1. Shyam wants to apply for Home Loan with ABC Bank. The bank has to calculate DBR (Debt to Burden ratio) to find out whether Loan can be approved or not. The formula to calculate DBR is as below:

   DBR = expenses / monthly income

   Wherein:
   Expenses - sum of all the expenses like rent, credit card payment, existing car loan EMI, existing student loan EMI, any other existing loan EMI

   Monthly income - total of all the combined sources of income like salary or any rent income or any other income coming from interest paid on the saving amount.

   The loan can be approved if the DBR is 36% or less. If DBR is more than 36%, the loan application is rejected.

   Create a java program to calculate the DBR and specify whether loan should be approved or rejected.

2. Shyam has applied for a Home Loan with ABC Bank. The bank has to calculate LTV. LTV is Loan to Value ratio which describes the size of a loan compared to the value of the property securing the loan. The bank policy is that LTV can be maximum 80%.

   The formula to calculate LTV is
         LTV = Loan amount asked / property value

   Write a Java program to calculate the LTV.

3. Before a Loan can be processed by a Bank, the Bank has to find out the Maximum Loan Amount which can be given to a particular applicant. The formula to calculate the Maximum Eligible Loan Amount is as below:

   Max_eligible_Loan_amount = E * ((1 + R) ^t) -1)/ (R * ((1 + R) ^t)

   Where
   E = Max eligible EMI (50% of effective monthly salary after deducting 20% DBR)
   R = effective Monthly Rate
   T = tenure (Max tenure which can be considered is 7 years)

   Create a java program to calculate Max Eligible Loan Amount for an applicant.

4. Calculate the installment amount of a loan given the following terms of loan
   - Loan Amount
   - Rate of Interest
   - Tenure

- Number of installments in a year

Formula for calculating installment amount is as below:

$$x = \frac{P\left(\frac{i}{t}\right) - \dfrac{RV\left(\frac{i}{t}\right)}{\left(1 + \frac{i}{t}\right)^{n}}}{\left(1 - \dfrac{1}{\left(1 + \frac{i}{t}\right)^{n}}\right)}$$

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 a loan at the end of tenure

5. Generate the Repayment Schedule for the entire Loan period i.e. calculate the return Principal and interest component of each installment given the same parameters as in Q4. 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

6. Calculate the Principal and interest component of an installment given
   - The same parameters as Q4
   - The installment number for which the breakup is required

   Formula for creating Principal and Interest Component of an installment is as below (monthly installment is assumed)

   - $In = OP_n * (r /100) * (1/12)$
   - $P_n = Installment - In$

- $OP_{n+1} = OP_n - P_n$

Where

I_n : Interest component of the nth Installment

OP_n : Outstanding Principal at the beginning of the nth Installment period

r : Interest rate per annum

P_n : Principal component of the nth installment

OP_{n+1} : Outstanding Principal at the end of the nth Installment period