

# CSCI 3328 Object Oriented Programming in C#

## Assignment #8

Instructor: Dr. Xiang Lian  
Due Date: See the course Web page

In a conventional arithmetic expression, the operator is between the operands ( $2 + 3$ ); this is called infix notation. Computers prefer postfix notation in which the operator is written to the right of its operands. A compiler would have to convert the infix to a postfix. Consider the following problems:

Infix	Postfix
$(6.2 + 3) * 5 - 8 / 4$	$6.2 3 + 5 * 8 4 / -$
$(3 + 4) * 5$	$3 4 + 5 *$
$3 + 4 * 5$	$3 4 5 * +$

Write a program to

Accept a Postfix problem as a string (a number could be real or integer).

Parse the string to find the operands and opcodes

Opcodes allowed are: +, -, \*, /, %

Using a stack data structure (that you create) do the calculation. Implement stack either as a class or a module.

Display all activities in a dialog box.

Display the result in a label box.

### Explanation:

We evaluate the expression by scanning from left to right. Consider the problem  $6 2 / 5 +$ . Look for the first operator beginning from left. The division operator is applied to the immediate previous operands. The divisor would be the later one, in this case 2. Now the problem has been reduced to  $3 5 +$ . Continue processing until the end of the problem statement.

Here are some problems with results.

postfix expression	result
$4 5 7 2 + - *$	-16
$3 4 + 2 * 7 /$	2
$5 7 + 6 2 - *$	48

\* this description and the samples are taken from Nell Dale's Book.

Please submit:

1. Program listing, and
2. The screen captures (as given in the Appendix)

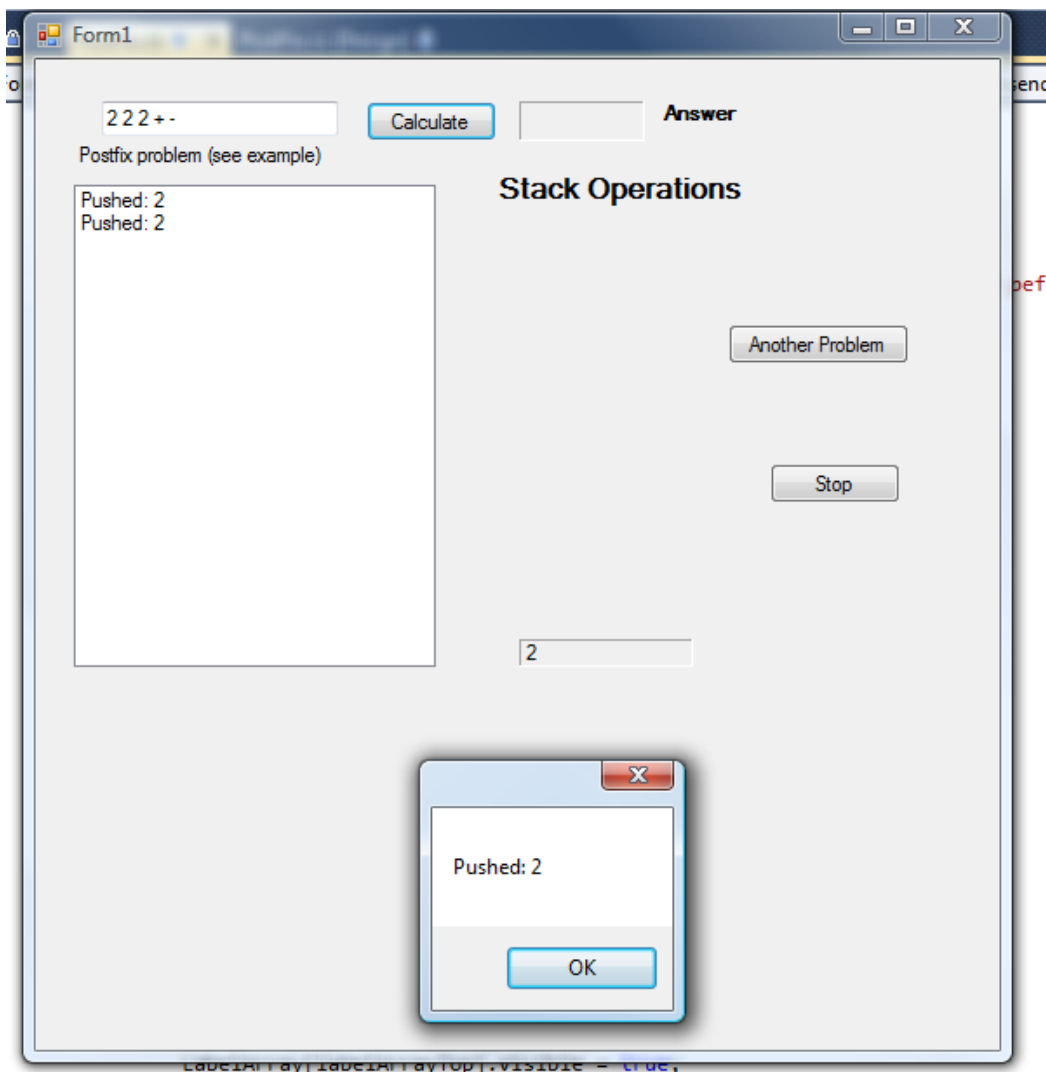
Please submit all files in a compressed \*.zip file.

