CPSC 1160 SECTION 001 INSTRUCTOR: GLADYS MONAGAN

ASSIGNMENT #3: RECURSIVE FUNCTIONS

DUE DATE WITH BRIGHTSPACE: JANUARY 25 AT 11:50 PM

LEARNING OBJECTIVES

- to think recursively
- to solve problems using recursion in C++
- to test recursive functions (it is the same as testing iterative functions)

READINGS

- Read chapter 17 (sections not covered §17.3, §17.6, §17.7, §17.9 but a good read)
- The Monagan_Recursion_Document in Brightspace under
    - **week III: arrays, recursion, sorting, complexity | Lectures | Files**

The exercises are from Monagan_Recursion_Document.
Write the following **recursive** functions. Do not use any loops.

1) Exercise 4.2: writeBackwardForward on page 11
2) Exercise 5.5: maximum on page 13
3) Exercise 5.8: isStrictlyDescending on page 14
4) Exercise 5.12: swapPairsLeftToRight on page 16
5) Exercise 8.4: goesFirst on page 26, 27
6) **Bonus question**: Exercise 5.6: minPosNum on page 13

You are to submit C++ code that implements the 5 functions (plus possibly the bonus) in the file **fcts.cpp**

- Fill in your code that implements the recursive function in the file **fcts.cpp**.
  The function prototypes are given already.
- If you write a helper function, place the code of that helper function before its call (you don't need to document helper functions)
- If the helper function is the one that is recursive, we say the calling function is recursive too.
- Document each function before its implementation (definition). Normally the documentation of a function would go by the function prototype but we are doing it differently.
  maximum has been done for you as example.
- You may add more tests. You should. Some tests will be marked.
- No loops.
- Include a README.txt if you do the bonus question and write that you did do the bonus.

TO SUBMIT AS A SINGLE COMPRESSED FILE

1. The **fcts.cpp** (with YOUR code)

   remove the cerr statement every time you implement a function

2. The file **unittest_fcts.cpp** (add more of YOUR tests)

3. The file **test_fcts.cpp** (will not be marked)

4. **doctest.h**

5. and possibly a **README.txt**

You will get the files in the lab.