Lab 1 – Thursday May 17, 2018

Question 1

Using Spyder, enter the following program into a script file named Lab1Q1.py. For the version use today's date.

```
# Lab1Q1.py
#
# Course:       COMP 1012
# Instructor:   Amirhossein Hosseinmemar
# Lab:          1 Question 1
# Author:       Stew Dent
# Version:      2018/05/04
#
# Purpose:      Display a message on the screen.

from time import ctime

print("\nEnjoy programming with Python!")

print("""
Programmed by Stew Dent.
Date: %s
End of processing.""" % ctime())
```

Replace each occurrence of Stew Dent with your name. Save the file as Lab1Q1.py.

Make sure the window containing your program is the active window and then run the program by pressing F5 or under the Run menu by selecting Run.

Question 2

Using Spyder, modify the program from question 1 so that it is the same as the program shown below and save it into a script file named Lab1Q2.py. For the version use today's date.

```
# Lab1Q2.py
#
# Course:       COMP 1012
# Instructor:   Amirhossein Hosseinmemar
# Lab:          1 Question 2
# Author:       Stew Dent
# Version:      2018/05/04
#
# Purpose:  Convert a weight from kilograms to pounds and ounces.
#
# kilograms - the weight in kilograms
# pounds - the number of pounds in the equivalent weight
# ounces - the number of ounces in the equivalent weight
# LBS_PER_KGM - the number pounds per kilogram
# OUNCES_PER_POUND - the number of ounces per pound

from time import ctime

LBS_PER_KGM = 2.20462262
OUNCES_PER_POUND = 16

kilograms = float(input('Enter the weight in kilograms: '))
pounds = kilograms * LBS_PER_KGM
ounces = pounds * OUNCES_PER_POUND
pounds = ounces // OUNCES_PER_POUND
ounces = ounces % OUNCES_PER_POUND

print ("\n%f kilograms is equivalent to %g pounds and %f ounces."
      % (kilograms, pounds, ounces))

print("""
Programmed by Stew Dent.
Date: %s
End of processing.""" % ctime())
```

Run the program and type in **12.25** as the weight. A sample run of the program is shown below.

```
Enter the weight in kilograms: 12.25

12.250000 kilograms is equivalent to 27 pounds and 0.106034
ounces.

Programmed by Stew Dent.
Date: Fri May  4 13:19:37 2018
End of processing.
```

Question 3

Using Spyder, enter the following program into a script file named Lab1Q3.py. For the version use today's date.

```
# Lab1Q3.py
#
# Course:       COMP 1012
# Instructor:   Amirhossein Hosseinmemar
# Lab:          1 Question 3
# Author:       Stew Dent
# Version:      2018/05/04
#
# Purpose:      Input the lengths of the semi-axes
#               for an ellipsoid and calculate the
#               the volume of the ellipsoid.
#
# prompt - text telling the user what to enter
# semiX - the length of the semi x-axis in cm
# semiY - the length of the semi y-axis in cm
# semiZ - the length of the semi z-axis in cm
# volume - the volume of the ellipsoid

from time import ctime
from math import pi

prompt = 'Enter the length of the semi x-axis in cm: '
semiX = float(input(prompt))
prompt = 'Enter the length of the semi y-axis in cm: '
semiY = float(input(prompt))
prompt = 'Enter the length of the semi z-axis in cm: '
semiZ = float(input(prompt))
volume = 4. * pi * semiX * semiY * semiZ / 3.
print('\nThe volume of the ellipsoid is %.2f cm^3'
      % volume)

print("""
Programmed by Stew Dent.
Date: %s
End of processing.""" % ctime())
```

Run the program and type in **10.5** as the length of the semi x-axis, **7.75** as the length of the semi y-axis and **2.25** as the length of the semi z-axis.

The sample run of the program is shown on the next page.

```
Enter the length of the semi x-axis in cm: 10.5

Enter the length of the semi y-axis in cm: 7.75

Enter the length of the semi z-axis in cm: 2.25

The volume of the ellipsoid is 766.94 cm^3

Programmed by Stew Dent.
Date: Fri May  4 13:22:45 2018
End of processing.
```