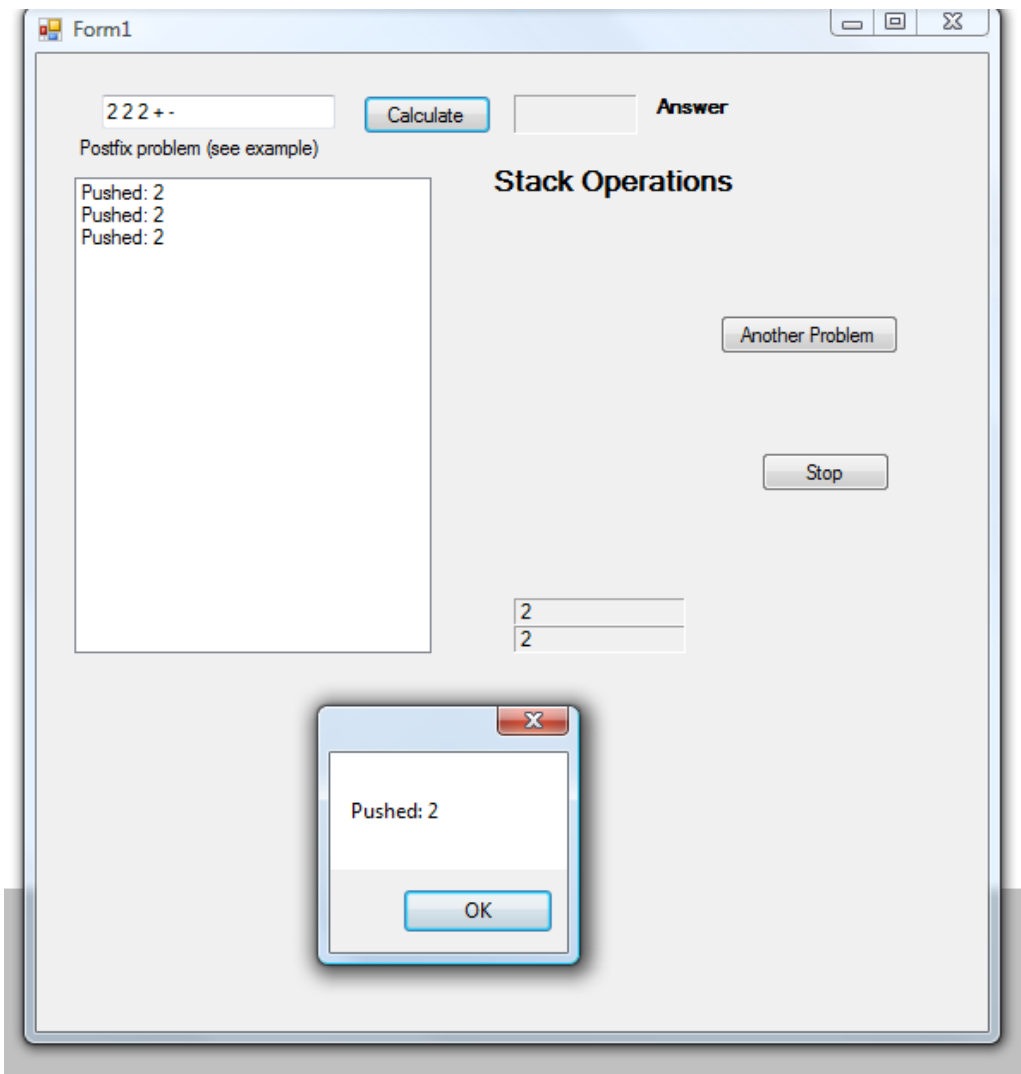
- Your program should begin with a comment section that would include the following:

