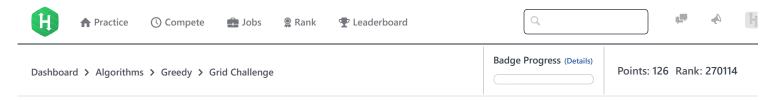
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Grid Challenge



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Given a squared sized grid G of size N in which each cell has a lowercase letter. Denote the character in the ith row and in the jth column as G[i][j].

You can perform one operation as many times as you like: Swap two column adjacent characters in the same row G[i][j] and G[i][j+1] for all valid i,j.

Is it possible to rearrange the grid such that the following condition is true?

$$G[i][1] \leq G[i][2] \leq \cdots \leq G[i][N]$$
 for $1 \leq i \leq N$ and $G[1][j] \leq G[2][j] \leq \cdots \leq G[N][j]$ for $1 \leq j \leq N$

In other words, is it possible to rearrange the grid such that every row and every column is lexicographically sorted?

Note: $c_1 \leq c_2$, if letter c_1 is equal to c_2 or is before c_2 in the alphabet.

Input Format

The first line begins with T, the number of testcases. In each testcase you will be given N. The following N lines contain N lowercase english alphabet each, describing the grid.

Constraints

 $1 \le T \le 100$ $1 \le N \le 100$

 G_{ij} will be a lower case letter

Output Format

Print T lines. On the ith line print YES if it is possible to rearrange the grid in the ith testcase or NO otherwise.

Sample Input

1 5 ebacd fghij olmkn trpqs xywuv

Sample Output

YES

Explanation

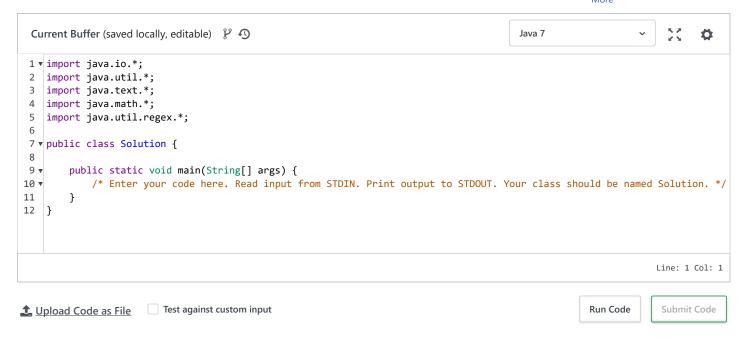
The grid in the first and only testcase can be reordered to

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abcde fghij klmno pqrst uvwxy

This fulfills the condition since the rows 1, 2, ..., 5 and the columns 1, 2, ..., 5 are all lexicographically sorted.

f in Submissions:<u>18549</u> Max Score:20 Difficulty: Easy Rate This Challenge: ☆☆☆☆☆



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