Problem 2075: Decode the Slanted Ciphertext

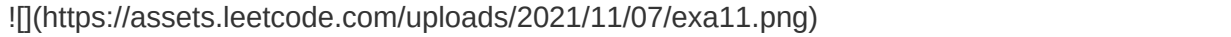
Problem Information

Difficulty: Medium
Acceptance Rate: 50.02%
Paid Only: No
Tags: String, Simulation

Problem Description

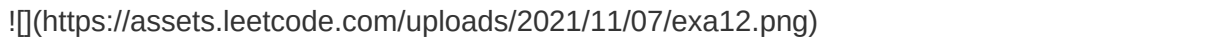
A string `originalText` is encoded using a **slanted transposition cipher** to a string `encodedText` with the help of a matrix having a **fixed number of rows** `rows`.

`originalText` is placed first in a top-left to bottom-right manner.



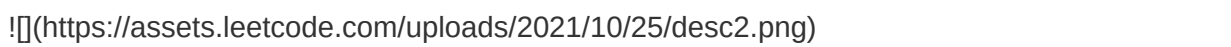
The blue cells are filled first, followed by the red cells, then the yellow cells, and so on, until we reach the end of `originalText`. The arrow indicates the order in which the cells are filled. All empty cells are filled with `' '`. The number of columns is chosen such that the rightmost column will **not be empty** after filling in `originalText`.

`encodedText` is then formed by appending all characters of the matrix in a row-wise fashion.



The characters in the blue cells are appended first to `encodedText`, then the red cells, and so on, and finally the yellow cells. The arrow indicates the order in which the cells are accessed.

For example, if `originalText = "cipher"` and `rows = 3`, then we encode it in the following manner:



The blue arrows depict how `originalText` is placed in the matrix, and the red arrows denote the order in which `encodedText` is formed. In the above example, `encodedText = "ch ie pr"`.

Given the encoded string `encodedText` and number of rows `rows`, return _the original string_ `originalText`.

Note: `originalText` **does not** have any trailing spaces `' '`. The test cases are generated such that there is only one possible `originalText`.

Example 1:

Input: encodedText = "ch ie pr", rows = 3 **Output:** "cipher" **Explanation:** This is the same example described in the problem description.

Example 2:

Input: encodedText = "iveo eed l te olc", rows = 4 **Output:** "i love leetcode" **Explanation:** The figure above denotes the matrix that was used to encode originalText. The blue arrows show how we can find originalText from encodedText.

Example 3:

Input: encodedText = "coding", rows = 1 **Output:** "coding" **Explanation:** Since there is only 1 row, both originalText and encodedText are the same.

Constraints:

* `0 <= encodedText.length <= 106` * `encodedText` consists of lowercase English letters and `' '` only. * `encodedText` is a valid encoding of some `originalText` that **does not** have trailing spaces. * `1 <= rows <= 1000` * The testcases are generated such that there is **only one** possible `originalText`.

Code Snippets

C++:

```
class Solution {
public:
string decodeCiphertext(string encodedText, int rows) {

}
};
```

Java:

```
class Solution {
public String decodeCiphertext(String encodedText, int rows) {

}
}
```

Python3:

```
class Solution:
def decodeCiphertext(self, encodedText: str, rows: int) -> str:
```