Practical - 04

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Student Name : Vinni Fengade

Roll No. : 67

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Course Name : Object Oriented Programming (CSP256)

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Problem Statements:

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1. Write a program to implement multiple inheritance.

Consider a class BankAccount with data members as account number, aadhar number, owner name, ROI and balance with member functions openAccount(), deposit(amount),closeAccount() and updateInterest(). Create an interface Debitable which has method withdraw().

Derive a class FixedDepositAccount from BankAccount having data member lockInPeriod. Override methods updateInterest() to update Simple Interest, and method closeAccount() to charge 5 % for closure of FD Account before lockInPeriod.

Derive a class SavingAccount from class BankAccount and interface Debitable.

[ROI for Saving Account is 4% and for FD – 1-2yrs-6% ; 2-5yrs-6.5% ; >5yrs- 7%]

Code

File :**Main.java**

```
import java.util.Scanner;


public class Main {
    public static void main(String[] args) {
        String User_name="kk",Opening_Date="2019-05-01",Exit_Date="2022-05-04";
        Scanner sc =new Scanner(System.in);
```

```
        System.out.print("Enter Username : ");
        User_name = sc.nextLine();
        System.out.print("Enter Date of Opening(yyyy-mm-dd) : ");
        Opening_Date = sc.nextLine();
        System.out.print("Enter Date of Exiting(yyyy-mm-dd) : ");
        Exit_Date = sc.nextLine();
        System.out.print("Enter the Balance/Amount: ");
        int balance = sc.nextInt();

        Fixed_Deposite fd1 = new Fixed_Deposite(10001, 10000, 2, Opening_Date);
        fd1.open_account(10001,User_name);
        fd1.close_account(Exit_Date);

        System.out.println("");

        Saving_Account sa1 = new Saving_Account(10002,5000,Opening_Date);
        sa1.deposite(5000);
        sa1.update_interest(Exit_Date);
        sa1.close_account();
    }
}
```

File :**Bank_Account**

```
import java.time.LocalDate;

public class Bank_Account {
    int acc_num;
    int aadhar_num;
    String owner_name;
    double ROI;
    int balance;
    LocalDate opening_date;
    Bank_Account(int acc_num,String date){
        this.acc_num=acc_num;
        this.opening_date = LocalDate.parse(date);
    }
```

```
    void open_account(int aadhar_num,String owner_name){
        this.aadhar_num=aadhar_num;
        this.owner_name=owner_name;
        System.out.println("Welcome "+ owner_name);
        System.out.println("Your Aadhar_num is :"+aadhar_num);
    }
    void deposite(int amt){
        this.balance+=amt;
        System.out.println(amt+"Rs deposited Successfully.");
    }
    void close_account(){
        System.out.println("Your bank account has been closed.");
        System.out.println("Account Closure Balance is "+balance);
    }
    void update_interest(int roi){
        this.ROI=4;
        balance*=1.04;
    }
}
```

File : **Fixed Deposite**

```
import java.time.LocalDate;
import java.time.Period;

public class Fixed_Deposite extends Bank_Account{
    int lockin_period =0;
    public Fixed_Deposite(int acc_num, int amount, int period, String date){
        super(acc_num,date);
        this.lockin_period=period;
        this.balance=amount;
    }

    @Override
    void update_interest(int period){
        this.lockin_period=period;
        if(lockin_period<2){
```

```
            ROI=6;
        }else if(lockin_period>=2 && lockin_period<5){
            ROI=6.5;
        }else if(lockin_period>=5){
            ROI=7;
        }
    }

    public void close_account(String exit_date){
        int year =
Period.between((this.opening_date),LocalDate.parse(exit_date)).getYears();
        update_interest(year);
        this.balance=(int)(this.balance*(1+ (ROI/100)*year)*(0.95));
        System.out.println("Your Fixed Deposite account has been closed after
"+year+" years.");
        System.out.println("Account Closure Balance is "+this.balance);
    }
}
```

File : **debitable**

```
public interface debitable {
    void withdraw(int amt);
}
```

