

# Transform the Expression

Transform the algebraic expression with brackets into RPN form (Reverse Polish Notation). Two-argument operators: +, -, \*, /, ^ (priority from the lowest to the highest), brackets ( ). Operands: only letters: a, b ... z. Assume that there is only one RPN form (no expressions like  $a*b*c$ ).

## Input

$t$  [the number of expressions  $\leq 100$ ]  
 $expression$  [length  $\leq 400$ ]  
[other expressions]

Text grouped in [ ] does not appear in the input file.

## Output

The *expressions* 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+^\*