Software Development 1

PBL

Use template provided for solutions.

Write the pseudo-code solution for the following problem:

1. Big Burgers Ltd requires a program to calculate their profit on hamburgers and chips sold each day. A portion of chips cost the company 30c and sells at 90c.
A hamburger costs 40c and sells at €1.50.

Input to the program is the number of hamburgers and the number of portions of chips sold, give these inputs any values you deem appropriate.

Output is the profit on hamburgers, the profit on chips and the total profit.

Use a calculator to test that your results are correct.

Design the pseudocode for this problem and if time permits, implement the solution in Python.

2. When you buy a new TV or video watch for out for those 0% interest deals. Read the fine print and you will notice that if you don't make the full payment by a certain date, hefty interest will start accruing. You may be better off to get an ordinary loan from the beginning with a cheaper interest rate. What matters most is the total payment(loan amount plus total interest) you'll have to make. To compare different loans you are to develop a loan calculator. Here's the problem statement

Write a loan calculator application that computes both monthly and total payments for a given loan amount, in Euro and cents, annual interest rate, in percent, e.g. 12.5, and loan period, in years e.g. 30. The loan amount, annual interest rate and loan period is to be input by the user.

The formula for computing the monthly payment is as follows:

Monthly payment = (L* R) / (1- (1/(1+R))^{N})

Where L is the loan amount, R is the **monthly** interest rate, and N is the number of payments.

The monthly rate R is expressed in a fractional value , e.g. 0.01 for 1 per cent monthly rate. Once the monthly payment is derived the total payment can be determined by multiplying the monthly payment by the number of months the payment is made.

Note that you have to convert the annual interest rate to the monthly interest rate and the input loan period to the number of monthly payments. The monthly interest rate is calculated as follows:

Monthly interest rate = annual interest rate / 100.0 / 12

Number of payments = loan period * 12

where 12 represents the number of months in the year in both cases

Notes:

In the Pseudo-code use (expression)^{N}

to reflect raising the expression to the power of N