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CIT
HUAWEI INTERNSHIP
ASSIGNMENT

JAVA CORE

Assignment 2:

1. Create an Interest calculator for banks using java which incorporates, Inheritance, polymorphism, classes, object etc.
2. User can first select a bank.
3. After selecting bank user can select a type of loans like, personal loan, housing loan, educational loan, gold loan.
4. User should be able to enter amount of loan they need. (If gold how many grams)
5. System should be able to present the interest rate along with period of repayment

EXPLANATION

- User can select bank and they can select the type of loan.
- User can enter the principal amount and years of repayment.
- Every bank has their own interest for each loans.
- Interest amount is calculated for particular loan with user input values.
- Display the principal, rate of interest, emi and years to the user.

CODE

```
package emi_calculator;
import java.util.*;
//EMI class has general variables like gold price,principal,time which is
//parent class for all three IB,SBI,IOB banks
class EMI{
   public double gold_price_per_gram=4853;
   protected double principal;
   protected double years;
   EMI(){
      System.out.println("----------------------------------WELCOME TO INTEREST CALCULATOR---
-------------------------");
      System.out.println();
   }
```

```
}
//This indian bank inherits Emi class which has its own rate of
//interest for all loans it provides and has methods to calculate emi
class IB extends EMI {
    //below are rate of interest for four loans in indian bank
    public double P_l= 9.20;
    public double E_l= 8.5;
    public double H_l= 7.55;
    public double G_l= 5.88;
   //constructor initialzes user inputs
   IB(double principal,double years){
       this.principal=principal;
       this.years=years;
    }
  //it calculate emi for personal loan in indian bank
  public double personal_loan ()
  {   //conevrt yearly interest to monthly interest
      P_l=P_l/(12*100);
      //convert time in years to months
      years=years*12;
      //general formula for calculate emi
      double emi= (principal*P_l*Math.pow(1+P_l,years))/(Math.pow(1+P_l,years)-1);
      return emi;

  }
  //it calculate emi for educational loan in indian bank
  public double educational_loan()
  {
      E_l=E_l/(12*100);
      years=years*12;
      double emi= (principal*E_l*Math.pow(1+E_l,years))/(Math.pow(1+E_l,years)-1);
      return emi;

  }
  //it calculate emi for home loan in indian bank
  public double home_loan()
  {
      H_l=H_l/(12*100);
      years=years*12;
      double emi= (principal*H_l*Math.pow(1+H_l,years))/(Math.pow(1+H_l,years)-1);
      return emi;
```

```
  }
  //it calculate emi for gold loan loan in indian bank
  public double gold_loan()
  {   //calculate principal from given grams of gold
      //which is 75% of actual gold price
      principal=(gold_price_per_gram*principal)*0.75;
      G_l=G_l/(12*100);
      years=years*12;
      double emi= (principal*G_l*Math.pow(1+G_l,years))/(Math.pow(1+G_l,years)-1);
      return emi;
  }

}

//This SBI bank inherits Emi class which has its own rate of
//interest for all loans it provides and has methods to calculate emi
class SBI extends EMI {
    //below are rate of interest for four loans in  SBI
    public double P_l= 9.6;
    public double E_l= 10.25;
    public double H_l= 6.95;
    public double G_l= 7.3;

   //constructor initialzes user inputs
   SBI(double principal,double years){
       this.principal=principal;
       this.years=years;
   }
   //it calculate emi for educational loan in State bank of india
  public double personal_loan ()
  {
      P_l=P_l/(12*100);
      years=years*12;
      double emi= (principal*P_l*Math.pow(1+P_l,years))/(Math.pow(1+P_l,years)-1);
      return emi;

  }
  //it calculate emi for educational loan in State bank of india
  public double educational_loan()
  {
      E_l=E_l/(12*100);
```

```
      years=years*12;
      double emi= (principal*E_l*Math.pow(1+E_l,years))/(Math.pow(1+E_l,years)-1);
      return emi;

   }
   //it calculate emi for educational loan in State bank of india
