Langara College
CPSC 2150 Instructor Gladys Monagan

Assignment #1: Recursion

Assignment due with Brightspace at 11:50pm on Tuesday January 17

Read in Drozdek chapters 1 (skip §1.3, §1.5), chapter 5 (skip §5.9). Read the Concluding Remarks in §5.10 on pages 197 and 198 carefully.
Read in Goodrich §3.5.
Read **Week II: recursion, recurrence relations, ADTs | Lectures | Files | Monagan_Recursion_Document.pdf** and do

1. Exercise 5.8 is strictly descending?
2. Exercise 5.12 swapPairsLeftToRight
3. Read 7.2 and do Exercise 7.2.3 outputAsHex
4. Read 7.2 and do Exercise 7.2.5 outInOctal
5. Read 8, 8.1 and 8.2 and do Exercise 8.6 insideInOrder
6. Implement Exercise 8.6 **iteratively**, with loops, call the function insideInOrderI
   Do not use any string library functions like substr or npos in this iterative function either

Read the text before the given exercises in **Monagan_Recursion_Document.pdf**
Test each function properly by writing appropriate google tests. We have started writing the tests in the file unittest_fcts.cpp. We also provided a test file that does not use google tests called test_fcts.cpp.
Clarification:

- No global variables and no static variables.
- For these exercises, if possible, do not pass the arguments by reference: try to program functionally
- You **can** overload the requested functions.
- You may implement helper functions to the required functions but place the code to those functions before calling them in the file fcts.cpp.
- Leave fcts.h as is, so, document the functions in fcts.cpp.
  The proper way would have been to document in fcts.h but we will not be marking fcts.h
- The file fcts.cpp should **not** have a main function
- All the functions are to be implemented recursively but if the function requested calls a recursive (possibly overloaded) function, we say that the requested function is recursive.
- There should be no loops in any of the functions except for insiderInOrderI.
- We should be able to compile and run your code using the Makefile provided.

Submit the following 5 files as a single compress (zipped) file:. Do “make clean” or “make remove” before compressing your files. Do not submit any files other than these below

- fcts.cpp (with YOUR code)
- fcts_unittest.cpp (adding YOUR tests … yes, marks are given for complete tests)
- test_fcts.cpp (up to you whether you want to add more code or not, won’t be marked)
- fcts.h (leave as is)
- Makefile (leave as is)

In addition, you may add a README.txt if you want to convey something to the marker.
Please put all the helper functions, in the file fcts.cpp BEFORE the helper functions are called.
Or alternatively, write a function prototype and place it at the top of fcts.cpp