ACSL
American Computer Science League

2014 - 2015 **Contest #2**

LISP Expressions
Senior Division

PROBLEM: Given a valid arithmetic LISP expression that contains an operator followed by 1 or more sublists, perform string operations on the expression. There will be a single space between every operation and the numbers used for that operation. There will be no space after a left parenthesis or before a right parenthesis. The entire expression must be inputted as a single string. The operators used will be ADD, SUB, MULT, DIV, SQR, and EXP. Sample LISP expressions could include:

(SQR (MULT 3 4 5))
(MULT (DIV 20 4) (EXP -2 3))
(DIV (ADD 5 4 -6 7) (MULT 3 -1 7) (SUB 5 4))

INPUT: There will be 6 lines of input. The first line will contain a valid arithmetic LISP expression. We guarantee that it will have no more than 2 levels of parentheses. The following 5 lines will contain a command from the following list:

COUNT	Print the number of sublists in the given expression.
REMOVE J K	Print the expression that results when the elements between the J^{th} and K^{th} sublists inclusive are eliminated. J and K will be positive integers in increasing order.
SORT J K	Print the expression that results when the elements between the J^{th} and K^{th} sublists inclusive are sorted alphabetically based on their operation. J and K will be positive integers in increasing order.
REVERSE J K	Print the expression that results when the elements between the J^{th} and K^{th} sublists inclusive are reversed. J and K will be positive integers in increasing order.
MAXIMUM	Print the sublist with the most arguments.

OUPUT: Perform the given operation on the original expression and output the result.

SAMPLE INPUT	SAMPLE OUTPUT
1. (ADD (EXP -3 2) (SQR 5) (SUB 6 2) (MULT 6 7 -2 3) (DIV 15 5))	
2. SORT 3 5	1. (ADD (EXP -3 2) (SQR 5) (DIV 15 5) (MULT 6 7 -2 3) (SUB 6 2))
3. REVERSE 1 4	2. (ADD (MULT 3 -2 7 6) (SUB 2 6) (SQR 5) (EXP 2 -3) (DIV 15 5))
4. COUNT	3. 5
5. REMOVE 3 4	4. (ADD (EXP -3 2) (SQR 5) (DIV 15 5))
6 MAXIMUM	5. (MULT 6 7 -2 3)