LAB INDEX

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UID: 21BCS8197
SECTION: 20BCS_WM-616/A

SUBJECT NAME: PBLJ (Lab)
SUBJECT CODE: 20CSP-321

Sr. No	Program	Date	Evaluation				Sign
			LW (12)	VV (10)	FW (8)	Total (30)	
1.	Create an application to save the employee information using arrays.	16/08/2022					
2.	Design and implement a simple inventory control system for a small video rental store.	20/08/2022					
3.	Create a application to calculate interest for FDs, RDs based on certain conditions using inheritance.	27/08/2022					

CHANDIGARH UNIVERSITY

UNIVERSITY INSTITUTE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Submitted By: Sahil Kaundal **Submitted To:** Neeru Sharma

Subject Name	Programming Based Learning Java (Lab)
Subject Code	20CSP-321
Branch	Computer Science Engineering
Semester	5th

Experiment 3

Student Name: Sahil Kaundal

UID: 21BCS8197

Branch: BE CSE (Lateral Entry)

Section/Group: 616/A

Semester: 5th

Date of Performance: 27/08/2022

Subject Name: PBLJ Lab

Subject Code: 20CSP-321

1. Aim/Overview of the practical:

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

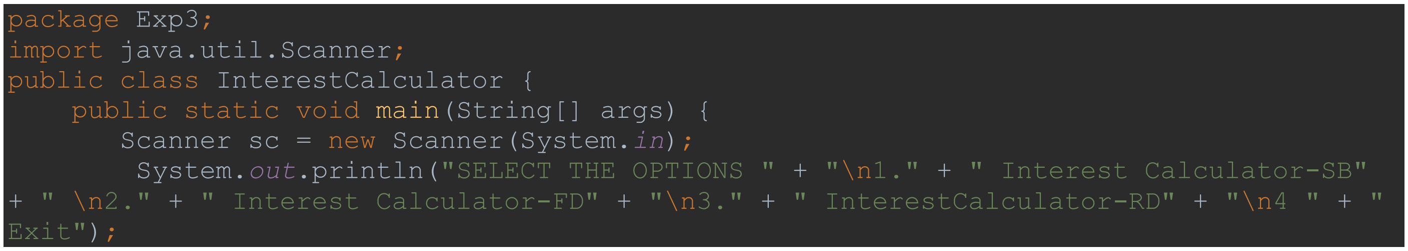
2. Apparatus / Simulator Used:

- Eclipse IDE - (Java)
- NetBeans.

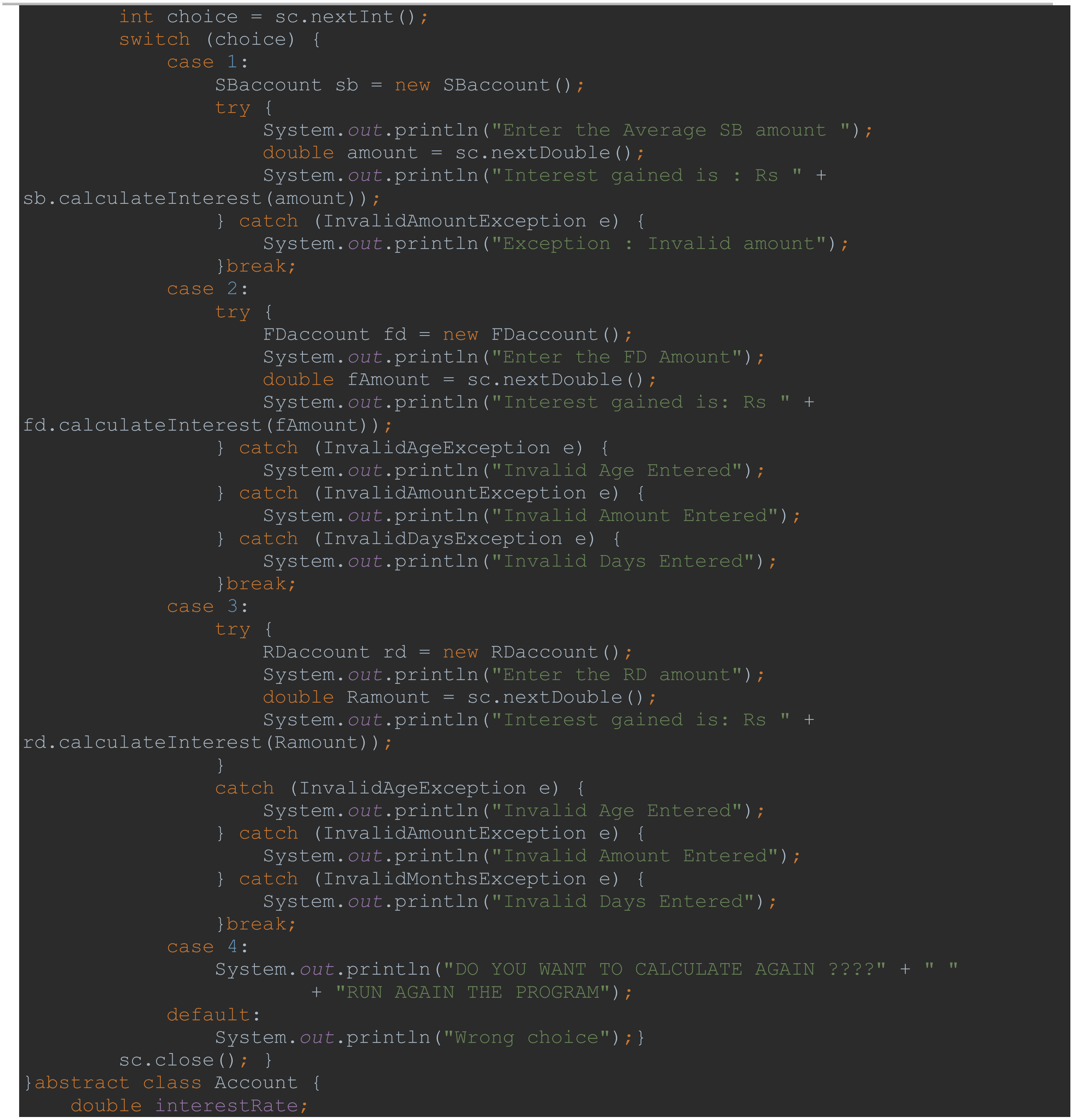
3. Algorithm/Flowchart:

- Make account class.
- Using method overriding create interest calculate.
- Create FD, Rd and SD.
- Take input of amount and age and days for FD.
- Take input of saving account and NRI and non NRI.
- For Rd take amount and month and age as input.
- Create a launcher class

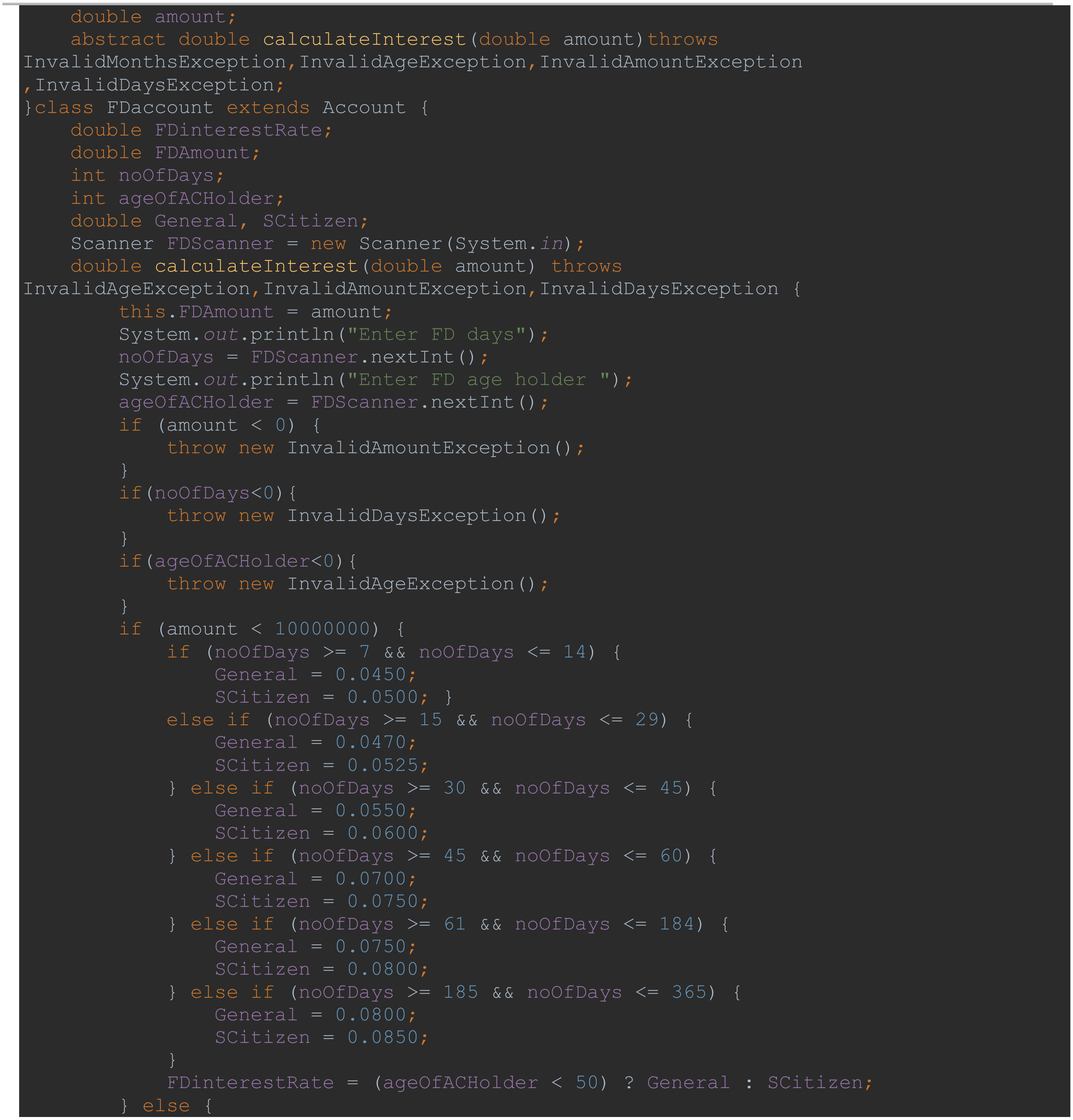
4. Programs/ Code:



