Area Rug

The main room of your home is square, $n{\times}n$ feet. Unfortunately, the floor is dirty. You're a college student, so you hate to clean! Rather than clean it, you buy an area rug $s{\times}s$ feet square to cover some of the dirty spots.

Consider all of the ways that you could place the $s{\times}s$ area rug in the $n{\times}n$ room so that all $s{\times}s$ square feet of it cover part of the floor, axis aligned (no rotation). How many ways are there to cover a certain number of dirty spots?

Input

Each input will consist of a single test case. Note that your program may be run multiple times on different inputs.

Each test case will begin with a line with two space-separated integers n (1 ≤ n ≤ 1,000) and s (1 ≤ s ≤ min[n,100]), where n is the size of one side of the room, and s is the size of one side of the new area rug.

Each of the next n lines will have a string of exactly n characters, consisting only of '**C**' (a clean spot on the floor) or '**D**' (a dirty spot on the floor).

Output

For each count of dirty floor spots covered, from 0 to s^2, if the number of ways of covering that many dirty spots with an area rug of size $s{\times}s$ is greater than 0, output the number of spots and the number of ways of covering them on a line, separated by a space. Output them in order, smallest number of dirty spots to largest.

Sample Input	Sample Output
10 5	0 16
DDDDDDDDDD	5 16
DCCCCCCCCD	9 4
DCCCCCCCCD	
DCCCCCCCCD	
DCCCCCCCCD	
DCCCCCCCCD	
DCCCCCCCCD	
DCCCCCCCCD	
DCCCCCCCCD	
DDDDDDDDDD	

In this example, there are 4 ways to cover 9 dirty spots (the corners), 16 ways to cover 5 dirty spots (the non-corner edges), and 16 ways to cover 0 dirty spots (the interior).