   public double home_loan()
   {
      H_l=H_l/(12*100);
      years=years*12;
      double emi= (principal*H_l*Math.pow(1+H_l,years))/(Math.pow(1+H_l,years)-1);
      return emi;
   }
   //it calculate emi for educational loan in State bank of india
   public double gold_loan()
   {   //calculate principal from given grams of gold
      //which is 75% of actual gold price
      principal=(gold_price_per_gram*principal)*0.75;
      G_l=G_l/(12*100);
      years=years*12;
      double emi= (principal*G_l*Math.pow(1+G_l,years))/(Math.pow(1+G_l,years)-1);
      return emi;
   }

}

//This IOB bank inherits Emi class which has its own rate of
//interest for all loans it provides and has methods to calculate emi
class IOB extends EMI {
    //below are rate of interest for four loans in  IOB
    public double P_l= 11.5;
    public double E_l= 10.4;
    public double H_l= 7.05;
    public double G_l= 7;

    //constructor initialzes user inputs
   IOB(double principal,double years){
      this.principal=principal;
      this.years=years;
   }
```

```
   //it calculate emi for educational loan in Indian overseas bank
  public double personal_loan ()
  {
     P_l=P_l/(12*100);
     years=years*12;
     double emi= (principal*P_l*Math.pow(1+P_l,years))/(Math.pow(1+P_l,years)-1);
     return emi;

  }
   //it calculate emi for educational loan in Indian overseas bank
  public double educational_loan()
  {
     E_l=E_l/(12*100);
     years=years*12;
     double emi= (principal*E_l*Math.pow(1+E_l,years))/(Math.pow(1+E_l,years)-1);
     return emi;

  }
   //it calculate emi for educational loan in Indian overseas bank
  public double home_loan()
  {
     H_l=H_l/(12*100);
     years=years*12;
     double emi= (principal*H_l*Math.pow(1+H_l,years))/(Math.pow(1+H_l,years)-1);
     return emi;
  }
   //it calculate emi for educational loan in Indian overseas bank
  public double gold_loan()
  {   //calculate principal from given grams of gold
     //which is 75% of actual gold price
     principal=(gold_price_per_gram*principal)*0.75;
     G_l=G_l/(12*100);
     years=years*12;
     double emi= (principal*G_l*Math.pow(1+G_l,years))/(Math.pow(1+G_l,years)-1);
     return emi;
  }

}


public class EMI_Calculator {
```

```
    public static void main(String[] args) {
        Scanner s=new Scanner(System.in);

        System.out.println("Choose a Bank to know loan details");
        System.out.println("Enter 1 for INDIAN BANK");
        System.out.println("Enter 2 for STATE BANK OF INDIA");
        System.out.println("Enter 3 for INDIAN OVERSEAS BANK");
        System.out.println();
        int a=s.nextInt();
        double principal=0,years=0,emi=0,r=0;
        int b;
        //Switch case for users to select respective bank
        switch(a)
        {case 1:  System.out.println("---------------------INDIAN BANK--------------------");
                System.out.println("Choose type of loan you want to calculate");
                System.out.println("Enter 1 for PERSONAL LOAN");
                System.out.println("Enter 2 for EDUCATIONAL LOAN");
                System.out.println("Enter 3 for HOME LOAN");
                System.out.println("Enter 4 for GOLD LOAN");
                System.out.println();
                b=s.nextInt();
                //Switch case to select respective loans for emi calculation in IB
                switch(b){
                    case 1:System.out.println("---------------------PERSONAL LOAN--------------------");
                            //User input data
                            System.out.println("Enter Principal amount: ");
                            principal=s.nextDouble();
                            System.out.println("Enter Loan Tensure(in years): ");
                            years=s.nextDouble();
                            //Access Indian bank class
                            IB obj1=new IB(principal,years);
                            //Calling personal loan function in IB class to get emi
                            emi=obj1.personal_loan();
                            //Access rate of interest from indian bank