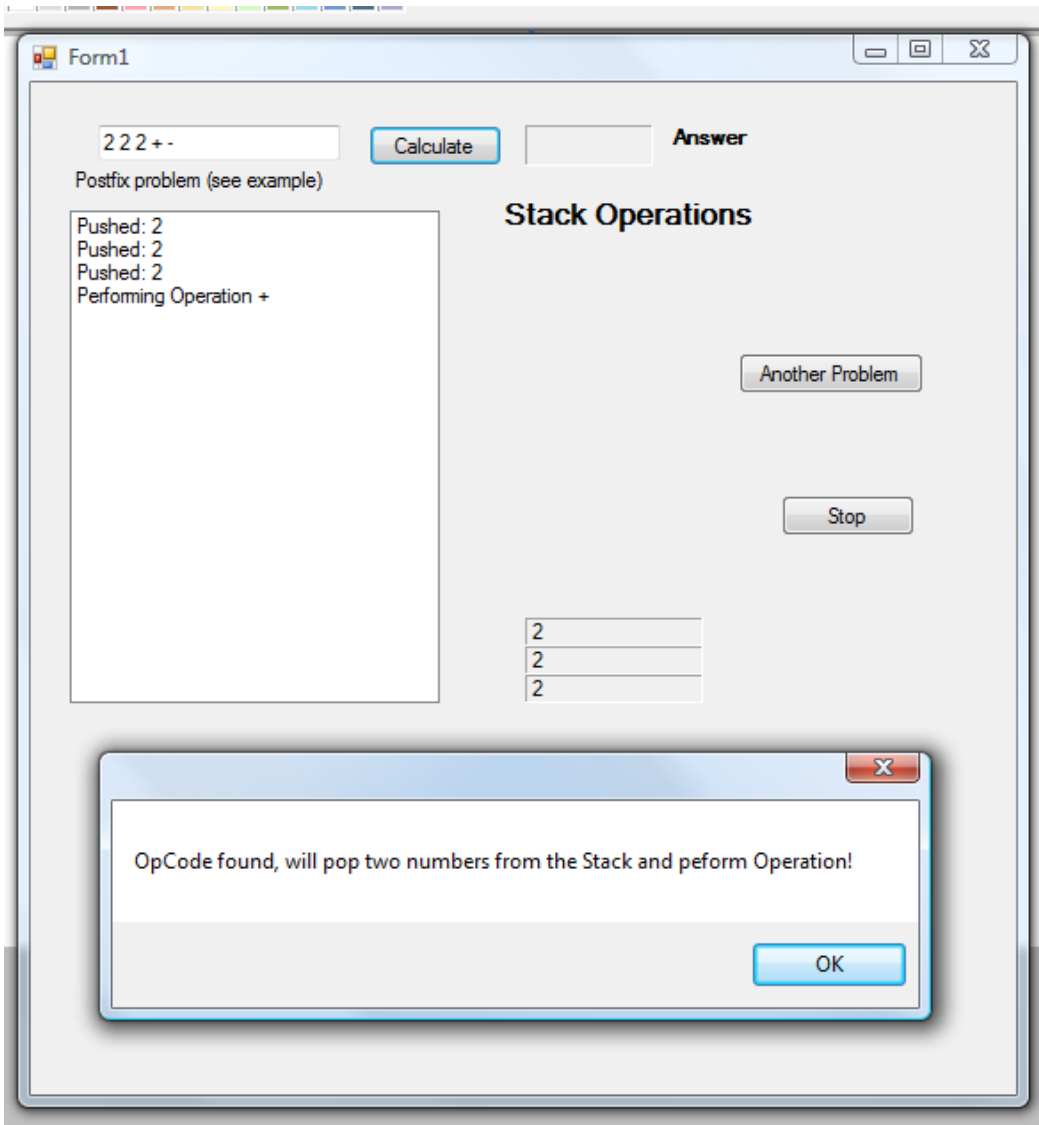
PROGRAMMERS NAME: \_\_\_\_\_  
STUDENT ID: \_\_\_\_\_  
CLASS: \_\_\_\_\_ ASSIGNMENT #: \_\_\_\_\_  
DATE DUE: \_\_\_\_\_ DATE TURNED IN: \_\_\_\_\_

