

Assignment 3

Given the following data:

Input for the string stacks/queues/deques

Mark, Alan, Jennifer, Jordyn, Eric, JoAnn, Bryan

Input for the double stacks/queues/deques

2019.1, 44.44, 888.55, 200.12, 123.123, 8.445,

- A. Implement and print (top of stack to bottom) the stacks using the STL `<stack>` with the above data.
- B. Delete Jordyn and 200.12 from the above stacks (you will need to delete others) using the STL `<stack>` and print (top of stack to bottom) the remaining elements in the stacks.
- C. Implement and print (top of stack to bottom) the stacks using a singly linked list using the above data. Do not use the STL.
- D. Delete Jordyn and 200.12 from the above stacks (you will need to delete others) and print (top of stack to bottom) the remaining elements in the stacks. Do not use the STL.
- E. Implement and print the queues using either a circular array or a linked list using the above data. Do not use the STL.
- F. Delete JoAnn and 200.12 from the above queues (you will need to delete others) and print the remaining elements in the queues. Do not use the STL.
- G. Implement and print the dequeues using a linked list using the above data (using push front). Do not use the STL.
- H. Delete JoAnn (pop front) and 200.12 (pop back) from the above dequeues (you will need to delete others) and print the remaining elements in the dequeues. Do not use the STL.

Label your output (part A, part B, part C, etc.)

Do not put deleted elements back on the data structures.

- I. Implement the Parentheses Algorithm without using the STL). Test your algorithm with the following mathematical statements.
 - a. $(12x + 6)(2x - 4)$
 - b. $\{2x + 5\}(6x + 4)$
 - c. $\{2x + 7\}(12x + 6)$
 - d. $\{\{8x + 5\} - 5x[9x + 3]\}$
 - e. $((((4x + 8) - x[4x + 3])))$
 - f. $[(5x - 5) - 4x[6x + 2]]$

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g. $\{(8x+5) - 6x[9x+3]\}$

J. (extra credit – 3 points) If valid, write software to evaluate the valid expressions above assuming $x = -2$.

Your output should CLEARLY demonstrate the above. Print out the part number before you display the stacks/queues/deques.

Due on February 3rd