Experiment 1.3

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Semester: 6th
Date of Performance: 30-01-2024
Subject Name: Project-Based Learning in Java with Lab
Subject Code: 21CSP-319

1. Aim:

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

2. Objective:

Write a program to create an application to make an Account holders list and calculate interest for FDs, RDs based on certain conditions using inheritance.

3. Algo. /Approach and output:

```
import java.util.Scanner;
abstract class Account {
   double interestRate;
   double amount;

   abstract double calculateInterest();
}

class SBAccount extends Account {
   public SBAccount(double amount) {
      this.amount = amount;
      setInterestRate();
   }
   private void setInterestRate() {
      interestRate = 4.0;
   }
   double calculateInterest() {
      return (amount * interestRate) / 100;
   }
}
```

```
class FDAccount extends Account {
    int noOfDays;
    int ageOfAccountHolder;

    public FDAccount(double amount, int noOfDays, int ageOfAccountHolder) {
        this.amount = amount;
        this.noOfDays = noOfDays;
        this.ageOfAccountHolder = ageOfAccountHolder;
        setInterestRate();
    }

private void setInterestRate() {
        if (amount < 10000000) {
            if (noOfDays >= 7 && noOfDays <= 14) {
                interestRate = ageOfAccountHolder >= 30 ? 5.00 : 4.50;
            } else if (noOfDays >= 15 && noOfDays <= 29) {
                interestRate = ageOfAccountHolder >= 30 ? 5.25 : 4.75;
            }
            else if(noOfDays>=30 && noOfDays<=45){
                interestRate = ageOfAccountHolder >= 30 ? 6.00 : 5.50;
            }
            else if(noOfDays>=61 && noOfDays<=184){
                interestRate = ageOfAccountHolder >= 30 ? 8.00 : 7.50;
            }
            else if(noOfDays>=185 && noOfDays<=365){
                interestRate = ageOfAccountHolder >= 30 ? 8.50 : 8.00;
            }
        } else {
            if (noOfDays >= 7 && noOfDays <= 14) {
                interestRate = 6.50;
            } else if (noOfDays >= 15 && noOfDays <= 29) {
                interestRate = 6.75;
            }else if (noOfDays >= 30 && noOfDays <= 45) {
                interestRate = 6.75;
            }else if (noOfDays >= 45 && noOfDays <= 60) {
                interestRate = 8.00;
            }else if (noOfDays >= 61 && noOfDays <= 184) {
                interestRate = 8.50;
            }else if (noOfDays >= 185 && noOfDays <= 365) {
                interestRate = 10.00;
            }
        }
    }
```

```
private void setInterestRate() {
    if (amount < 10000000) {
        if (noOfDays >= 7 && noOfDays <= 14) {
            interestRate = ageOfAccountHolder >= 30 ? 5.00 : 4.50;
        } else if (noOfDays >= 15 && noOfDays <= 29) {
            interestRate = ageOfAccountHolder >= 30 ? 5.25 : 4.75;
        }
        else if(noOfDays>=30 && noOfDays<=45){
            interestRate = ageOfAccountHolder >= 30 ? 6.00 : 5.50;
        }
        else if(noOfDays>=61 && noOfDays<=184){
            interestRate = ageOfAccountHolder >= 30 ? 8.00 : 7.50;
        }
        else if(noOfDays>=185 && noOfDays<=365){
            interestRate = ageOfAccountHolder >= 30 ? 8.50 : 8.00;
        }
    } else {
        if (noOfDays >= 7 && noOfDays <= 14) {
            interestRate = 6.50;
        } else if (noOfDays >= 15 && noOfDays <= 29) {
            interestRate = 6.75;
        }else if (noOfDays >= 30 && noOfDays <= 45) {
            interestRate = 6.75;
        }else if (noOfDays >= 45 && noOfDays <= 60) {
            interestRate = 8.00;
        }else if (noOfDays >= 61 && noOfDays <= 184) {
            interestRate = 8.50;
        }else if (noOfDays >= 185 && noOfDays <= 365) {
            interestRate = 10.00;
        }
    }
}

while (true) {
        System.out.println("Select 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");

        int option = scanner.nextInt();
```

```
case 1:
        System.out.println("Enter the Average amount in your account:");
        double sbAmount = scanner.nextDouble();
        SBAccount sbAccount = new SBAccount(sbAmount);
        double sbInterest = sbAccount.calculateInterest();
        System.out.println("Interest gained: Rs. " + sbInterest);
        break;

case 2:
       System.out.println("Enter the FD amount:");
       double fdAmount = scanner.nextDouble();
       System.out.println("Enter the number of days:");
       int fdDays = scanner.nextInt();
       System.out.println("Enter your age:");
       int fdAge = scanner.nextInt();
       if (fdDays < 0) {
          System.out.println("Invalid Number of days. Please enter correct values.");
          break;
       }
       FDAccount fdAccount = new FDAccount(fdAmount, fdDays, fdAge);
       double fdInterest = fdAccount.calculateInterest();
       System.out.println("Interest gained is: Rs. " + fdInterest);
       break;
case 3:
   System.out.println("Enter the RD amount:");
   double rdAmount = scanner.nextDouble();
   System.out.println("Enter the RD tenure in months:");
   int rdMonths = scanner.nextInt();
   System.out.println("Enter monthly contribution for RD:");
   double rdMonthlyAmount = scanner.nextDouble();
   RDAccount rdAccount = new RDAccount(rdAmount, rdMonths, rdMonthlyAmount);
    double rdInterest = rdAccount.calculateInterest();
                System.out.println("Interest gained is: Rs. " + rdInterest);
                break;
            case 4:
                System.out.println("Exiting the program.");
                scanner.close();
                System.exit(0);
            default:
                System.out.println("Invalid option. Please choose a valid option.");
        }
      }
   }
}
```

Output:

```
"C:\Users\DELL\AppData\Local\Programs\Eclipse Adoptium\jdk-17.0.9.9-hotspot\bin\ja
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit
1
Enter the Average amount in your account:
20000
Interest gained: Rs. 800.0
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit
2
Enter the FD amount:
30000
Enter the number of days:
45
Enter your age:
30
Interest gained is: Rs. 221.91780821917808
```

```
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit
3
Enter the RD amount:
40000
Enter the RD tenure in months:
6
Enter monthly contribution for RD:
3000
Interest gained is: Rs. 1600.0
Select the option:
1. Interest Calculator -SB
2. Interest Calculator -FD
3. Interest Calculator -RD
4. Exit
4
Exiting the program.
```

Learning Outcome:

1. Learned about inheritance.
2. Learned about polymorphism.
3. Learned about the application of object-oriented principles.