

## Problem B: Chemistry

Source: `chemistry.{c,cpp,java}`

The chemical formula of a molecule **M** describes its atomic make-up. Chemical formulas obey the following grammar:

```

M := G | M G
G := S | S C
S := A | '(' M ')'
C := T | N E
E := D | D E
T := '2' | ... | '9'
N := '1' | ... | '9'
D := '0' | .. | '9'
A := U | U L | U L L
U := 'A' | .. | 'Z'
L := 'a' | .. | 'z'

```

The count **C** represents a multiplier for the subgroup **S** that precedes it. For example, **H2O** has two **H** (hydrogen) and one **O** (oxygen) atoms, and **(AlC2)3Na4** contains 3 **Al** (aluminum), 6 **C** (carbon) and 4 **Na** (sodium) atoms.

### Input

The input will contain data for one or more test cases. For each test case, there will be one line of input, containing a valid chemical formula. Each line will have no more than 100 characters.

### Output

For each line of input there will be one line of output which is the atomic decomposition of the chemical in the form of a sum as shown in the sample output. The atoms are listed in lexicographical order, and a count of 1 is implied and not explicitly written. There are no blank spaces in the output. All of the counts in the correct output will be representable in 32-bit signed integers.

## Sample Input

**H2O**  
**(AlC2)3Na4**

## Sample Output

**2H+O**  
**3Al+6C+4Na**