                            r=obj1.P_l;
                            break;
                    case 2:System.out.println("---------------------EDUCATIONAL LOAN--------------------
");
                            //User input data
```

```
                System.out.println("Enter Principal amount: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian bank class
                IB obj2=new IB(principal,years);
                //calling educational loan function in IB class to get emi
                emi=obj2.educational_loan();
                //Access rate of interest from indian bank
                r=obj2.E_l;
                break;
            case 3:System.out.println("----------------------HOME LOAN----------------------");
                //User input data
                System.out.println("Enter Principal amount: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian bank class
                IB obj3=new IB(principal,years);
                //Calling home loan function in IB class to get emi
                emi=obj3.home_loan();
                //Access rate of interest from indian bank
                r=obj3.H_l;
                break;
            case 4:System.out.println("----------------------GOLD LOAN----------------------");
                //User input data
                System.out.println("Enter gold in grams: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian bank class
                IB obj4=new IB(principal,years);
                //Calling gold loan function in IB class to get emi
                emi=obj4.gold_loan();
                //Convert gold in grams into principal amount
                principal=(obj4.gold_price_per_gram*principal)*0.75;
                //Access rate of interest from indian bank
                r=obj4.G_l;
        }
        break;
    case 2:  System.out.println("----------------------STATE BANK OF INDIA----------------------");
```

```
            System.out.println("Choose type of loan you want to calculate");
            System.out.println("Enter 1 for PERSONAL LOAN");
            System.out.println("Enter 2 for EDUCATIONAL LOAN");
            System.out.println("Enter 3 for HOME LOAN");
            System.out.println("Enter 4 for GOLD LOAN");
            System.out.println();
            b=s.nextInt();
            //Switch case to select respective loans for emi calculation in SBI
            switch(b){
              case 1:System.out.println("----------PERSONAL LOAN----------");
                  //User input data
                  System.out.println("Enter Principal amount: ");
                  principal=s.nextDouble();
                  System.out.println("Enter Loan Tensure(in years): ");
                  years=s.nextDouble();
                  //Access State bank of india bank class
                  SBI obj1=new SBI(principal,years);
                  //Calling personal loan function in SBI class to get emi
                  emi=obj1.personal_loan();
                  //Access rate of interest from state bank of india
                  r=obj1.P_l;
                  break;
              case 2:System.out.println("----------EDUCATIONAL LOAN----------
");
                  //User input data
                  System.out.println("Enter Principal amount: ");
                  principal=s.nextDouble();
                  System.out.println("Enter Loan Tensure(in years): ");
                  //Access State bank of india bank class
                  years=s.nextDouble();
                  SBI obj2=new SBI(principal,years);
                  //Calling educational loan function in SBI class to get emi
                  emi=obj2.educational_loan();
                  //Access rate of interest from state bank of india
                  r=obj2.E_l;
                  break;
              case 3:System.out.println("----------HOME LOAN----------");
                  //User input data
                  System.out.println("Enter Principal amount: ");
                  principal=s.nextDouble();
                  System.out.println("Enter Loan Tensure(in years): ");
```

