

OBJECTIVE : Stack Operations
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1. Download stack_int.h header file from our course website to use stack operations. Make changes if necessary.

Write a C program that evaluates a postfix expression such as

6 2 + 5 * 8 4 / -

The program should read a postfix expression consisting of positive digits and operators into a character array and will be evaluated as follows:

(((6+2) *5) - (8/4))

from left to right

<u>Postfix Expression</u>	:	Op1 Op2 operator
Ex	:	6 2 +

<u>Infix Expression</u>	:	Op1 operator Op2
Ex	:	6 + 2

For this reason, make use of a stack where values should be pushed to the stack in the order (op1,op2, ...).

The arithmetic operations allowed in an expression are:

+ addition
- subtraction
*** multiplication**
/ division

Project Name: LG6C_Q1**File Name:** Q1.cpp**Example Run#1:**

Enter an expression: **12 4 + 10 16 8 / -**
 The result is: **1**

Example Run#2:

Enter an expression: **4 6 * 8 - 16 4 / +**
 The result is: **2**

2. Add the file stack_int.h to your solution directory.You are supposed to make some additions to **stack_int.h** by writing some functions in it, which are:

DisplayStack	: Displays the stack,
CountStack	: Counts the elements of the stack (Stack content does not change!),
RemMaxStack	: Removes the Maximum element from the stack,
SendNthToEnd	: The nth element from the top is sent to the bottom of the stack.

Write a C program that will first get numbers from user to fill the stack until a sentinel value is entered (-9 for instance), and then displays a menu, and call the appropriate STACK function according to the user's choice. Examine well the example run.

Project Name: LG6C_Q2**File Name:** Q2.cpp

Example Run:

Enter a number: 23
Enter a number: 42
Enter a number: 56
Enter a number: 87
Enter a number: 33
Enter a number: -9

- 1) Count Stack
- 2) Remove Maximum Element
- 3) Send Nth To End
- 4) Exit

Enter your choice: 1

STACK CONTENT

33
87
56
42
23

Number of elements in the stack: 5

- 1) Count Stack
- 2) Remove Maximum Element
- 3) Send Nth To End
- 4) Exit

Enter your choice: 2

STACK CONTENT

33
56
42
23

- 1) Count Stack
 - 2) Remove Maximum Element
 - 3) Send Nth To End
 - 4) Exit
- Enter your choice: 3
Enter N: 2

STACK CONTENT

33
42
23
56

- 1) Count Stack
- 2) Remove Maximum Element
- 3) Send Nth To End
- 4) Exit

Enter your choice: 6

- 1) Count Stack
- 2) Remove Maximum Element
- 3) Send Nth To End
- 4) Exit

Enter your choice: -1

- 1) Count Stack
- 2) Remove Maximum Element
- 3) Send Nth To End
- 4) Exit

Enter your choice: 4