Consider a grid of size n x n where each cell contains a number. Let's call a grid stable if we can rearrange the numbers of each row so that every column of the resulting grid has no repeated values.

Mathematically, say, we have a grid G of size $n \times n$. We would like to permute the elements of each row G_i $(1 \le i \le n)$ so that the resulting grid has the following property:

For every column j, the values $G_{i,j}$ are all distinct for $(1 \le i \le n)$.

As an example, consider a grid G of size 4×4 as shown below

2	1	1	3
3	1	2	6
2	6	10	3
9	8	7	6

We can permute each row to get G' as shown below

2	1	1	3
1	3	6	2
6	2	3	10
9	8	7	6

In G', there are no repeated values in any column. So, the given grid is stable.

In this problem, you will be given a grid of size $n \times n$ and you have to determine whether it is stable or not.

Input

Input starts with an integer T (≤ 500), denoting the number of test cases.

Each case starts with a line containing the value of n $(0 < n < 100)$. The next n lines contain n integers each. The j-th integer of the i-th line represent the value of $G_{i,j}$. Consecutive integers in each line are separated with space characters. All the integers in the grid are non-negative with magnitude not greater than 100.

Output

For each case, output the case number first. If the given grid is stable, output '`yes`' otherwise output '`no`'. Look at the samples for exact format.

Sample Input

```
3
4
2 1 1 3
3 1 2 6
2 6 10 3
9 8 7 6
3
1 1 2
1 1 1
2 2 2
3
1 2 3
2 3 1
3 1 2
```

Sample Output

```
Case 1: yes
Case 2: no
Case 3: yes
```