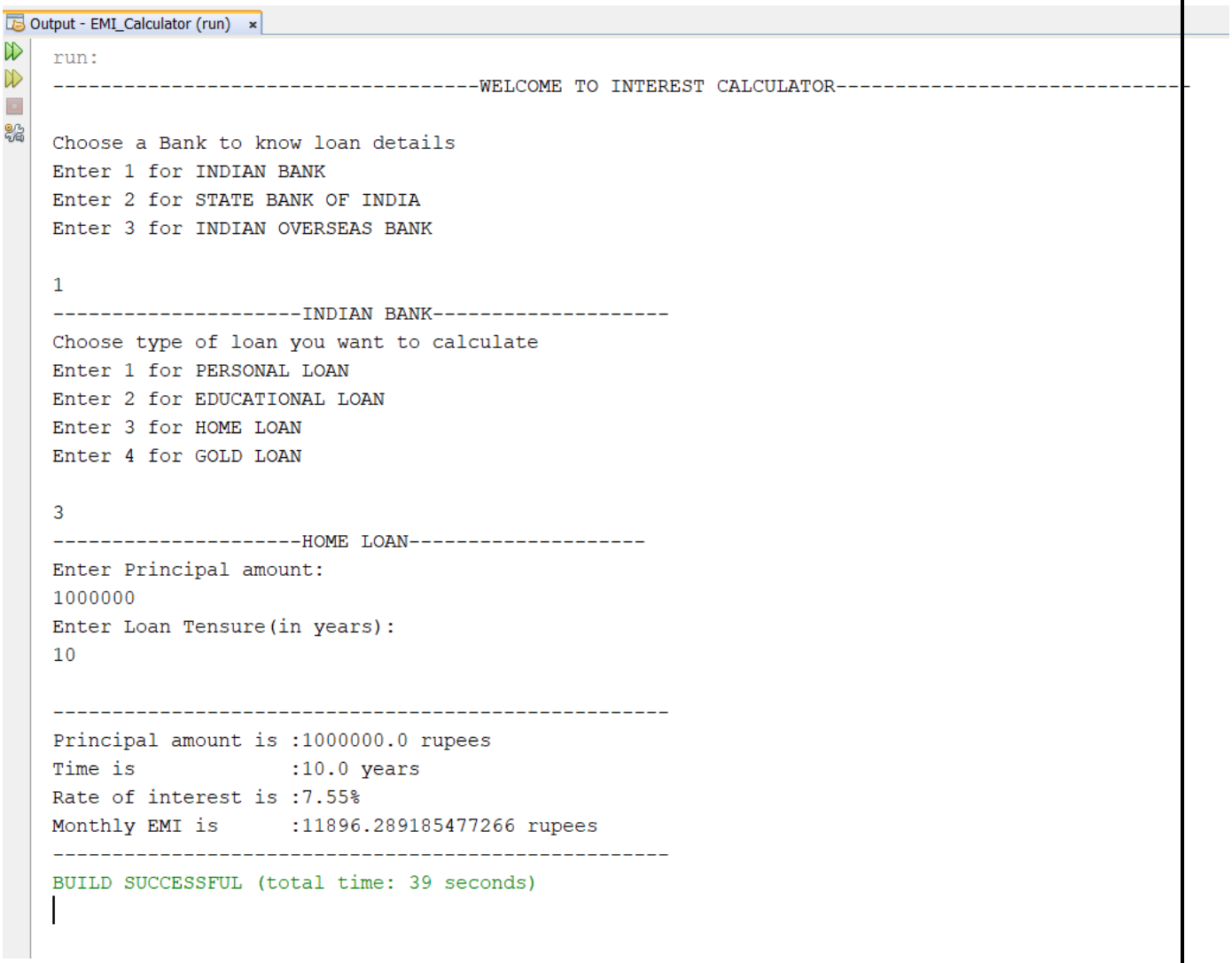
```
                //Access State bank of india bank class
                years=s.nextDouble();
                SBI obj3=new SBI(principal,years);
                //Calling home loan function in SBI class to get emi
                emi=obj3.home_loan();
                //Access rate of interest from state bank of india
                r=obj3.H_l;
                break;
            case 4:System.out.println("----------GOLD LOAN----------");
                //User input data
                System.out.println("Enter gold in grams: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access State bank of india bank class
                SBI obj4=new SBI(principal,years);
                //Calling gold loan function in SBI class to get emi
                emi=obj4.gold_loan();
                //Convert gold in grams into principal amount
                principal=(obj4.gold_price_per_gram*principal)*0.75;
                //Access rate of interest from state bank of india
                r=obj4.G_l;
        }
        break;
    case 3:  System.out.println("----------INDIAN OVERSEAS BANK----------");
        System.out.println("Choose type of loan you want to calculate");
        System.out.println("Enter 1 for PERSONAL LOAN");
        System.out.println("Enter 2 for EDUCATIONAL LOAN");
        System.out.println("Enter 3 for HOME LOAN");
        System.out.println("Enter 4 for GOLD LOAN");
        System.out.println();
        b=s.nextInt();
        //switch case to select respective loans for emi calculation in IOB
        switch(b){
            case 1:System.out.println("----------PERSONAL LOAN----------");
                //User input data
                System.out.println("Enter Principal amount: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian overseas bank class
```

```
                IOB obj1=new IOB(principal,years);
                //Calling personal loan function in IOB class to get emi
                emi=obj1.personal_loan();
                //Access rate of interest from indian overseas bank
                r=obj1.P_l;
                break;
            case 2:System.out.println("----------EDUCATIONAL LOAN----------
");
                //User input data
                System.out.println("Enter Principal amount: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian overseas bank class
                IOB obj2=new IOB(principal,years);
                //Calling educational loan function in IOB class to get emi
                emi=obj2.educational_loan();
                //Access rate of interest from indian overseas bank
                r=obj2.E_l;
                break;
