

Chemical Formulae

Problem ID: a15p03chemicalformulae

Write a program that, given two chemical formulae, transforms each chemical formula string into a set of chemical components. For example $CaSO_4 \rightarrow \{Ca, S, O\}$. The program should then display common components in each of the formulae.

Input

The program receives two lines as input. The first and second line each contain one formula.

A formulae is defined as a series of chemical components each possibly followed by a number. Chemical components always start off with 1 or 2 English letters, the first being uppercase, and the second being lowercase.

In the tests the length of each formulae will be restricted to 1 to 300.

Output

Output consists of one line. The common elements in the two formulae each separated by a comma and a space. The elements should be output in lexicographical order.

Sample Input 1

NaNO3 NaHCO3	Na, O
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Sample Output 1

Sample Input 2

C6H12O6 CH2O	C, H, O
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Sample Output 2

Sample Input 3

H2O Cr2Ru3H	H
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Sample Output 3