System.out.println("Enter 1 to deposit");
  choice = s.nextInt();
  if(choice == 1){
   System.out.println("Enter deposit amount");
    deposite = s.nextDouble();
      balance += deposite;
  } else{
   System.out.println("Invalid");
  }
void Interest(){
   int a=5;
    System.out.println("Enter time in years");
   int t = s.nextInt();
    double w = balance*Math.pow((1+a/100),t) -balance;
    balance = balance+w;
  System.out.println("w" + " interest has been added.
New balance is " + balance);
}
 void withdraw(){
    System.out.println("Enter amount to be
withdrawn");
    w= s.nextDouble();
   if(balance-w>0){
     balance-= w;
  System.out.println("New balance is" + balance);
 } else{
```

```
if (choice == 1){
    Sav_acc sav = new Sav_acc();
     sav.set();
     sav.deposit();
     sav.withdraw();
     sav.Interest();
} else if (choice == 2) {
    Cur_acc cur = new Cur_acc();
     cur.set();
     cur.deposit();
     cur.withdraw();
     cur.display();
```

Output:

1. Savings Account
2. Current Account

1

1. Withdrawal
2. Compound Interest

Enter name: Avs
Enter accno: 210
Enter balance: 1000
Name: Avs
Accno: 210
Balance: 1000
Enter 1 to deposite.
1
Enter deposit amount
1000
Enter compounding time in years
1
New balance is 2100.

Enter withdrawal amount

100

New balance is 2000