Lab Assignment 4

2021 – 2022 Spring, CMPE 211 Fundamentals of Programming II

In this assignment, your program must have a Person class like in the below;

```
public class Person {
    private String name;
    private String surname;
    private int age;
    private double salary;
}

    public static void main(String[] args) {

        Person person1 = new Person("Ali", "Irmak", 36, 5000);
        Person person2 = new Person("Veli", "Kaya", 61, 3500);

        person1.applyForLoan(person1,100000, 6, "CreditCard");
        person1.applyForLoan(person1,10000, 6, "CreditCard");

        person2.applyForLoan(person2, 50000, 12, "Vehicle");
        person2.applyForLoan(person2, 50000, 24, "Vehicle");

        person1.applyForLoan(person2, 50000, 12, "Personal");
        person1.applyForLoan(person2, 50000, 24, "Personal");

    }
```

After creating the **Person** object and **Main** Method;

You have to implement four methods for all bank credit classes which are given with their inputs:

- double calculateInterest(int capital, Person person) //Calculates Interest Fees
- double creditRiskFee(int age, double capital) *// It will calculate the risk fee for loan application*
- void printCreditResult(Boolean b, int capital, Person person, double installment, int month, String loanType) *// Prints all results*
- void applyForLoan(Person p, int capital, int month, String loanType) // Decision module for the loan applications

These are all must be implemented for each type of bank loans. You have to implement **Personal, Vehicle, CreditCard** classes. For each type of credits, there are several calculation differences must be applied.

These differences are given in the below;

For Personal Loans:

Interest Rate (RATE) = 0.3995
If the person age > 55 credit risk will be calculated as (age - 55) * 0.02 * capital * (RATE / 12)
Else, there will be no credit risk fee.
calculateInterest method will be calculated as (capital + creditRiskFee)*(1+RATE)

For Vehicle Loans:

Interest Rate (RATE) = 0.3495
If the person age is between 35 and 60 (all included) there will be no credit risk fee.
Else, credit risk will be calculated as 0.01 * capital * (RATE / 12)
calculateInterest method will be calculated as (capital + creditRiskFee)*(1+RATE)

For CreditCard Loans:

Interest Rate (RATE) = 0.3105
If the person age > 50 credit risk will be calculated as (age - 50) * 0.01 * capital * (RATE / 12)
Else, there will be no credit risk fee.

calculateInterest method will calculate as (capital + creditRiskFee)*(0.85+RATE)

- Also, you have to implement "**void printCreditResult(Boolean b, int capital, Person person, double installment, int month, String loanType)**" method inside the Person class which will print the loan application results. You have three types of loans which are Personal, Vehicle and CreditCard. Your output must show all these loan types when the result comes.

- Finally, you have to implement "**void applyForLoan(Person p, int capital, int month, String loanType)**" method inside your Person class which will calculates installments for each type of the loans. After that it will compare the salary of person with the installment payment.
  If the *salary* < *installment* so, it will not accept the loan. On the other case, it will show the monthly Installment fee and the repayment cost shown as in the *Expected Results* part.

- **Do not forget that;** you have to use "**printCreditResult**" method for all of your printing processes. So, you have to pass all related parameters into this method included for **applyForLoan** too.

- We have two candidates for Loan applications who are:

  1. *Name: Ali, Surname: Irmak, Age: 36, Monthly Salary: 5000TL*
  2. *Name: Veli, Surname: Kaya, Age: 61, Monthly Salary: 3500TL*

You have to create your objects in the main program. So, you have to pass all personal information through from your main classes.

Do not forget to implement your constructors, getters and setters (Accessors & Mutators).

Important Warning:

After completing your laboratory assignment, do not lose your works that you already made. **You will have to use same project to complete the second phase of the laboratory assignment.**

Expected Output:

```
We are sorry Ali Irmak!
Your CreditCard credit application 100000 has been rejected because your salary
is lower than the installments!
Your salary: 5000.0 < 19341.666666666664

Congratulations Ali Irmak!
Your CreditCard credit application: 10000 has been accepted!
Your monthly payment will be: 1934.1666666666663 x 6
Repayment costs = 11604.999999999998

We are sorry Veli Kaya!
Your Vehicle credit application 50000 has been rejected because your salary is
lower than the installments!
Your salary: 3500.0 < 5624.554341145834

Congratulations Veli Kaya!
Your Vehicle credit application: 50000 has been accepted!
Your monthly payment will be: 2812.277170572917 x 24
Repayment costs = 67494.65209375

We are sorry Veli Kaya!
Your Personal credit application 50000 has been rejected because your salary is
lower than the installments!
Your salary: 3500.0 < 5854.545843749999

Congratulations Veli Kaya!
Your Personal credit application: 50000 has been accepted!
Your monthly payment will be: 2927.2729218749996 x 24
Repayment costs = 70254.550125
```