

Problem H

Bar Classification

You are taking a course on machine learning at your university, and as homework you have been tasked with writing a program that can tell vertical bars from horizontal bars in images. To generate some training data, you use the following method. First, take an $N \times N$ grid, and fill it with zeros. Next, take a row or a column, and fill it with ones. Finally, take at most N arbitrary cells, and flip them. Flipping a cell means changing a zero to a one, or changing a one to a zero.



Generating data this way is easy, but how to generate all the answers? It will take hours to go through the training data manually. If only you had a program that finds all the outputs automatically somehow.

You are given an $N \times N$ matrix that has been generated as in the description. Write a program that finds whether it was a column or a row that was filled with ones, or if it is impossible to determine.

Input

The first line of input consists of an integer N ($2 \leq N \leq 1000$), the size of the grid.

The following N lines each contain a string of length N consisting of zeros and ones. These are the rows of the grid.

It is guaranteed that the input was generated by taking a grid of zeros, putting ones on a row or a column, and then flipping at most N cells.

Output

If the bar was vertical (a column), print “|”. If it was horizontal (a row), print “-”. If it is impossible to determine (because it could be both), print “+”.

Sample Input 1

```
5
01100
01000
01001
00000
01000
```

Sample Output 1

```
|
```

Sample Input 2

```
3
111
000
111
```

Sample Output 2

```
-
```

Sample Input 3**Sample Output 3**

3 010 101 010	+
------------------------	---