CS3305-XL Assignment 5

Requirements

The goal of this assignment is to reinforce using stacks in C++ program. Use the STL stack class. The goal of this assignment is to reinforce the concept of stacks and their implementation. Specifically, the assignment is to implement additional functions to manipulate stack objects of different types. To keep the assignment uniform for all, we will use the STL template class stack. Watch Jordan's recording and sample STL programs on how to use the STL templates.

Design and implement the following functions in a test program in file called **test_stack.cpp**. Write your main function (**main()**) as part of file **test_stack.cpp** and test every function listed above.

1. Function **topToBottom(…)** takes a stack object of type integer and displays the stack content from the top of the stack to the bottom of the stack. That is, the top value is printed first; while the bottom value is printed last. This function does not change the stack content.

2. Function **bottonToTop(…)** takes a stack object of type double and displays the stack content from the bottom of the stack to the top of the stack. That is, the bottom value is printed first; while the top value is printed last. This function does not change the stack content.

3. Function **flipStack(…)** takes a stack object of type string and returns the same stack object with its content being flipped. That is, if the stack has values are **Ed, Tom, Bob, Amy** before calling this function, the stack would have the values **Amy, Bob, Ed, Tom** after the function is executed.

4. Function **searchStack(…)** takes 2 parameters: a stack object of type integer and an integer target value. It returns true if the target value is on the stack at any place; otherwise it returns false. This function does not change the stack content.

5. Function **chcekIfPalindrome(…)** takes a stack object of type character and returns true if the stack content represents a palindrome (i.e., the stack content has the same order if read top to bottom or bottom to top). For example, a stack with values **R, A, C, E, C, A, R** is a palindrome; while a stack with values **T, H, I, S, C, L, A, S, S** is not a palindrome;

Sample Output:

```
Testing function topToBottom:
        Stack content:     3  4  5  5  7  8  8
        Function output:   3  4  5  5  7  8  8

Testing function bottomToTop:
        Stack content:     3.5  4.6  5.5  9.7
        Function output:   9.7  5.5  4.6  3.5

Testing function flipStack:
        Stack content before:   Ed   Tom   Bob   Amy
        Stack content after:    Amy  Bob   Tom   Ed  1

Testing function searchStack:
        Stack content:     11  14  15  25  71  60  95
        Target value:      88
    Function output:   false

Testing function checkIfPalindrome:
        Stack content:     R   A   C   E   C   A   R
    Function output:   true
```

Submitting Assignment

Submit your assignment zip file through D2L using the appropriate assignment link. Please use the submission guidelines provided in D2L