

Problem 537: Complex Number Multiplication

Problem Information

Difficulty: Medium

Acceptance Rate: 72.75%

Paid Only: No

Tags: Math, String, Simulation

Problem Description

A [complex number](https://en.wikipedia.org/wiki/Complex_number) can be represented as a string on the form `"**real** + **imaginary** i"` where:

* ``real`` is the real part and is an integer in the range `[-100, 100]`. * ``imaginary`` is the imaginary part and is an integer in the range `[-100, 100]`. * `i2 == -1`.

Given two complex numbers ``num1`` and ``num2`` as strings, return `_` a string of the complex number that represents their multiplications`_`.

Example 1:

Input: `num1 = "1+1i", num2 = "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: `num1 = "1+-1i", num2 = "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`.

Constraints:

* ``num1`` and ``num2`` are valid complex numbers.

Code Snippets

C++:

```
class Solution {  
public:  
    string complexNumberMultiply(string num1, string num2) {  
  
    }  
};
```

Java:

```
class Solution {  
    public String complexNumberMultiply(String num1, String num2) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def complexNumberMultiply(self, num1: str, num2: str) -> str:
```