Assignment 2 Recursion - 100 pts Due 8/25/22 @ 11:59 pm

Note: Never hard-code test data in the test program, unless explicitly stated otherwise in the assignment. Always allow the user to enter the test data using a menu option

GENERAL SUBMISSION REQUIREMENTS

Upload all files individually as specified, not as zip files, to Assignments in D2L. Do not email files.
Make sure your program compiles, runs, and produces the correct output.
Ensure you have the correct file name(s), and author header, as specified in the Assignment.
Always use meaningful labels for prompts, inputs, and outputs.
Well documented programs use comments, indentation and whitespace as shown in text.

Objective: To reinforce the concept of recursion.

Assignment: There are two parts to this assignment.

Part 1 - Factorial

Write out the logic / pseudo code to compute the factorial of n, customarily denoted as n!

It is important to use correct recursion terminology in your pseudo code.

Next, use your pseudo code as the basis for writing a complete, well documented program. Your program should prompt the user to enter a nonnegative number and then display the factorial for that number. Your program must contain a function called *factorial*. Function *factorial* calculates the factorial of a number. Sample output is included below.

```
Enter a nonnegative integer:  4    <enter>
Factorial of 4 is 24
```

Do not forget to include author header in your file as shown, no header, no points!

```
// Name:         <your name>
// Class:        CS 3305/ put your section number after the /
// Term:         Fall 2022
// Instructor:   Sharon Perry
// Assignment: 2 - Part 1 Factorial
```

DELIVERABLE INSTRUCTIONS

Capture a **READABLE** screenshot(s) of your program output and paste into a word/pdf document. Readable means readable! Screenshots ***should not be an entire desktop*** – use some type of snipping tool. After your output screenshots, copy and paste the source code for your program into the word/pdf doc. Save doc as a file named LastName-A2-Part-1-Factorial.docx or .pdf. word. Last step is to upload everything to D2L, word/pdf doc and source code file.

Part 2 – Recursion

Write a complete, well documented program, that prompts the user for input and tests a recursive function. You will write a function that implements recursion and produces the following output:

```
// Sample below is for input of 4:
// Note: indentions are required for credit.

// Expected Output

This was written by call number 1.
  This was written by call number 2.
    This was written by call number 3.
      This was written by call number 4.
      This was ALSO written by call number 4.
    This was ALSO written by call number 3.
  This was ALSO written by call number 2.
This was ALSO written by call number 1.
```

In this example, the recursion stopped when it reached four levels deep (because 4 was input), but your program should be capable of continuing to any specified level.

Do not forget to include author header in your file as shown, no header, no points!

```
// Name:         <your name>
// Class:        CS 3305/ put your section number after the /
// Term:         Fall 2022
// Instructor:   Sharon Perry
// Assignment:   2 – Part 2 Recursion
```

DELIVERABLE INSTRUCTION

Capture a **READABLE** screenshot(s) of your program output and paste into a word/pdf document. Readable means readable! Screenshots ***should not be an entire desktop*** – use some type of snipping tool. After your output screenshots, copy and paste the source code for your program into the word/pdf doc. Save doc as a file named LastName-A2-Part-2-Recursionl.docx or .pdf. word. Last step is to upload everything to D2L, word/pdf doc and source code file.

Submit everything to the assignment submission folder in D2L by the due date posted in D2L.

No zip file or email submissions are accepted. Late penalties are in effect for this assignment.

Important Note: Code must be correctly running and produce correct results before being uploaded.