"Experiment 1.3"

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Branch: **CSE** Section/Group: **808-A**
Semester: **5** Date of Performance: **18-08-22**
Subject Name: **PBLJ Lab** Subject Code: **20CSP-321**

AIM:

Create an application to calculate interest for FDs, RDs based on certain conditions using inheritance.

Minimum Hardware Requirements:

- 2 GHz CPU or 1 virtual CPU in virtualized environments.
- 1 GB of RAM.
- 4 GB of storage.

Minimum Software Requirements:

Software	Version
• OS	• Mac OS 10.15, HP-UX 11i V3, AIX 7.2, Windows Server 2019, Windows 10, Solaris 11.3, Red Hat Enterprise Linux 8.1, Ubuntu Server 20.04
• JDK	• JDK 1.8.0, JDK 11, Ellipse IDE, Net, NetBeans 8.2

Algorithm:

1. Make Account Class.
2. Using Method Overriding Create Interest Calculate.
3. Create FD, RD & SD.
4. Take input of amount and age and days for FD.
5. Take input of saving account
6. For RD take amount and month and age as input.
7. Create a Launcher class.

Source Code:

```
// SUMIT KUMAR
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package practice2;

import java.util.*;
interface Account{
    double interestrate=0.0;
    double amount=0.0;
    abstract double calculateInterest();
}
class SBAccount implements Account{
    private double interestrate;
    private double amount;
    double gainedInterest;
    public double calculateInterest(){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the average in your account");
        amount=sc.nextDouble();
        System.out.println("Enter 1 for Normal account or 2 for NRI account");
        int typeofacc=sc.nextInt();
        if(amount <= 0)
        {
            System.out.println("Please enter Valid Amount.");
        }
        else{
            if(typeofacc==1){
                gainedInterest=((amount*4)/100);
                System.out.println("Interest gained "+gainedInterest);
            }
            else if(typeofacc == 2){
                gainedInterest=((amount*6)/100);
                System.out.println("Interest gained "+gainedInterest);
            }
            else{
                System.out.println("invalid selection");
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            }
        }
        return 0;
    }
}

class FDAccount implements Account{
    private double interestrate;
    private double amount;
    private int noOfDays;
    int ageOfACHolder;
    double gainedInterest;
    public double calculateInterest(){
        System.out.println("Enter the FD amount:");
        Scanner sc=new Scanner(System.in);
        amount=sc.nextDouble();
        System.out.println("Enter the no of days:");
        noOfDays=sc.nextInt();
        System.out.println("Enter your age:");
        ageOfACHolder=sc.nextInt();
        if(amount<10000000){
            if(noOfDays>=7 && noOfDays<=14){
                if(ageOfACHolder<=60){
                    interestrate=4.50;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
                else{
                    interestrate=5.0;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
            }
            else if(noOfDays>=15 && noOfDays<=29){
                if(ageOfACHolder<=60){
                    interestrate=4.75;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
                else{
                    interestrate=5.25;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
            }
            else if(noOfDays>=30 && noOfDays<=45){
                if(ageOfACHolder<=60){
                    interestrate=5.50;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
                else{
                    interestrate=6.00;
                    gainedInterest=(amount*interestrate)/100;
                    System.out.println("Interest gained is: "+gainedInterest);
                }
            }
            else if(noOfDays>=46 && noOfDays<=60){
                if(ageOfACHolder<=60){
```

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                interestrate=7;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
            else{
                interestrate=7.50;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
        }
        else if(noOfDays>=61 && noOfDays<=184){
            if(ageOfACHolder<=60){
                interestrate=7.50;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
            else{
                interestrate=8.00;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
        }
        else if(noOfDays>=185 && noOfDays<=365){
            if(ageOfACHolder<=60){
                interestrate=8.00;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
            else{
                interestrate=8.50;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
        }
        else {System.out.println("Please Provide Valid days.");}
    }
    else{
        if(noOfDays>=7 && noOfDays<=14){
            interestrate=6.50;
            gainedInterest=(amount*interestrate)/100;
            System.out.println("Interest gained is: "+gainedInterest);
        }
        else if(noOfDays>=15 && noOfDays<=29){
            interestrate=6.75;
            gainedInterest=(amount*interestrate)/100;
            System.out.println("Interest gained is: "+gainedInterest);
        }
        else if(noOfDays>=30 && noOfDays<=45){
            interestrate=6.75;
            gainedInterest=(amount*interestrate)/100;
            System.out.println("Interest gained is: "+gainedInterest);
        }
        else if(noOfDays>=46 && noOfDays<=60){
            interestrate=8.00;
            gainedInterest=(amount*interestrate)/100;
            System.out.println("Interest gained is: "+gainedInterest);
        }
        else if(noOfDays>=61 && noOfDays<=184){
            interestrate=8.50;
```

```
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
            else if(noOfDays>=185 && noOfDays<=365){
                interestrate=10.00;
                gainedInterest=(amount*interestrate)/100;
                System.out.println("Interest gained is: "+gainedInterest);
            }
            else {System.out.println("Please Provide Valid days.");}
        }
        return 0.0;}

}


class RDAccount implements Account{
    private double interestRate;
    private double amount;
    private double monthlyAmount;
    private int ageOfACHolder;
    private int noOfMonths;

    public double calculateInterest(){
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the RD amount: ");
        amount = sc.nextDouble();
        System.out.println("Enter the number of months, either 6 or 9 or 12 or 15
or 18 or 21");
        noOfMonths = sc.nextInt();
        System.out.println("Enter your age: ");
        ageOfACHolder = sc.nextInt();
        if(amount <= 0.0){
            System.out.println("Invalid RD Amount");
        }
        else{
            if (noOfMonths == 6) {
                if(ageOfACHolder <= 55){
                    interestRate = 7.5;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else if (noOfMonths == 9) {
                if(ageOfACHolder <= 55){
                    interestRate = 7.75;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    interestRate = 8.25;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else if (noOfMonths == 12) {
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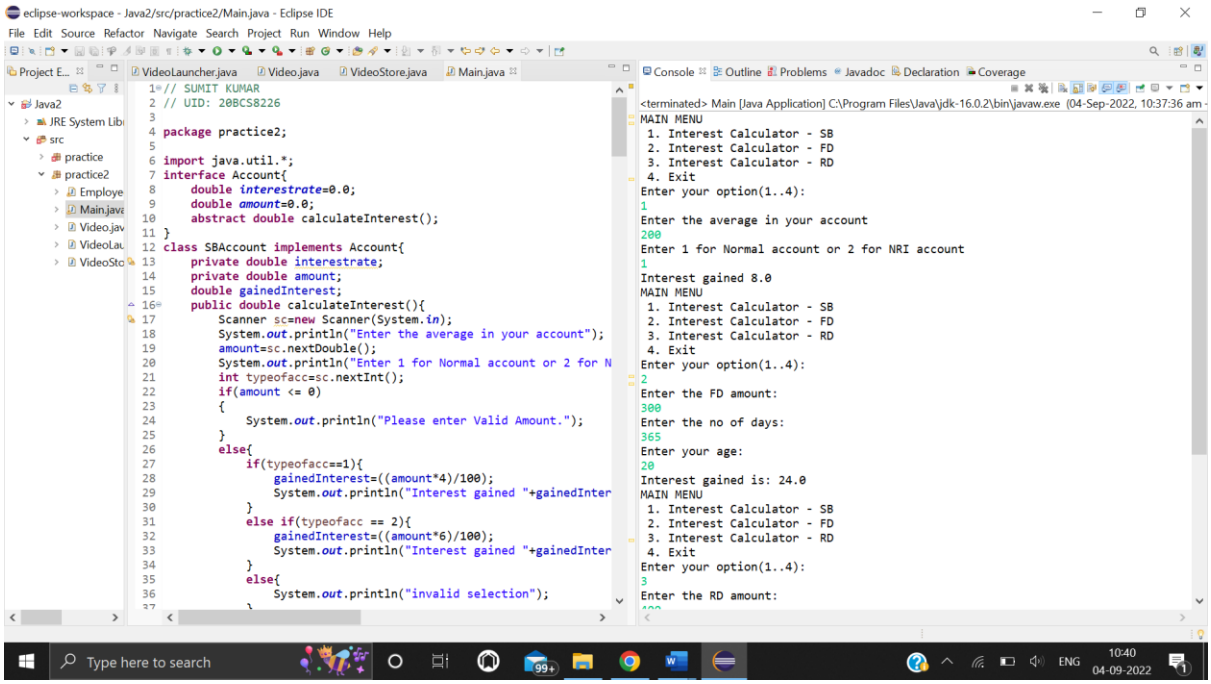
```
                if(ageOfACHolder <= 55){
                    interestRate = 8.0;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    interestRate = 8.5;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else if (noOfMonths == 15) {
                if(ageOfACHolder <= 55){
                    interestRate = 8.25;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    interestRate = 8.75;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else if (noOfMonths == 18) {
                if(ageOfACHolder <= 55){
                    interestRate = 8.5;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    interestRate = 9.0;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else if (noOfMonths == 21) {
                if(ageOfACHolder <= 55){
                    interestRate = 8.75;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
                else{
                    interestRate = 9.25;
                    double gainedInterest = (amount * interestRate)/100;
                    System.out.println("Interest Gained is : "+gainedInterest);
                }
            }
            else System.out.println("Please Provide Valid Months.");
        }
        return 0.0;
    }
}
 public class Main {
    public static void main(String args[]){
        int choice;
        do{
            FDAccount fda=new FDAccount();
            SBAccount sba=new SBAccount();
            RDAccount rda=new RDAccount();
```

