

# Group Anagrams

For this problem we need to group words that are anagrams of each other.

## Key Idea:

Two strings are anagrams if they have the same character counts.

Common approaches:

1. Sort characters in each string  $\rightarrow$  use as key.
2. Use character frequency (26-length vector)  $\rightarrow$  use as key.

## Approach 1: Sorting Key:

Algorithm:

- For each string:
  1. Sort the characters  $\rightarrow$  forms a canonical key.
  2. Store string in a hash map grouped by this key.
- Return grouped values.

## Approach 2: Frequency Count Key (Optimized):

Create key using counts of 26 letters:

Example: "eat"  $\rightarrow$  1#0#0#...#1#...#1 (for a, e, t)

Avoid sorting ( $O(k \log k)$ )  $\rightarrow O(k)$  per string.

## Complexity:

Approach 1:

• Time:  $O(N * K \log K)$  ( $K = \text{max word length}$ )

• Space:  $O(N * K)$

Approach 2:

• Time:  $O(N * K)$

• Space:  $O(N * 26)$