Exatlon Battle (exatlon)

Like every year, Luca is organizing the famous Exatlon Battle: a test of strength, skill and logic. As usual, the competitors will be split in two teams, *The Famous* (the red team) and *The Warriors* (the blue team).

Luca's favorite test in the competition is as follows: each team receives a square formed by N boards of equal shape, but of different color. Each board has length N and width 1. The boards are formed by square cells of sizes 1×1, each of them being painted red or blue.

For example, the following figure shows a board of length 6, where the first and the fourth zones are painted red, while the zones 2, 3, 4 and 6 are blue:

The players can reorder the boards, but they cannot change the colors in each individual board. The goal of each player is to produce a rectangular zone of the maximum possible area, painted with the color of their team. The team which forms the largest rectangular area of their own color will win the match.

Before starting the live stream of the match, Luca wants to determine the winning team and the area of the largest rectangular zone, painted in the color of the winning team. Help him!

☞ Among the attachments of this task you may find a template file `exatlon.*` with a sample incomplete implementation.

Input

The first line of the input contains a positive integer N, the number of painted boards in the game. Each of the following N lines contains N characters (either `A` or `R`, meaning respectively a *blue* or a *red* cell), representing the way in which the boards are painted.

Output

You should write two integer numbers separated by a space. The first number represents the winning team (1 for *The Famous*, 2 for *The Warriors*, 0 if it's a draw) and the second number represents the area of the maximum rectangular zone that can be produced.

Constraints

- $2 \leq N \leq 1000$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) Each board is *monochromatic*: either all-blue or all-red.

– **Subtask 3** (30 points) On each board all the blue squares precede the red ones.

– **Subtask 4** (40 points) $N \leq 100$.

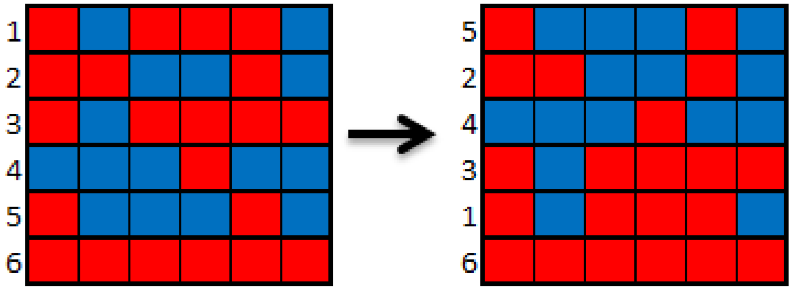
– **Subtask 5** (20 points) No additional limitations.

Examples

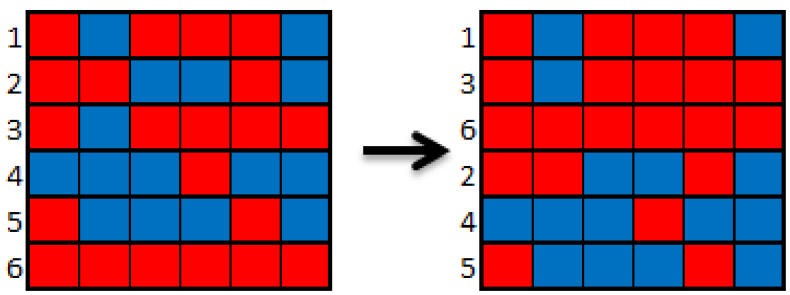
input	output
6 RARRRA RRAARA RARRRR AAARAA RAAARA RRRRRR	1 9
2 RA AR	0 1

Explanation

In the **first sample case**, The Famous (the red team) can arrange the board in the order $5, 2, 4, 3, 1, 6$ and obtain a rectangular zone of area 9, as shown here:



The Warriors (the blue team) can arrange the boards in the order $1, 3, 6, 2, 4, 5$ and obtain a rectangular zone of area 4, thus losing the match:



In the **second sample case** each team can at most produce a rectangle of area 1. It's a draw.