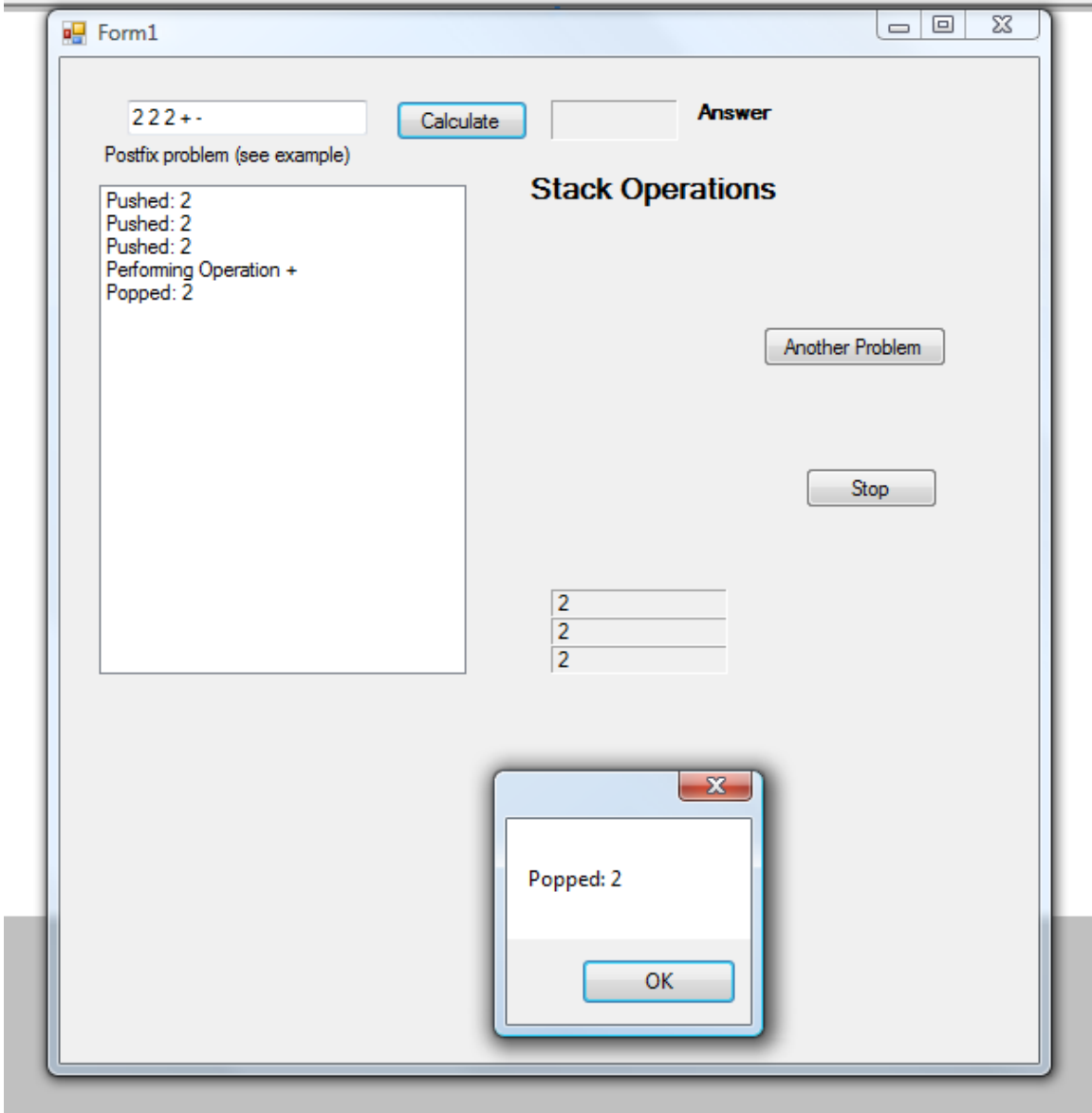
- Upload the \*.zip file you created to the Blackboard. The subject of the submission must include the following information:  
[CSCI 3328] [Assignment #] [Your Name Here] [Your Student ID Here]

