# **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**

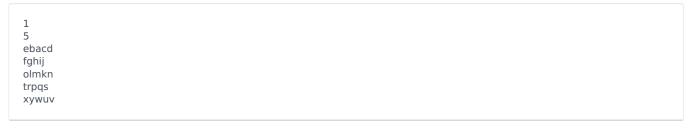
The first line begins with T, the number of testcases. In each testcase you will be given N. The following N lines contain N lowercase english alphabet each, describing the grid.

#### **Constraints**

## **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**



# **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.