

ASSIGNMENT #3: RECURSIVE FUNCTIONS

DUE DATE WITH BRIGHTSPACE: SEPTEMBER 28 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: 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 5.4: smaller on page 13
- 3) Exercise 5.5: maximum on page 13
- 4) Exercise 5.8: isStrictlyDescending on page 14
- 5) Exercise 5.12: swapPairsLeftToRight on page 16
- 6) Exercise 8.4: goesFirst on page 26, 27
- 7) **Bonus question:** Exercise 5.6: minPosNum on page 13

You are to submit C++ code that implements the 6 functions (plus possibly the bonus) in the file **fcts.cpp**

- Fill in your code that implements the recursive function in the file **fcts.cpp** provided for you where it says “fill the code below”. 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.
- 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 **fcts_unittes.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 tomorrow.