Shift Puzzle

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

There are two $N \times N$ grids S and T, where each cell is either black or white. The color of each grid is represented by N^2 characters. In grid S, if the cell in the x-th row from the top and the y-th column from the left is black, $S_{x,y}$ is `#`, and if it is white, $S_{x,y}$ is `.`(period). The same applies to T.

You can perform the following operations on the grid S:

- Choose integers t and x $(1 \leq t \leq 2, 1 \leq x \leq N)$.
- If $t = 1$, perform a cyclic right shift by 1 on the x-th row of S. Specifically, replace $S_{x,1}S_{x,2}\dots S_{x,N}$ with $S_{x,N}S_{x,1}\dots S_{x,N-1}$ simultaneously.
- If $t = 2$, perform a cyclic downward shift by 1 on the x-th column of S. Specifically, replace $S_{1,x}S_{2,x}\dots S_{N,x}$ with $S_{N,x}S_{1,x}\dots S_{N-1,x}$ simultaneously.

Determine whether S can be transformed into T using at most N^3 operations. If possible, output one sequence of operations to achieve this transformation.

Input

The input is given from Standard Input in the following format:

N
$S_{1,1}\dots S_{1,N}$
$\vdots$
$S_{N,1}\dots S_{N,N}$
$T_{1,1}\dots T_{1,N}$
$\vdots$
$T_{N,1}\dots T_{N,N}$

- $2 \leq N \leq 80$
- $S_{x,y}, T_{x,y}$ are `#` or `.`(period).
- N is an integer.

Output

If it is impossible to match the grids with at most N^3 operations, output `No`.

If it is possible, output `Yes` on the first line, and the number of operations $M(0 \leq M \leq N^3)$ on the second line. From the third line to the $(M+2)$-th line, output the sequence of operations. On the $(i+2)$-th line, output the chosen t and x for the i-th operation in this order.

Examples

standard input	standard output
3 .#. #.# .#. #.# ... #.#	Yes 4 1 3 2 3 2 1 1 1
3 .#. #.# .#. .#. #.# .#.	Yes 0
13 ....#####.... ......#...... ......#...... ......#...... ......#...... ....#...#.... ....#...#.... ....#...#.... ....#...#.... .....###..... ....####..... ....#...#.... ....####..... ....#..... ....#..... ....###..... ....#...#.... ....#..... ....#...#.... .....###.....	No

Note

In the first example, S changes as follows: