ASSIGNMENT

EMI Calculator

Develop a code in Java which will enable users to compute the following for a given set of parameters provided:

Function 1: Calculate the Installment Amount of a loan given the following terms of the loan

- Loan Amount
- Rate of Interest
- Tenure
- Number of Installments in a Year

Function 2: Generate the Repayment Schedule for the entire loan period ie. calculate and return Principal and Interest component of each Installment given :

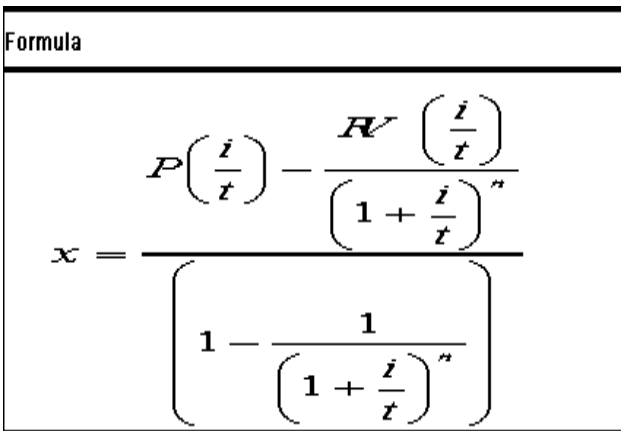
- The same parameters as above

Function 3: Calculate the Principal and Interest component of an Installment given

- The same parameters as above
- The installment number for which the breakup is required

BUSINESS REQUIREMENT

Formula for calculating Installment amount is as below



where

x	= Installment Amount
P	= Original Loan Principal Amount
i	= Interest Rate pa
t	= Number of payments in a year
n	= Tenure or number of installments
RV	= Residual Value of loan at the end of tenure

Formula for calculating Principal and Interest component of an Installment is as below (monthly installment

is assumed)

- $I_n = OP_n * (r /100) * (1/12)$
- $P_n = Installment – I_n$
- $OP_{n+1} = OP_n – P_n$

Where I_n : Interest component of the n^{th} Installment
OP_n : Outstanding Principal at the beginning of the n^{th} Installment period
r : Interest rate per annum
P_n : Principal component of the n^{th} installment
OP_{n+1} : Outstanding Principal at the end of the n^{th} Installment period

TECHNICAL SPECIFICATIONS

The same java code will be called for the 3 functions listed above. The first 2 functions require 4 parameters (as mentioned above) while the 3rd function requires a 5th parameter as well

In the first function the Java code will return 1 value ie. the Installment amount

In the second function the Java code will return a complete repayment schedule ie. the following information for the entire period in question (one for each month/installment):

- Installment Number
- Opening Balance
- Interest component
- Principal component
- Installment
  ** The above will be repeated for the number of installments

In the 3rd function the Java code will return only one set of the above breakup ie. for the installment number requested.

Write a code in java to implement the logic explained above taking care of the following:

1. **Quality of Code**
2. **Program Design**
3. **Maintainability of Code**
4. **Clarity of results**
5. **Exception handling**