

## Complex Number Multiplication

Medium

Given two strings representing two [complex numbers](#).

You need to return a string representing their multiplication. Note  $i^2 = -1$  according to the definition.

### Example 1:

Input: "1+1i", "1+1i"

Output: "0+2i"

Explanation:  $(1 + i) * (1 + i) = 1 + i^2 + 2 * i = 2i$ , and you need convert it to the form of  $0+2i$ .

### Example 2:

Input: "1+-1i", "1+-1i"

Output: "0+-2i"

Explanation:  $(1 - i) * (1 - i) = 1 + i^2 - 2 * i = -2i$ , and you need convert it to the form of  $0+-2i$ .

### Note:

1. The input strings will not have extra blank.
2. The input strings will be given in the form of **a+bi**, where the integer **a** and **b** will both belong to the range of  $[-100, 100]$ . And **the output should be also in this form**.