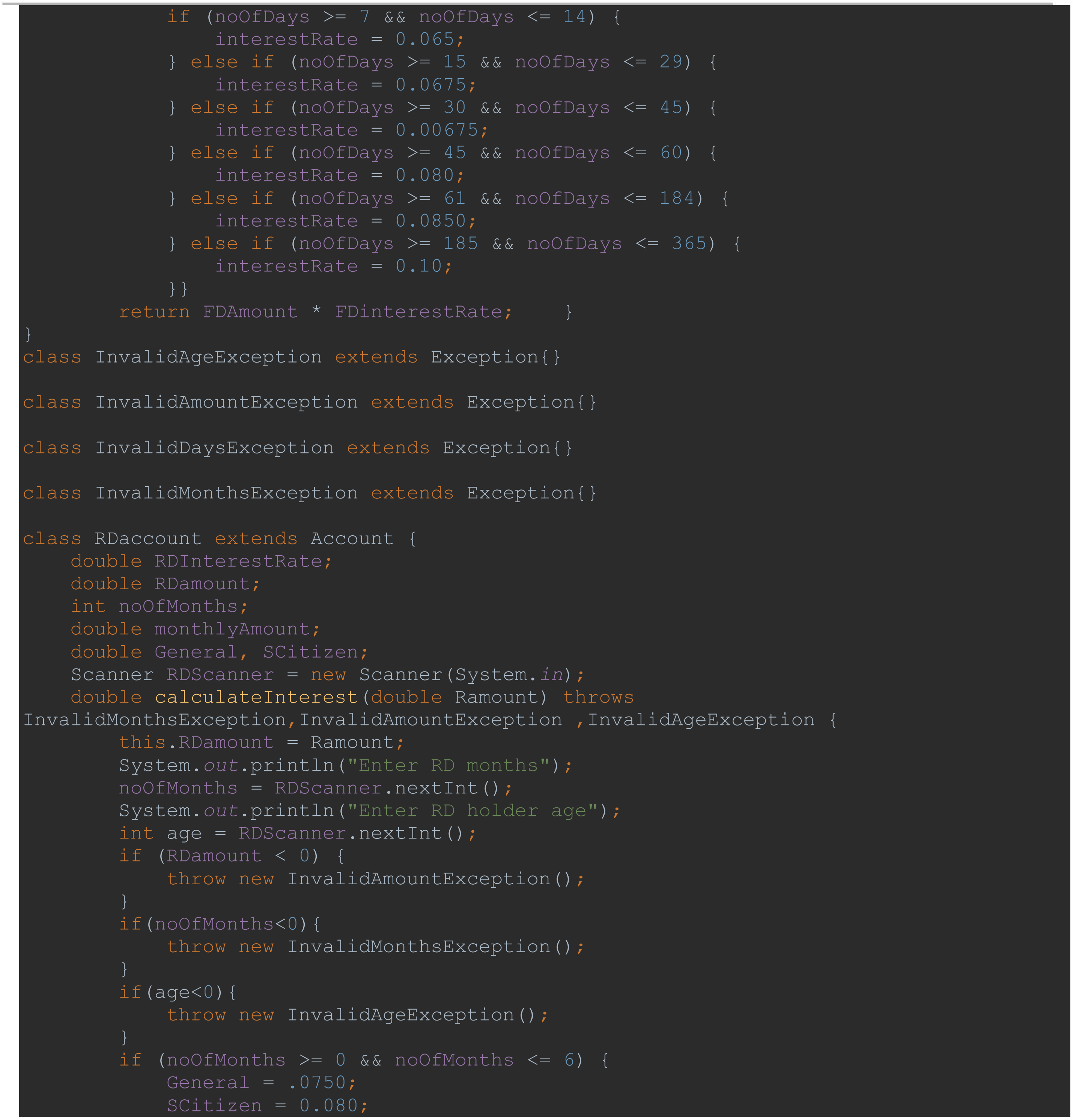
```
package Exp3;
import java.util.Scanner;
public class InterestCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
         System.out.println("SELECT THE OPTIONS " + "\n1." + " Interest Calculator-SB"
+ " \n2." + " Interest Calculator-FD" + "\n3." + " InterestCalculator-RD" + "\n4 " + "
Exit");
```