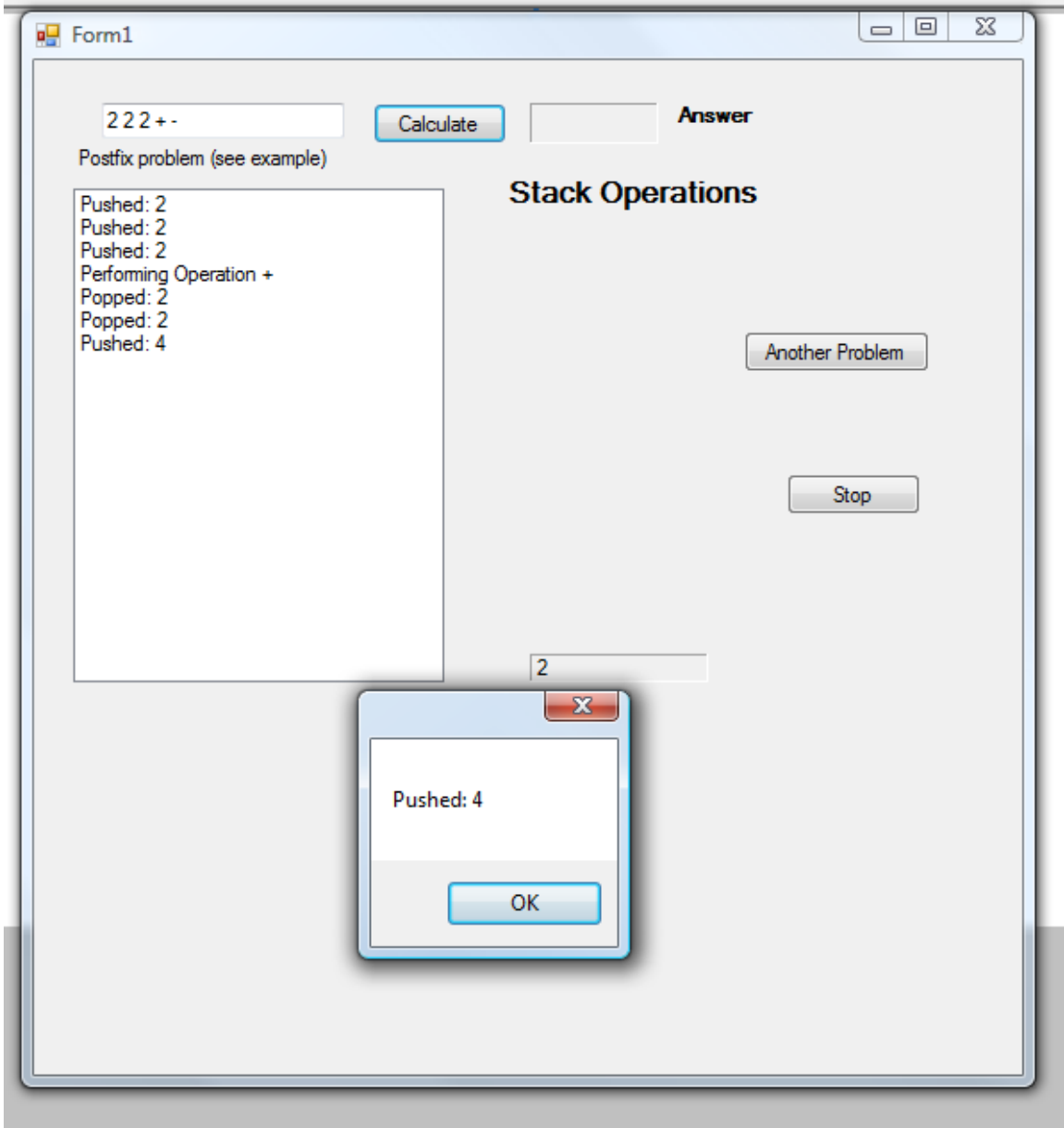
## Appendix: Examples of Screen Captures

