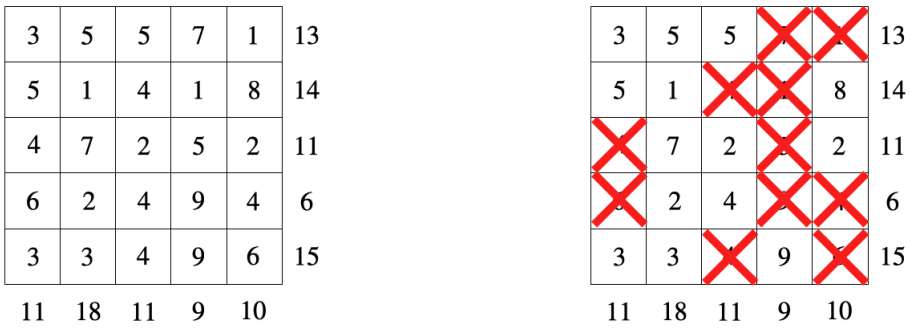
(-1,1)-Sumplete

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Sumplete is a logic puzzle similar to Sudoku, Kakuro, and Hitori. It is famous for being developed with the help of [1]ChatGPT.

The Sumplete puzzle consists of a square grid, with each cell containing an integer. Each row and column also has an integer "hint" assigned. The player must cross out some numbers in the grid such that the sum of uncrossed numbers in each row and column equals the corresponding hint. See the following picture for an illustration.



An example of a 5×5 Sumplete puzzle (left) and its solution (right)

Recently, on September 15th, 2023, a paper *Sumplete is Hard, Even with Two Different Numbers* by Suthee Ruangwises was uploaded to [2]arxiv. The paper showed that if we allow the grid of Sumplete puzzles to be rectangular, then deciding the solvability of a given Sumplete puzzle is **NP**-complete, even if the grid contains only two different numbers 1 and 3.

Bobo is quite unsatisfied with this result. He insists that there must exist some Sumplete puzzles that are easy to solve. Now he provides you with a Sumplete puzzle, where the grid contains only two different numbers -1 and 1. Can you please solve the puzzle for him?

Input

The first line of input contains an integer n ($1 \le n \le 4\,000$), denoting the height and width of the grid of the Sumplete puzzle.

Then n lines follow, where the i-th ($1 \le i \le n$) line contains a string s_i of length n consisting of '+'s and '$-$'s, such that $a_{i,j} = 1$ if the j-th character of s_i is '+' and $a_{i,j} = -1$ if the j-th character of s_i is '$-$'.

The input then contains a line containing n integers $r_1, r_2, \ldots, r_n$ ($-n \le r_i \le n$), where the i-th number denotes the hint in the i-th **row**.

Lastly, the input contains a line containing n integers $c_1, c_2, \ldots, c_n$ ($-n \le c_i \le n$), where the i-th number denotes the hint in the i-th **column**.

Output

If the given Sumplete puzzle has no solutions, output "No" in the first line. Otherwise, output "Yes" in the first line. You can output each letter in any case (lowercase or uppercase). For example, the strings "yEs", "yes", "Yes", and "YES" will all be considered as positive replies.

[1]See `https://sumplete.com/about/` to learn more about the creation of this puzzle.

[2]`https://arxiv.org/pdf/2309.07161.pdf`

If your answer is "Yes", output a binary string of length n in each of the following n lines. In the i-th ($1 \le i \le n$) line you need to output a string t_i of length n consisting of '0's and '1's, such that the j-th character of t_i being '0' denotes you **cross out** the number on the i-th row and j-th column, and the j-th character of t_i being '1' denotes you **keep** it. Your solution must satisfy that the sum of uncrossed numbers in each row and column equals the corresponding hint. If there are multiple solutions, outputting any of them will be considered correct.

Examples

standard input	standard output
3 +-+ -++ +-+ 1 1 1 1 -1 3	Yes 111 001 001
3 --- -++ +++ -2 -1 0 -2 -1 0	Yes 110 100 000
3 +-+ -++ ++- 1 0 2 2 2 -1	No

Note

The first sample corresponds to the following 3×3 Sumplete puzzle:

1	−1	1	1
−1	1	1	1
1	−1	1	1
1	−1	3	

Its three solutions are listed as follows (the third one corresponds to crossing out none of the numbers in the grid), and outputting any of them will be considered correct.