Experiment 1.3

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Aim:

Calculate interest based on the type of the account and the status of the account holder. The rates of interest changes according to the amount (greater than or less than 1 crore), age of account holder (General or Senior citizen) and number of days if the type of account is FD or RD.

Objectives:

Design and implement a simple Banking management system.

Code:

```
package University.Java_Using_Project.Experiment3;


import java.util.Scanner;

abstract class Account{
   double interestRate;
   double amount;

   Account(double amount){
      this.amount = amount;
      this.interestRate = 0.0;
   }
   abstract double calculateInterest();
}

class FDAccount extends  Account{
   int  noOfDays;
   int ageOfACHolder;

   public FDAccount(double amount, int noOfDays,int ageOfACHolder ) {
```

```
        super(amount);
        this.noOfDays = noOfDays;
        this.ageOfACHolder = ageOfACHolder;
    }



    @Override
    double calculateInterest() {
        if(amount<1000000){
            if(7<= noOfDays && noOfDays<=14){
                interestRate = (ageOfACHolder<60)?4.50 : 5.0;
            } else if (15<= noOfDays && noOfDays<=29) {
                interestRate = (ageOfACHolder<60)? 4.75 : 5.25;
            }
            else if (30<= noOfDays && noOfDays<=45) {
                interestRate = (ageOfACHolder<60)? 5.50 : 6.00;
            }
            else if (46<= noOfDays && noOfDays<=60) {
                interestRate = (ageOfACHolder<60)? 7.00 : 7.50;
            }
            else if (61<= noOfDays && noOfDays<=184) {
                interestRate = (ageOfACHolder<60)? 7.50 : 8.00;
            }
            else if (185<= noOfDays) {
                interestRate = (ageOfACHolder<60)? 8.00 : 8.50;
            }else{
                interestRate = 0.0;
            }
        }else{
            if(7<= noOfDays && noOfDays<=14){
                interestRate = 6.50;
            } else if (15<= noOfDays && noOfDays<=29) {
                interestRate = 6.75;
            }
            else if (30<= noOfDays && noOfDays<=45) {
                interestRate = 7.50;
            }
            else if (46<= noOfDays && noOfDays<=60) {
                interestRate = 8.00;
            }
            else if (61<= noOfDays && noOfDays<=184) {
```

```
                interestRate = 8.50;
            }
            else if (185<= noOfDays) {
                interestRate = 10.00;
            }else{
                interestRate = 0.0;
            }
        }

        return (amount*interestRate*noOfDays)/(365*100);
    }
}

class  RDAccount extends  Account{

    int noOfMonths;
    int ageOfACHolder;

   RDAccount(double amount, int noOfMonths, int ageOfACHolder){
      super(amount);
      this.noOfMonths = noOfMonths;
      this.ageOfACHolder = ageOfACHolder;
   }

   @Override
   double calculateInterest() {

      if(noOfMonths<=6){
         interestRate = (ageOfACHolder<60)? 7.50 : 8.00;
      }else if(noOfMonths<=9){
         interestRate = (ageOfACHolder<60)? 7.75 : 8.25;
      }else if( noOfMonths<=12){
         interestRate = (ageOfACHolder<60)? 8.00 : 8.50;
      }else if(noOfMonths<=15){
         interestRate = (ageOfACHolder<60)? 8.25 : 8.75;
      }else if(noOfMonths<=18){
         interestRate = (ageOfACHolder<60)? 8.50 : 9.00;
      }else if(noOfMonths<=21){
         interestRate = (ageOfACHolder<60)? 8.75 : 9.25;
      }else{
         interestRate = 10.0;
      }
```

```
        return (amount*interestRate*noOfMonths)/(12*1000);

    }

}

class SBAccount extends Account{

    String accountType;
    SBAccount(double amount,String accountType ){
        super(amount);
        this.accountType  =accountType;
    }

    @Override
    double calculateInterest() {
        if(accountType.equals("Normal")){
            return (amount*4)/100;
        }
        else if(accountType.equals("NRI")){
            return (amount*6)/100;
        }else{
            System.out.println("Invalid account type");
        }
        return 0;
    }
}

public class Main {

    static void run(Scanner in){
      while(true){
            System.out.println("\nSelect the option:");
            System.out.println("1. Interest Calculator –SB");
            System.out.println("2. Interest Calculator –FD");
            System.out.println("3. Interest Calculator –RD");
            System.out.println("4. Exit\n");

            int choice = in.nextInt();
            switch (choice){
```

```
                case 1:{
                    System.out.println("Enter the amount");
                    double amount  = in.nextDouble();
                    if(amount>0){
                        System.out.println("Enter the account type");
                        String type = null;
                        System.out.println("--Enter 1 for Normal account--\n--Enter 2
for NRI account--");
                        int val = in.nextInt();
                        if(val ==1){
                            type = "Normal";
                        }else if(val == 2){
                            type = "NRI";
                        }
                        else{
                            System.out.println("Wrong input");
                        }
                        SBAccount sb = new SBAccount(amount,type);
                        System.out.println("Interest gained: Rs. "+
Math.round(sb.calculateInterest()));
                    }
                    else{
                        System.out.println("Invalid amount");
                    }
                }break;
                case 2:{
                    System.out.println("Enter the FD amount");
                    double amount = in.nextDouble();
                    if(amount>0){
                        System.out.println("Enter the number of days");
                        int day = in.nextInt();
                        System.out.println("Enter the account Holder age");
                        int age = in.nextInt();
                        FDAccount fd = new FDAccount(amount,day,age);
                        System.out.println("Interest gained: Rs.
"+Math.round(fd.calculateInterest()));
                    }else{
                        System.out.println("Invalid amount");
                    }
                }
                break;
                case 3:{
```

```
                    System.out.println("Enter the amount");
                    double amount = in.nextDouble();
                    if(amount>0){
                        System.out.println("Enter the number of months");
                        int months = in.nextInt();
                        System.out.println("Enter the age of account holder");
                        int age = in.nextInt();
                        RDAccount rd = new RDAccount(amount,months,age);
                        System.out.println("Interest gained: Rs.
"+Math.round(rd.calculateInterest()));
                    }else{
                        System.out.println("Invalid amount");
                    }
                }break;
                case 4:{
                    System.out.println("Exiting....");
                    System.exit(0);
                }break;
                default:{
                    System.out.println("Invalid choice");
                }
            }
        }
    }

    public static void main(String[] args){

        Scanner in = new Scanner(System.in);
        run(in);
    }

}
```

Output:

```
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit

1
Enter the amount
1000
Enter the account type
--Enter 1 for Normal account--
--Enter 2 for NRI account--
1
Interest gained: Rs. 40
```

```
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit

2
Enter the FD amount
1000
Enter the number of days
45
Enter the account Holder age
21
Interest gained: Rs. 7
```

```
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit

3
Enter the amount
1000
Enter the number of months
12
Enter the age of account holder
20
Interest gained: Rs. 8
```