Programming Fundamentals LAB – Spring 2021
(BS-IT-F20 Morning & Afternoon)

Lab # 1

Instructions:

- **Attempt the following tasks exactly in the given order.**
- **Indent** your pseudo-code properly.
- Use meaningful variable names. Use the **camelCase** notation to name variables.
- Use meaningful prompt lines/labels for all input/output that is performed by your algorithms.

You are required to write algorithm in **pseudo-code** form and draw **flowchart** for each of the following tasks:

Task # 1

A company has determined that its annual profit is typically 13 percent of total sales. Design an algorithm that asks the user to enter the amount of total sales, and then determines and displays the annual profit that will be made from that amount.

```
real annualProfit, totalSale
print "Please enter the amount of total sales:"
input totalSale
annualProfit = 0.13 * totalSale
print "annual profit is: " annualProfit
```

Task # 2

Design an algorithm that will ask the user to enter the amount of a purchase. The algorithm should then compute the federal and provincial sales tax. Assume that the federal sales tax is 6 percent and the provincial sales tax is 4 percent. The algorithm should display the amount of the purchase, the federal sales tax, the provincial sales tax, the total sales tax, and the total of the sale (which is the sum of the amount of purchase plus the total sales tax).

```
real purchange, federalSaleTax, provincialSaleTax, totalSale
print "Please enter the amount of a purchage:"
input purchange

federalSaleTax = 0.06 * purchange
provincialSaleTax = 0.04 * purchange
totalSale =  federalSaleTax + provincialSaleTax

print " The amount of purchange is: " purchange
print " The amount of the federal sale tax is: " federalSaleTax
print " The amount of the provincial sale tax is: " provincialSaleTax
print " The amount of the total sale tax is: " totalSale
```

Task # 3

A car's mileage in kilometers per liter (KMPL) can be calculated with the following formula:

$$KMPL = Kilometers\ driven / Liters\ of\ petrol\ used$$

Design an algorithm that asks the user for the number of kilometers driven and the liters of petrol used. It should calculate the car's KMPL and display the result on the screen.

```
real kmpl, kilometersDriven, litersOfPetrolUsed

print "Please enter the number of kilometers driven:"
input kilometersDriven
print "Please enter the liter of petrol used:"
input litersOfPetrolUsed

kmpl= kilometersDriven / litersOfPetrolUsed


print " The car's KMPL: " kmpl
```

Task # 4

Design an algorithm that asks the user how many eggs he/she has bought and then tells the user how many dozen eggs he/she has and how many extra eggs are left over. A sample run of your algorithm is given below. Text shown in **red** is entered by the user.

Sample run:

```
How many Eggs you bought: 42
You bought 3 dozen and 6 extra Eggs
```

Hint: Use the division operator (**/**) and the modulus (**%**) operator (Kindly try it on the base of your understanding. Both the division operator (**/**) and the modulus (**%**) operator divides one value by another, where division operator (**/**) returns the quotient value while modulus (**%**) operator returns the remainder value.)

```
integer boughtEggs, dozen, extra

print "How many Eggs you bought:"
input boughtEggs

dozen = boughtEggs/12
extra = bougtEggs%12

print "you bougth:" dozen "dozen and" extra "Eggs"
```