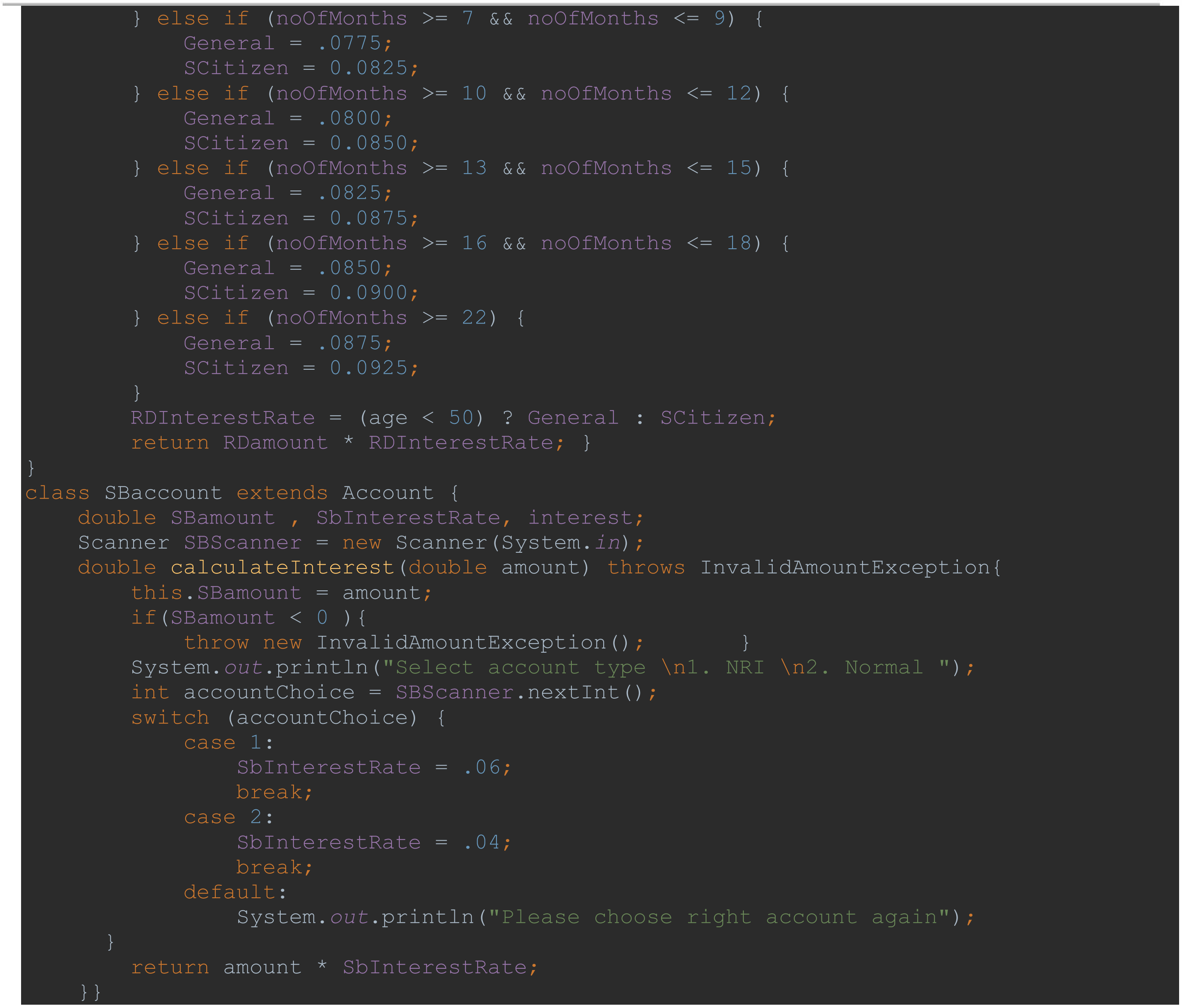
```
        int choice = sc.nextInt();
        switch (choice) {
            case 1:
                SBaccount sb = new SBaccount();
                try {
                    System.out.println("Enter the Average SB amount ");
                    double amount = sc.nextDouble();
                    System.out.println("Interest gained is : Rs " +
sb.calculateInterest(amount));
                } catch (InvalidAmountException e) {
                    System.out.println("Exception : Invalid amount");
                }break;
            case 2:
                try {
                    FDaccount fd = new FDaccount();
                    System.out.println("Enter the FD Amount");
                    double fAmount = sc.nextDouble();
                    System.out.println("Interest gained is: Rs " +
fd.calculateInterest(fAmount));
                } catch (InvalidAgeException e) {
                    System.out.println("Invalid Age Entered");
                } catch (InvalidAmountException e) {
                    System.out.println("Invalid Amount Entered");
                } catch (InvalidDaysException e) {
                    System.out.println("Invalid Days Entered");
                }break;
            case 3:
                try {
                    RDaccount rd = new RDaccount();
                    System.out.println("Enter the RD amount");
                    double Ramount = sc.nextDouble();
                    System.out.println("Interest gained is: Rs " +
rd.calculateInterest(Ramount));
                }
                catch (InvalidAgeException e) {
                    System.out.println("Invalid Age Entered");
                } catch (InvalidAmountException e) {
                    System.out.println("Invalid Amount Entered");
                } catch (InvalidMonthsException e) {
                    System.out.println("Invalid Days Entered");
                }break;
            case 4:
                System.out.println("DO YOU WANT TO CALCULATE AGAIN ????" + " "