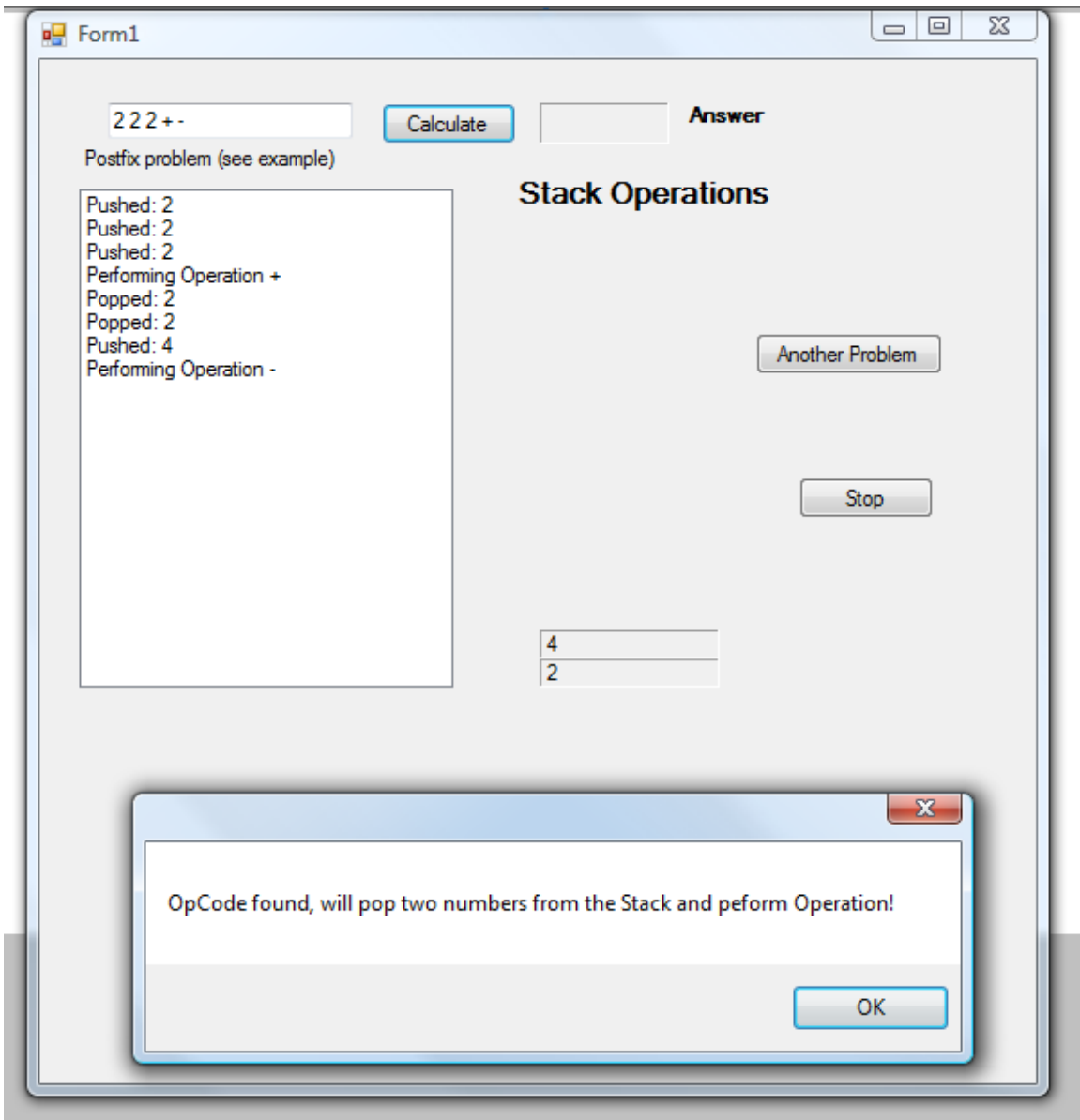


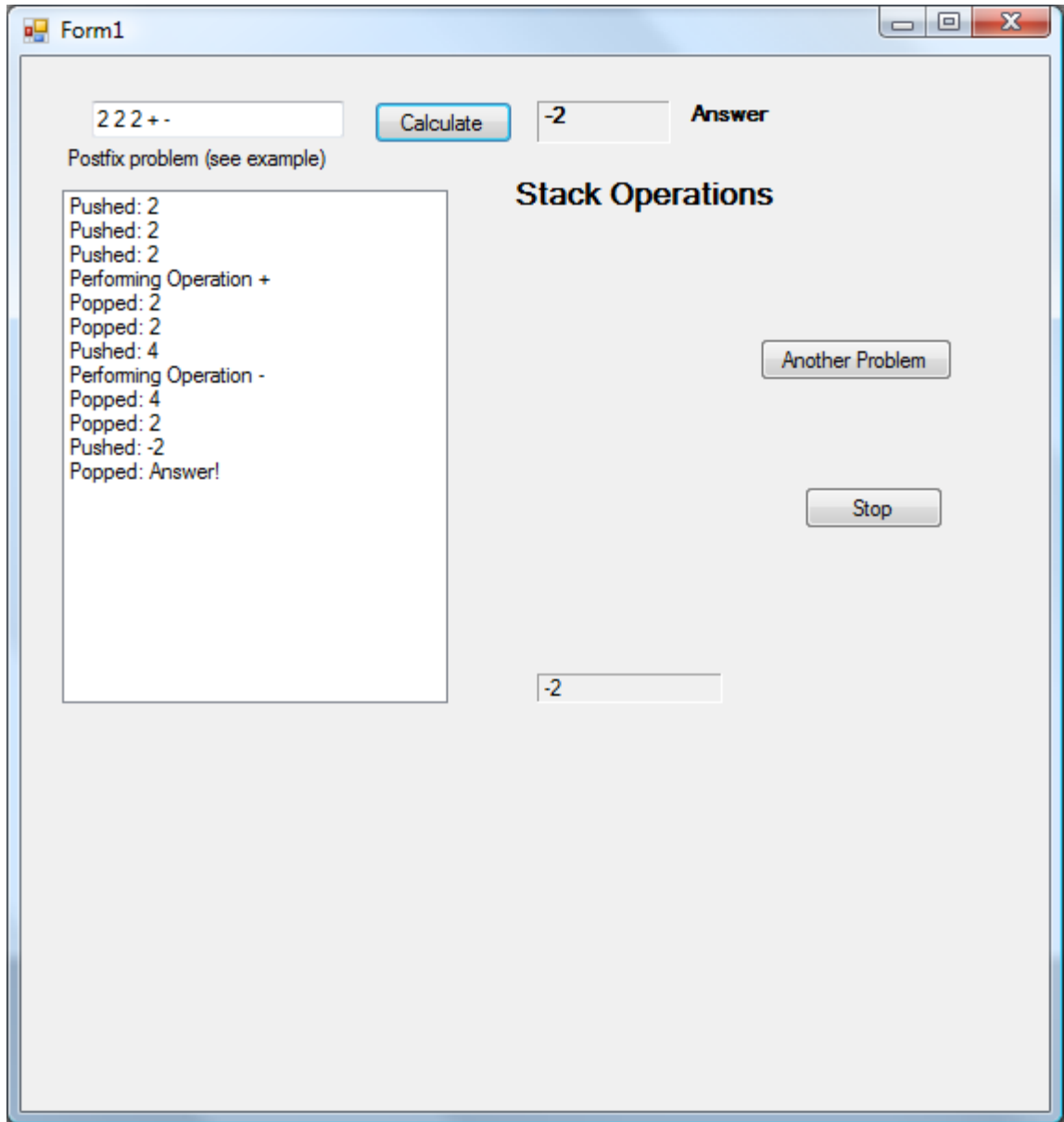












Another Program run showing just the last screen:



Form1

6.2 3 + 5 \* 8 4 / -    Calculate    44    Answer

Postfix problem (see example)

### Stack Operations

Pushed: 6.2  
Pushed: 3  
Performing Operation +  
Popped: 3  
Popped: 6.2  
Pushed: 9.2  
Pushed: 5  
Performing Operation \*  
Popped: 5  
Popped: 9.2  
Pushed: 46  
Pushed: 8  
Pushed: 4  
Performing Operation /  
Popped: 4  
Popped: 8  
Pushed: 2  
Performing Operation -  
Popped: 2  
Popped: 46  
Pushed: 44

Another Problem

Stop

44