1. Write a program called **CheckPassFail** which prints "PASS" if the int variable "mark" is more than or equal to 50; or prints "FAIL" otherwise. The program shall always print "DONE" before exiting.

2. Write a program called **PrintDayInWord** which prints "Sunday", "Monday", ... "Saturday" if the int variable "dayNumber" is 0, 1, ..., 6, respectively. Otherwise, it shall print "Not a valid day". Use
   a. "nested-if" statement.
   b. "switch-case-default" statement

   Try `dayNumber = 0, 1, 2, 3, 4, 5, 6, 7` and verify your results

3. The progressive income tax rate is mandated as follows:

Taxable Income	Rate (%)
First $20,000	0
Next $20,000	10
Next $20,000	20
The remaining	30

   For example, suppose that the taxable income is $85000, the income tax payable is $20000*0% + $20000*10% + $20000*20% + $25000*30%.

   Write a program called **IncomeTaxCalculator** that reads the taxable income (in int). The program shall calculate the income tax payable (in double); and print the result rounded to 2 decimal places. For examples,
   a. Enter the taxable income: $**41234**
      The income tax payable is: $2246.80

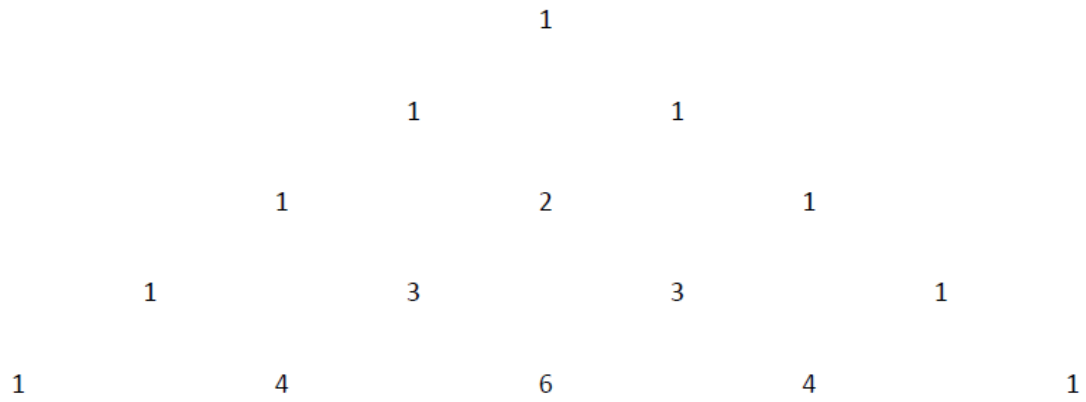
   b. Enter the taxable income: $**67891**
      The income tax payable is: $8367.30

   c. Enter the taxable income: $**85432**
      The income tax payable is: $13629.60

   d. Enter the taxable income: $**12345**
      The income tax payable is: $0.00

4. Write a program in Java to check whether an input number is even, odd-non-prime or odd-Prime

5. Write a program in Java to print the Pascal triangle up to nth level; n being an input from the user : Use multidimensional array only



6. 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 20% or less. If DBR is more than 40%, the loan application is rejected.

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

7. 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.

8. Before a Loan can be processed by a Bank, the Bank must 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:

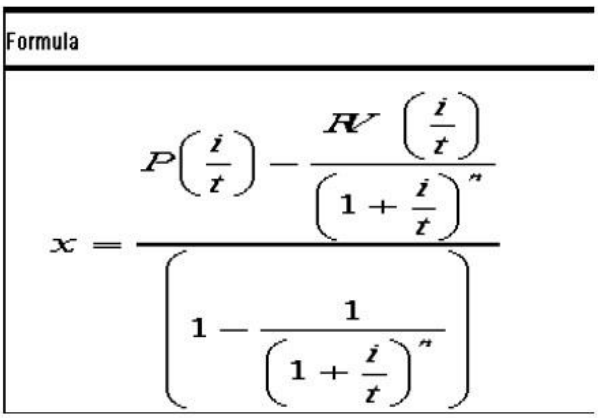
   Max_eligible_Loan_amount = E * ((1 + R) ^t) -1)/ (R * ((1 + R) ^t)

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.

9. 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:



    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

10. 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 Question 9. The Java code will return a complete repayment schedule i.e. 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

Formula for creating Principal and Interest Component of an installment is as below (monthly installment is assumed). Installment is calculated in Question 9, use the same formula.

- In = OPn * (r /100) * (1/12)
- Pn = Installment – In
- OPn+1 = OPn – Pn

Where:

In : Interest component of the nth Installment
OPn : Outstanding Principal at the beginning of the nth Installment period
r : Interest rate per annum
Pn : Principal component of the nth installment
OPn+1 : Outstanding Principal at the end of the nth Installment period

11. Calculate the Principal and interest component of an installment given:
    - The same parameters as Question 9
    - The installment number for which the breakup is required.

    Use the same formula as in Question 9.