Grid Challenge

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

$1 \leq T \leq 100$
$1 \leq N \leq 100$
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

```
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.