CS410P

# LAB 2L

## Description

This exercise gives you practice with applying simple logic in a program and also get used to output formatting.

## Problem

1. Write a program that prompts the user to input four numbers that go into the four variables boxA, boxB, boxC and boxD – all of them are floating point numbers. (There is no starter file for this lab, if it makes it easier you can copy over your solution for 1L and use that file to begin this lab).
   a) Display all the variable values input by the user in the same order of input (i.e. print boxA first followed by boxB, etc.).
   Next, we want to swap the variable values such that eventually boxA will contain boxB's initial value, boxB will contain boxC's initial value, boxC will contain boxD's initial value and boxD will contain boxA's initial value. Display the contents of all the variables again, **in the same order**.
   ***NOTE: You must actually swap the values of the variables and not just print the values in some order to match with the output sample!***

   For displaying variable values use 10 character spaces in total, and 2 digits after the decimal point.
   - For now, since we have not really covered much of output formatting use the "%" format specifier technique – for example a floating point number can be formatted as 6.2f to indicate a total of 6 places to be used to display a number correct to 2 decimal digits.
   - If "number" is a variable having a floating point value,
     print ("%6.2f" % number)
     will print the value with 6 places wide and 2 after the decimal point.

   b) Compute the value of the expression where boxA and boxB are multiplied with each other and subtracted from the product of boxC and boxD. Display the result correct to 3 decimal places. For this computation use the new values of all the variables (i.e. complete part (a) and use the most recent variable values in your computation)
   c) Compute the value of the expression:

   $$a^3 + 3a^2b + 3ab^2 + b^3$$

   where the values of a and b are the ***original*** values (entered by the user before swapping) of boxA and boxB respectively.

2. To assist you with testing your program you can compare your program output with mine located under the 2L public folder on the course web site. I have created a few files named out1, out2, etc. for showing you the program output for different inputs. Use the same inputs as mine and verify that your program output matches with mine. Very minor discrepancies in decimal digits in your output (versus mine) are acceptable.
3. If you are satisfied that your program works correctly submit your program for grading via myCourses for 2L.

## Grade Key

| | | |
|---|---|---|
| **A** | Name, comments | **5** |
| **B** | Proper inputs and prompts | **10** |
| **C** | Initial Box values are correctly printed | **10** |
| **D** | Swapped Box values are correctly printed (actual swap performed) | **20** |
| **E** | Computation in (b) above correct | **15** |
| **F** | Computation in (c) above is correct | **20** |
| **G** | Output formatting reasonable | **10** |
| **H** | Results accurate for multiple input combinations | **10** |