            case 3:System.out.println("----------HOME LOAN----------");
                //User input data
                System.out.println("Enter Principal amount: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian overseas bank class
                IOB obj3=new IOB(principal,years);
                //Calling home loan function in IOB class to get emi
                emi=obj3.home_loan();
                //Access rate of interest from indian overseas bank
                r=obj3.H_l;
                break;
            case 4:System.out.println("----------GOLD LOAN----------");
                //User input data
                System.out.println("Enter gold in grams: ");
                principal=s.nextDouble();
                System.out.println("Enter Loan Tensure(in years): ");
                years=s.nextDouble();
                //Access Indian overseas bank class
                IOB obj4=new IOB(principal,years);
```

```
                    //Calling gold loan function in IOB class to get emi
                    emi=obj4.gold_loan();
                    //Convert gold in grams into principal amount
                    principal=(obj4.gold_price_per_gram*principal)*0.75;
                    //Access rate of interest from indian overseas bank
                    r=obj4.G_l;
                }
                break;
        default: System.out.println("Please choose among 1,2,3");
        }
        //Finally printing the calclated interest amount for user to be paid for the
        //loan amount with time in years
        System.out.println();
        System.out.println("-------------------------------------------------");
        System.out.println("Principal amount is :"+principal+" rupees");
        System.out.println("Time is           :"+years+" years");
        System.out.println("Rate of interest is :"+(r*1200)+"%");
        System.out.println("Monthly EMI is     :"+emi+" rupees");
        System.out.println("-------------------------------------------------");
    }

}
```

OUTPUT


Output - EMI_Calculator (run)
run:
----------WELCOME TO INTEREST CALCULATOR----------
Choose a Bank to know loan details
Enter 1 for INDIAN BANK
Enter 2 for STATE BANK OF INDIA
Enter 3 for INDIAN OVERSEAS BANK
1
----------INDIAN BANK----------
Choose type of loan you want to calculate
Enter 1 for PERSONAL LOAN
Enter 2 for EDUCATIONAL LOAN
Enter 3 for HOME LOAN
Enter 4 for GOLD LOAN
3
----------HOME LOAN----------
Enter Principal amount:
1000000
Enter Loan Tensure(in years):
10
Principal amount is :1000000.0 rupees
Time is :10.0 years
Rate of interest is :7.55%
Monthly EMI is :11896.289185477266 rupees
BUILD SUCCESSFUL (total time: 39 seconds)