

Reverse Words in a String

For this problem we need to reverse the order of words, remove leading/trailing spaces, and reduce multiple spaces to a single space.

Approach 1: Using Extra Space (Simple):

1. Trim leading/trailing spaces.
2. Split string by spaces.
3. Remove empty entries (multiple spaces).
4. Reverse the words and join with single space.

Approach 2: In Place $O(1)$ Extra Space (Follow Up):

If string is mutable:

1. Reverse the entire string.
2. Reverse each word individually.
3. Remove extra spaces (leading, trailing, multiple).

This avoids extra arrays.

Complexity:

- Time: $O(n)$ (linear scan)
- Space: $O(1)$ for extra version, $O(n)$ for in-place version.