CCO '16 - O Canada

Canadian Computing Olympiad: 2016 Day 2, Problem 1

In this problem, a *grid* is an N-by-N array of cells, where each cell is either red or white.

Some grids are *similar* to other grids. Grid A is similar to grid B if and only if A can be transformed into B by some sequence of *changes*. A change consists of selecting a 2-by-2 square in the grid and flipping the colour of every cell in the square. (Red cells in the square will become white; white cells in the square will become red.)

You are given G grids. Count the number of pairs of grids which are similar. (Formally, number the grids from 1 to G, then count the number of tuples (i, j) such that $1 \leq i < j \leq G$ and grid i is similar to grid j.)

Input Specification

The first line of input contains N $(2 \leq N \leq 10)$, the size of the grids. The second line contains G $(2 \leq G \leq 10\,000)$, the number of grids. The input then consists of $N \cdot G$ lines, where each line contains N characters, where each character is either `R` or `W`, indicating the colour (red or white) for that element in the grid. Moreover, after the first two lines of input, the next N lines describe the first grid, the following N lines describe the second grid, and so on.

For 12 out of the 25 marks available for this question, $2 \leq G \leq 10$.

Output Specification

Output the number of pairs of grids which are similar.

Sample Input

```
2
2
RW
WR
WR
RW
```

Sample Output

```
1
```

Explanation

There are exactly two grids, and they are similar because the first grid can be transformed into the second grid using one change (selecting the 2-by-2 square consisting of the entire grid).