                        + "RUN AGAIN THE PROGRAM");
            default:
                System.out.println("Wrong choice");}
        sc.close(); }
}abstract class Account {
    double interestRate;
```



```
    double amount;
    abstract double calculateInterest(double amount)throws
InvalidMonthsException,InvalidAgeException,InvalidAmountException
,InvalidDaysException;
}class FDaccount extends Account {
    double FDinterestRate;
    double FDAmount;
    int noOfDays;
    int ageOfACHolder;
    double General, SCitizen;
    Scanner FDScanner = new Scanner(System.in);
    double calculateInterest(double amount) throws
InvalidAgeException,InvalidAmountException,InvalidDaysException {
        this.FDAmount = amount;
        System.out.println("Enter FD days");
        noOfDays = FDScanner.nextInt();
        System.out.println("Enter FD age holder ");
        ageOfACHolder = FDScanner.nextInt();
        if (amount < 0) {
            throw new InvalidAmountException();
        }
        if(noOfDays<0){
            throw new InvalidDaysException();
        }
        if(ageOfACHolder<0){
            throw new InvalidAgeException();
        }
        if (amount < 10000000) {
            if (noOfDays >= 7 && noOfDays <= 14) {
                General = 0.0450;
                SCitizen = 0.0500; }
            else if (noOfDays >= 15 && noOfDays <= 29) {
                General = 0.0470;
                SCitizen = 0.0525;
            } else if (noOfDays >= 30 && noOfDays <= 45) {
                General = 0.0550;
                SCitizen = 0.0600;
            } else if (noOfDays >= 45 && noOfDays <= 60) {
                General = 0.0700;
                SCitizen = 0.0750;
            } else if (noOfDays >= 61 && noOfDays <= 184) {
                General = 0.0750;
                SCitizen = 0.0800;
            } else if (noOfDays >= 185 && noOfDays <= 365) {
                General = 0.0800;
                SCitizen = 0.0850;
            }
            FDinterestRate = (ageOfACHolder < 50) ? General : SCitizen;
        } else {
```

