Equilibrium

Problem description

Since you're in department of engineering, you must had been devastated by chemical equation in your senior high school life. Now, it comes back!

You are asked to write a program to parse a chemical equation. And find what and how many elements are too much or too little from the left hand side of equation to right hand side. In this problem, we will simplify the representation of chemical eq. For example:

$$2H_2O_2 \rightarrow 2H_2O + O_2$$

This chemical eq will be simplified to "2H2O2 -> 2H2O + O2". That is we won't use subscript(下標) and ,instead, use the number directly.

The output will be pairs of element and number. The listed element will be that of too much or too little in the equation. The number is greater than zero, if the corresponding(相對應的) element is too much in left hand side. The number is less than zero, if the corresponding element is too little in left hand side. And the magnitude(數值) will be the amount of the difference. If the difference is 0 in left hand and right hand side, the element don't need to be listed. And also you need to print the result pairs in lexicographic order(字典順序) of the listed element for our judge's easiness.

Sample Input 1:

CH3C6H5 + 3HNO3 -> CH3C6(NO2)2 + H2O

Sample Output1:

H 6
N 1
O 4

Sample Input 2:

C2(2O) -> C2O2

Sample Output 2:

Invalid format