The University of New Mexico

CS 241—Data Organization: Project 1

Postfix Calculator

Joel Castellanos

Due: Monday, 1/26/2009 at midnight in WebCT

Problem Specification

Write a C program that accepts a postfix expression in the form of a single quoted string and prints the result of the expression to the *standard output* device. Your program must:

1. Consist of a single file: `postfixCalculator.c`
2. Consist of a single function: `int main(int argc, char *argv[])`
3. Compile on the cs.unm.edu Linux machines with gcc version 4.2.3 for x86_64-linux-gnu.
4. Display appropriate error messages when given erroneous input.
5. Adhere to the UNM CS-241 coding standards.
6. Assume a stack size no larger than 25 is needed.

Grading

Points	Input	Output
5	`"4 5 +"`	`9.000000`
5	`"6 7 *"`	`42.000000`
5	`"2 3 -"`	`-1.000000`
5	`"2 3 /"`	`0.666667`
5	`"25 501 *"`	`12525.000000`
5	`"4 3 + 2 *"`	`14.000000`
5	`"4 3 2 + *"`	`20.000000`
5	`"1 28 3 5 * - + 7 /"`	`2.000000`
5	`"2 3 * 9 4 3 + - *"`	`12.000000`
5	`"4 3 7 9 10 + + + +"`	`33.000000`
5	`"1 2 3 4 5 6 7 8 9 10 11 + * - - + + + + + 2 / +"`	`105.000000`
1		`Error*** postfixCalculator takes exactly one argument.`
2	`3 4 +`	`Error*** postfixCalculator takes exactly one argument.`
2	`"4 x +"`	`Error*** unrecognized symbol: x`
5	`"4 3 5 + + +"`	`Error*** Found a + when there is 1 item on the stack.`

5	"4 3 7 9 10 + + +"	Error*** Input string ended with nonempty stack.
10	Comments are sufficient, accurate, and informative	
10	Algorithm is well organized (no spaghetti code)	
10	Adheres to the UNM CS-241 coding standards	
-10	Wrote code in more than one function	
-10x	Where X is the number of compiler warning messages.	
-10x	Where X is the number of reserved words or function calls not found in chapter 1.	

Extra Credit Points	Input	Output
5	"4.5 2 * .1 /"	90.000000
5	"11.2 .3 .5 + + 8.0 /"	1.500000
5	"2 -8 3 * -"	26.000000
5	"-22 2 -3 -2 * - +"	-26.000000