

# 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+^*
```