

Rectangular Apartment

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 1024 megabytes

Recently, the turtle rented an apartment. By a happy coincidence, it turned out to be rectangular in shape. The apartment is divided into $n \times m$ squares of the same size: n rows with m squares in each. The rows are numbered from top to bottom, and the columns from left to right. We denote the square in the i -th row and j -th column as (i, j) .

In some places in the apartment, there is furniture. The description of the apartment is given by a matrix a of size $n \times m$:

- If $a_{i,j} = \#$, then the square (i, j) is occupied by furniture.
- If $a_{i,j} = .$, then the square (i, j) is free.

The turtle has been training hard and has learned to move not only to the right or down but also up. To consolidate her success in mastering this new movement, she decided to do exercises every morning. The exercise is described by a string s and proceeds as follows:

1. The turtle stands in the square (i, j) .
2. Then for each i from 1 to $|s|$, the turtle moves to another square. Suppose she is currently at (x, y) , then:
 - If $s_i = \text{D}$, the turtle moves to $(x + 1, y)$.
 - If $s_i = \text{R}$, the turtle moves to $(x, y + 1)$.
 - If $s_i = \text{U}$, the turtle moves to $(x - 1, y)$.

Naturally, during the exercise, the turtle cannot go outside the boundaries of the apartment or stand in a square occupied by furniture. Thus, if at any moment the turtle tries to move to a square that does not exist or is occupied by furniture, the exercise fails. The square from which the turtle starts the exercise must also be free.

Help the turtle find the number of squares (i, j) from which she can complete her exercise fully.

Input

The first line contains two integers n and m ($2 \leq n, m \leq 500$) — the dimensions of the apartment.

The second line contains the string s ($1 \leq |s| \leq 2nm$, $s_i \in \{\text{D}, \text{R}, \text{U}\}$) — the description of the exercise.

The i -th of the following n lines contains $a_{i,1}, a_{i,2}, \dots, a_{i,m}$ ($a_{i,j} \in \{\#, .\}$) — the description of the turtle's apartment.

Output

Output a single number — the count of squares (i, j) from which the turtle can complete her exercise fully.

Examples

standard input	standard output
5 6 RDUUR .#....# .#.#..#....	3
4 2 RR	0

Note

In the first example, the turtle can complete the exercise starting from the squares (2,2), (2,4), and (4,4).

If the turtle starts the exercise in the square (2,2), her path looks like this: (2,2) → (2,3) → (3,3) → (2,3) → (1,3) → (1,4).

Scoring

The tests for this problem consist of five groups. Points for each group are awarded only if all tests of the group and all tests of some of the previous groups are passed. Note that passing the tests from the statement is not required for some groups.

Group	Points	Constraints	Required	Comments
0	0	–	–	Samples
1	17	$n, m \leq 50$	0	
2	14	$s_i = \text{R}$	–	
3	19	$s_i \in \{\text{D}, \text{U}\}$	–	
4	23	$s_i \in \{\text{R}, \text{D}\}$	2	
5	27	–	0 – 4	