# Problem 4 – Line Inverter

You'll be given a board of size **NxN** where **each cell is either white ('W') or black ('B')**. On the first line you'll be given the **size N** of the board and on each of the next N lines you'll be given strings with N symbols (either 'W' or 'B') representing the colors of each cell of the respective row.

You are allowed to perform two operations – **invert a row** and **invert a column**. Inverting a row/column means switching the color of each cell on the row/column – from white to black and from black to white. The goal is to **turn all cells on the board black**. Print on the console **the minimum number of inversions** in order to turn the board black or **-1 if this is impossible**. Check out the examples for a visual explanation.

## Input

- The input data should be read from the console.
- On the first line you'll be given the size N of the board.
- On the next N lines, you'll be given strings with length N representing the colors of the cells of the respective row.
- The input data will always be valid and in the format described. There is no need to check it explicitly.
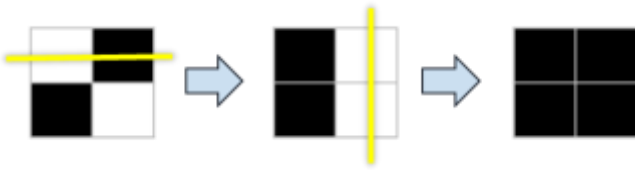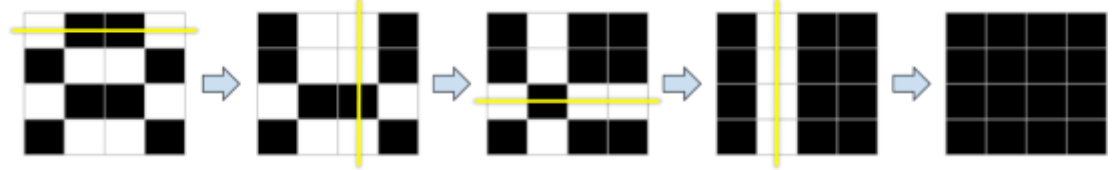
## Output

- The output should be printed on the console. It should consist of only one line.
- On the only output line print the minimum number of inversions needed in order to turn the board black or -1 if it's impossible.

## Constraints

- The size N of the board will be between 1 and 20.
- The strings representing the rows will contain only the characters 'W' and 'B'.
- Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

## Examples

| Input | Output | Visualization |
|---|---|---|
| 2<br>WB<br>BW | 2 |  |
| 3<br>WWW<br>BBB<br>BBB | 1 |  |
| 4<br>WBBW<br>BWWB<br>WBBW<br>BWWB | 4 |  |
| 3<br>WWW<br>WBW<br>WWW | -1 | It is not possible to obtain a black board with any number of inversions:<br> |