File : **Saving_Account**

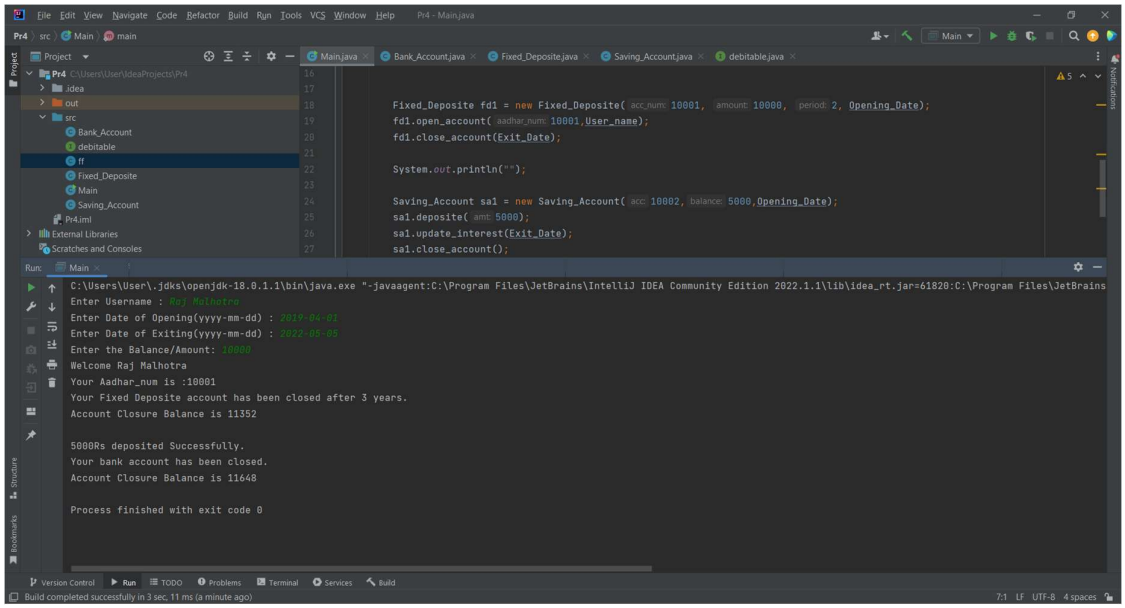
```
import java.time.LocalDate;
import java.time.Period;

public class Saving_Account extends Bank_Account implements debitable{
    Saving_Account(int acc,int balance,String date){
        super(acc,date);
        this.balance=balance;
    }
```

```
    @Override
    void open_account(int aadhar_num,String owner_name){
       super.open_account(aadhar_num, owner_name);
        System.out.println("Your Saving Account Balance is :"+this.balance);
    }

    void update_interest(String current_date){
        LocalDate c_date = LocalDate.parse(current_date);
        int year =
Period.between(this.opening_date,LocalDate.parse(current_date)).getYears();
        update_interest(year);
        if(year>=1){
            balance*=(1+year*0.04);
        }
    }
    @Override
    public void withdraw(int amt){
        if(amt>this.balance){
            System.out.println("Low Balance!!\n Could not complete the withdrawl
transaction.");
        }else{
            System.out.println("Transaction is in process...");
            this.balance-=amt;
            System.out.println(amt+" Rs  withdrawn.");
            System.out.println("Saving Account Balance is "+this.balance);
        }
    }
}
```

Execution


Fixed_Deposite fd1 = new Fixed_Deposite(acc_num: 10001, amount: 10000, period: 2, Opening_Date);
fd1.open_account(aadhar_num: 10001,User_name);
fd1.close_account(Exit_Date);
System.out.println("");
Saving_Account sa1 = new Saving_Account(acc: 10002, balance: 5000,Opening_Date);
sa1.deposite(amt: 5000);
sa1.update_interest(Exit_Date);
sa1.close_account();
C:\Users\User\.jdks\openjdk-18.0.1.1\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.1.1\lib\idea_rt.jar=61820:C:\Program Files\JetBrains
Enter Username : Raj Malhotra
Enter Date of Opening(yyyy-mm-dd) : 2019-04-01
Enter Date of Exiting(yyyy-mm-dd) : 2022-05-05
Enter the Balance/Amount: 10000
Welcome Raj Malhotra
Your Aadhar_num is :10001
Your Fixed Deposite account has been closed after 3 years.
Account Closure Balance is 11352
5000Rs deposited Successfully.
Your bank account has been closed.
Account Closure Balance is 11648
Process finished with exit code 0