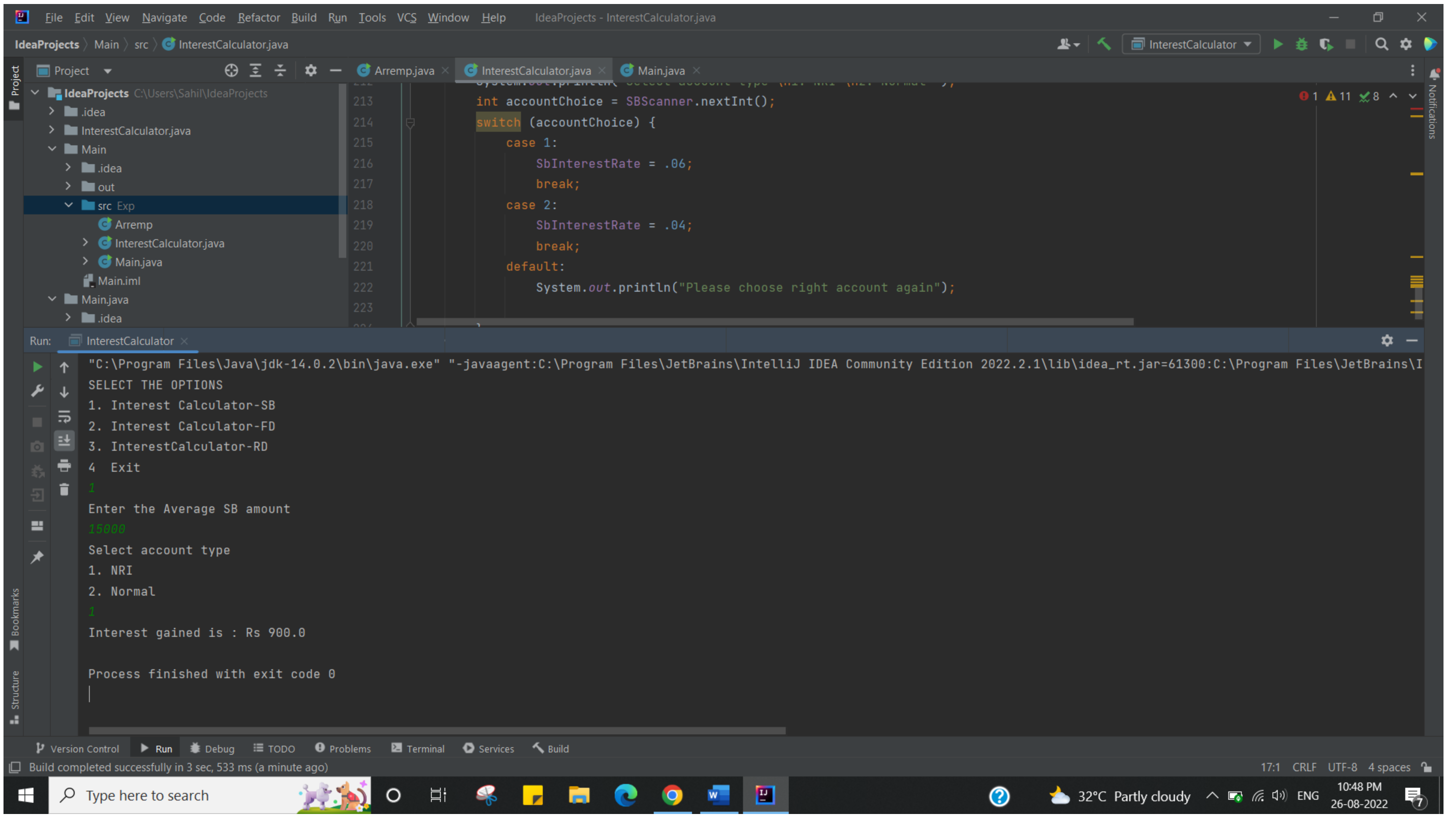


```
            if (noOfDays >= 7 && noOfDays <= 14) {
                interestRate = 0.065;
            } else if (noOfDays >= 15 && noOfDays <= 29) {
                interestRate = 0.0675;
            } else if (noOfDays >= 30 && noOfDays <= 45) {
                interestRate = 0.00675;
            } else if (noOfDays >= 45 && noOfDays <= 60) {
                interestRate = 0.080;
            } else if (noOfDays >= 61 && noOfDays <= 184) {
                interestRate = 0.0850;
            } else if (noOfDays >= 185 && noOfDays <= 365) {
                interestRate = 0.10;
            }}
        return FDAmount * FDinterestRate;    }
}
class InvalidAgeException extends Exception{}

class InvalidAmountException extends Exception{}

class InvalidDaysException extends Exception{}

class InvalidMonthsException extends Exception{}

class RDaccount extends Account {
    double RDInterestRate;
    double RDamount;
    int noOfMonths;
    double monthlyAmount;
    double General, SCitizen;
    Scanner RDScanner = new Scanner(System.in);
    double calculateInterest(double Ramount) throws
InvalidMonthsException,InvalidAmountException ,InvalidAgeException {
        this.RDamount = Ramount;
        System.out.println("Enter RD months");
        noOfMonths = RDScanner.nextInt();
        System.out.println("Enter RD holder age");
        int age = RDScanner.nextInt();
        if (RDamount < 0) {
            throw new InvalidAmountException();
        }
        if(noOfMonths<0){
            throw new InvalidMonthsException();
        }
        if(age<0){
            throw new InvalidAgeException();
        }
        if (noOfMonths >= 0 && noOfMonths <= 6) {
            General = .0750;
            SCitizen = 0.080;
```



```
        } else if (noOfMonths >= 7 && noOfMonths <= 9) {
            General = .0775;
            SCitizen = 0.0825;
        } else if (noOfMonths >= 10 && noOfMonths <= 12) {
            General = .0800;
            SCitizen = 0.0850;
        } else if (noOfMonths >= 13 && noOfMonths <= 15) {
            General = .0825;
            SCitizen = 0.0875;
        } else if (noOfMonths >= 16 && noOfMonths <= 18) {
            General = .0850;
            SCitizen = 0.0900;
        } else if (noOfMonths >= 22) {
            General = .0875;
            SCitizen = 0.0925;
        }
        RDInterestRate = (age < 50) ? General : SCitizen;
        return RDamount * RDInterestRate; }
}
class SBaccount extends Account {
    double SBamount , SbInterestRate, interest;
    Scanner SBScanner = new Scanner(System.in);
    double calculateInterest(double amount) throws InvalidAmountException{
        this.SBamount = amount;
        if(SBamount < 0 ){
            throw new InvalidAmountException();       }
        System.out.println("Select account type \n1. NRI \n2. Normal ");
        int accountChoice = SBScanner.nextInt();
        switch (accountChoice) {
            case 1:
                SbInterestRate = .06;
                break;
            case 2:
                SbInterestRate = .04;
                break;
            default:
                System.out.println("Please choose right account again");
      }
        return amount * SbInterestRate;
    }}
```

