Transform the Expression Problem Code: **ONP**

Reverse Polish Notation (RPN) is a mathematical notation where every operator follows all of its operands. For instance, to add three and four, one would write "3 4 +" rather than "3 + 4". If there are multiple operations, the operator is given immediately after its second operand; so the expression written "3   4 + 5" would be written "3 4   5 +" first subtract 4 from 3, then add 5 to that.

Transform the algebraic expression with brackets into RPN form.

You can assume that for the test cases below only single letters will be used, brackets [] will not be used and each expression has only one RPN form (no expressions like a*b*c)

Input
The first line contains t, the number of test cases (less then 100).

Followed by t lines, containing an expression to be translated to RPN form, where the length of the expression is less then 400.

Output
The *expression*s in RPN form, one per line.

Example
Input:

3

(a+(b*c))

((a+b)*(z+x))

((a+t)*((b+(a+c))^(c+d)))

Output:

abc*+

ab+zx+*

at+bac++cd+^*