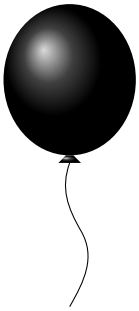
I The Robot



Time limit: 2.0s
Memory limit: 512MB

Sofia is participating in a robot programming competition. At the initial moment, the robot is located in the top left cell of a rectangular field with dimensions of $n \times m$ cells. The goal of the robot is to reach the bottom right cell as quickly as possible. In a single move, the robot can move from its current cell to an adjacent cell along the side of the field.

Each cell is colored either black or white. It is known that the top left and bottom right cells of the field are black. After each move of the robot, if it is on a white cell, the following happens: one of the white cells of the field is randomly and equally likely chosen, and the robot is moved to that cell. In particular, it may happen that the cell on which the robot is already standing is chosen, in which case it remains in place.

Sofia wants to win the competition, so she needs to develop an optimal strategy for the robot. She knows the field layout, where each cell is marked as black or white. Now she is trying to determine the expected number of moves that the robot will need to reach the finish line using the optimal strategy. Sofia wants to know the answer exactly, so she wants to express it as an irreducible fraction. Help her determine the desired expected value.

Input

The first line contains an integer t — the number of fields.

Each field is described as follows. The first line contains two integers n and m — the height and the width of the field ($1 \le n, m \le 2\,000$). The next n lines contain m characters each. If the character is '`B`', then the corresponding cell is black, and if it is '`W`', then it is white.

The total number of cells in all fields does not exceed $4 \cdot 10^6$.

Output

For each field, print the expected number of moves required to reach the bottom right cell from the top left cell using the optimal strategy, in a separate line.

The answer should be printed as an irreducible fraction.

Samples

Sample input 1	Sample output 1
3 2 2 BB BB 2 2 BW WB 1 12 BWBBBBBBBBWB	2/1 2/1 4/1