5. Result/Output/Writing Summary:

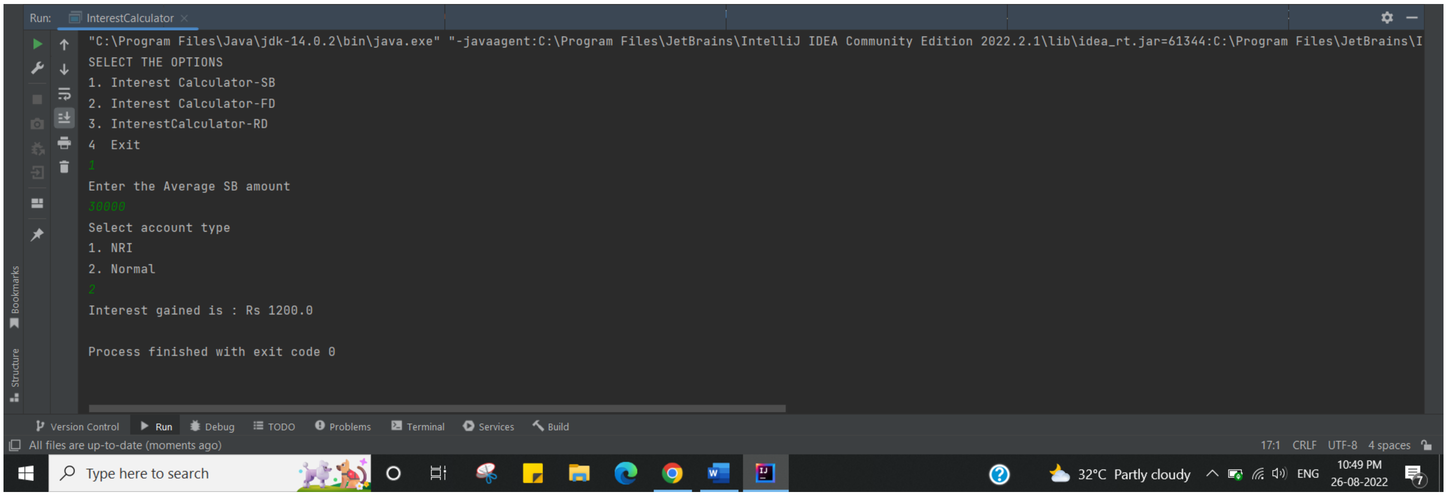


IdeaProjects - InterestCalculator.java

```
int accountChoice = SBScanner.nextInt();
switch (accountChoice) {
    case 1:
        SbInterestRate = .06;
        break;
    case 2:
        SbInterestRate = .04;
        break;
    default:
        System.out.println("Please choose right account again");
```

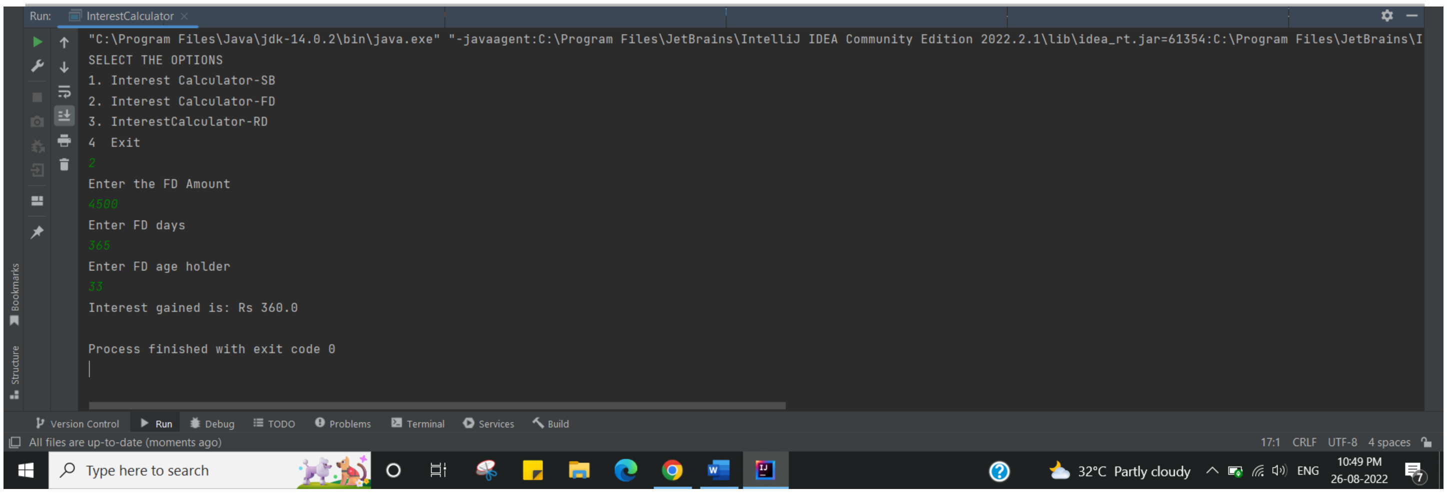
```
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.2.1\lib\idea_rt.jar=61300:C:\Program Files\JetBrains\I
SELECT THE OPTIONS
1. Interest Calculator-SB
2. Interest Calculator-FD
3. InterestCalculator-RD
4  Exit
1
Enter the Average SB amount
15000
Select account type
1. NRI
2. Normal
1
Interest gained is : Rs 900.0

Process finished with exit code 0
```