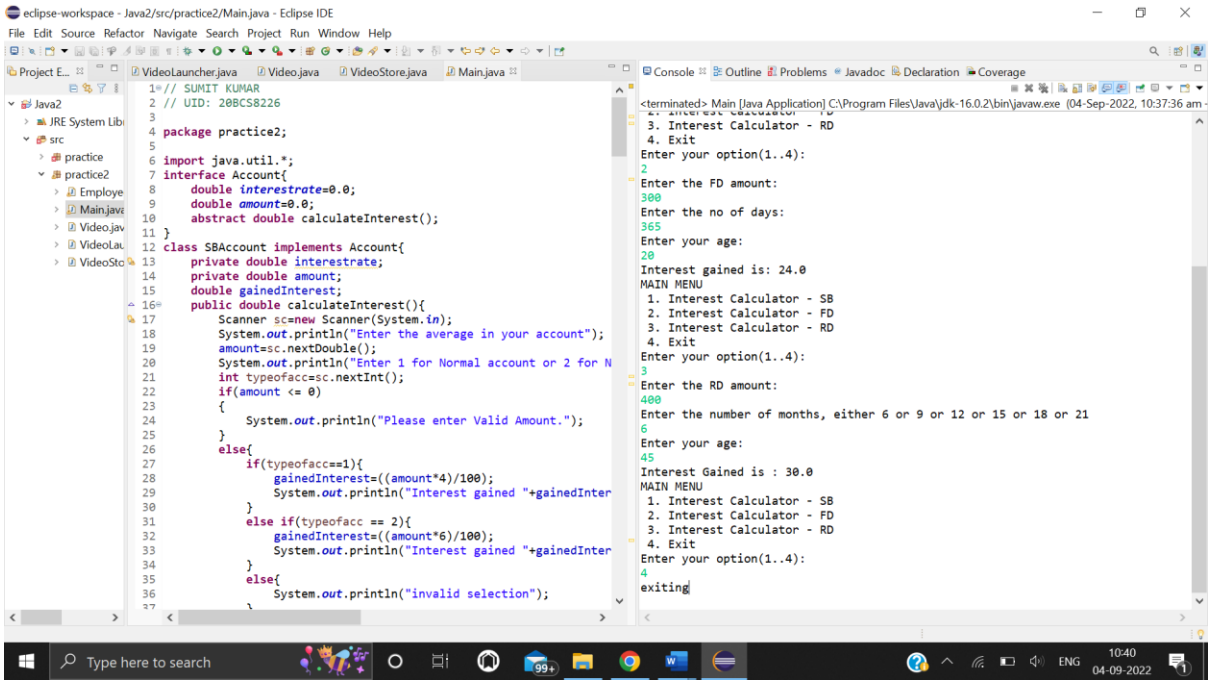
```
            System.out.println("MAIN MENU \n 1. Interest Calculator - SB \n 2.
Interest Calculator - FD \n 3. Interest Calculator - RD \n 4. Exit");
            System.out.println("Enter your option(1..4): ");
            Scanner sc=new Scanner(System.in);
            choice=sc.nextInt();

                switch (choice){
                    case 1: sba.calculateInterest();
                    break;
                    case 2:fda.calculateInterest();
                    break;
                    case 3:rda.calculateInterest();
                    break;
                    case 4:System.out.println("exiting");
                        System.exit(0);
                        break;
                    default:System.out.println("You are enter wrong entry");
                }
//                if (choice == 1) {
//                    sba.calculateInterest();
//                } else if (choice == 2) {
//                    fda.calculateInterest();
//                } else if (choice == 3) {
//                    rda.calculateInterest();
//                } else if (choice == 4) {
//                    System.out.println("exiting");
//                    System.exit(0);
//                } else
//                    System.out.println("Please enter valid choice");
        }while(choice !=4);
//        catch(Exception e){
//            System.out.println("Error occurred at: "+e);
//        }
    }
}
```

Output:



Screenshot of executing choices 1 and 2



Screenshot of executing choices 3 and 4

Learning outcomes:

- Learnt how to create and import user defined packages for more understandable and modular code.
- Learnt about simple and compound interest and how to calculate them using their respective formulas.
- Learnt about the concept of inheritance in object oriented programming and how to implement it in a program.