Let A be an n by n grid, in wich each cell has a color. Let a_{ij} denote the cell at the intersection of the i-th row and the j-th column, and let $c(a_{ij})$ denote the color of cell a_{ij}. We say a directed path **monotonic** if it only goes downward (in the direction that the row-index increases) and rightward (in the direction that the column-index increases). We say a path **bichromatic** if it only visits cells of **at most** two colors. Figure 1 shows a bichromatic monotonic path from a_{11} to a_{nn} for $n = 3$.

Write a program to decide whether the given n by n grid contains a bichormatic monotonic path P from a_{11} to a_{nn}.

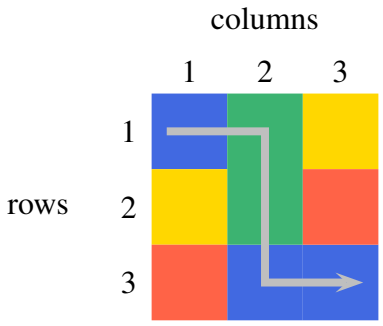

Figure 1: A bichromatic monotonic path from a_{11} to a_{33}.

Hint

If a bichromatic monotonic path from a_{11} to a_{nn} exists, then one color must be $c(a_{11})$. Which color is the other? You may find bichromatic monotonic paths for each guess of the other color.

Input

The first line contains n. Each of the subsequent n lines contains the color of n cells on a row so that the second line represents the first row, the third line represents the second row, and so on. You may assume that n is an integer in $[2, 100]$ and $c(a_{ij})$ is a letter in $\{a, b, \ldots, z\}$ for every $i, j \in [1, n]$.

Output

Output "Yes" if such a bichromatic monotonic path exists, or "No" otherwise.

Sample Input

```
3
b g y
y g r
r b b
```

Sample Output

```
Yes
```