Build completed successfully in 3 sec, 533 ms (a minute ago)



```
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.2.1\lib\idea_rt.jar=61344:C:\Program Files\JetBrains\I
SELECT THE OPTIONS
1. Interest Calculator-SB
2. Interest Calculator-FD
3. InterestCalculator-RD
4  Exit
1
Enter the Average SB amount
30000
Select account type
1. NRI
2. Normal
2
Interest gained is : Rs 1200.0

Process finished with exit code 0
```

All files are up-to-date (moments ago)



```
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SELECT THE OPTIONS
1. Interest Calculator-SB
2. Interest Calculator-FD
3. InterestCalculator-RD
4  Exit
2
Enter the FD Amount
4500
Enter FD days
365
Enter FD age holder
33
Interest gained is: Rs 360.0

Process finished with exit code 0
```

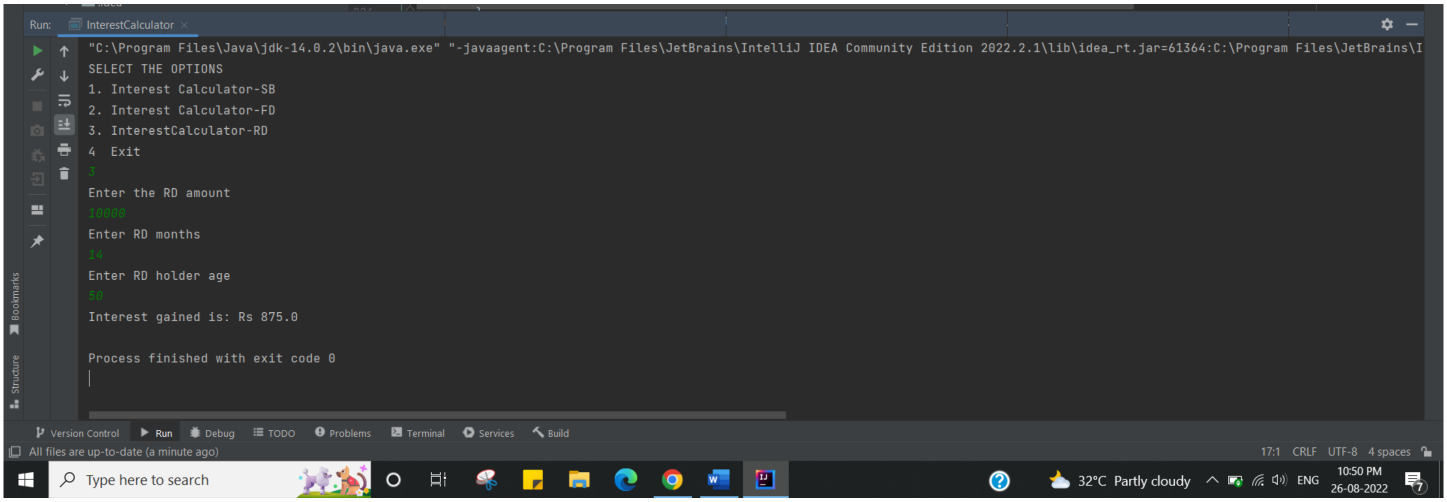

```
"C:\Program Files\Java\jdk-14.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.2.1\lib\idea_rt.jar=61364:C:\Program Files\JetBrains\I
SELECT THE OPTIONS
1. Interest Calculator-SB
2. Interest Calculator-FD
3. InterestCalculator-RD
4  Exit
3
Enter the RD amount
10000
Enter RD months
14
Enter RD holder age
50
Interest gained is: Rs 875.0

Process finished with exit code 0
```

I have successfully done this program.

Learning Outcomes (What I have learnt):

1. Here we have learnt the Concept of Inheritance with the Abstract class
2. And finding the Interest, SB, RD & FD based on the Amount, Citizenship and Age group.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			

2.			
3.			