

G7 – Letter grid

Consider the following letter grid:

E	R	A	T
A	T	S	R
A	U	T	U

There are 7 ways to read the word TARTU from the grid:

E	<u>R</u>	<u>A</u>	<u>T</u>
A	<u>T</u>	S	R
A	<u>U</u>	T	U

E	R	<u>A</u>	T
A	<u>T</u>	S	<u>R</u>
A	<u>U</u>	<u>T</u>	U

E	<u>R</u>	<u>A</u>	T
A	<u>T</u>	S	R
A	<u>U</u>	T	U

E	R	<u>A</u>	<u>T</u>
A	T	S	<u>R</u>
A	U	<u>T</u>	<u>U</u>

E	<u>R</u>	A	T
<u>A</u>	<u>T</u>	S	R
A	<u>U</u>	T	U

E	R	<u>A</u>	T
A	<u>T</u>	S	<u>R</u>
A	U	<u>T</u>	<u>U</u>

E	R	<u>A</u>	<u>T</u>
A	T	S	<u>R</u>
A	<u>U</u>	<u>T</u>	U

Given a letter grid and a word, your task is to determine the number of ways the word can be read from the grid. The first letter of the word can be in any cell of the grid, and after each letter, the next letter has to be in one of the neighbour cells (horizontally, vertically or diagonally). A cell can be used multiple times when reading the word.

Input:

The first line of the input contains three integers: H ($1 \leq H \leq 200$), the height of the grid, W ($1 \leq W \leq 200$), the width of the grid, and L ($1 \leq L \leq 100$), the length of the word. The following H lines each containing W letters describe the grid. The last line containing L letters describes the word. All letters in the grid and in the word are uppercase English letters (A...Z).

Output:

The only line of the output should contain one integer: the number of ways the word can be read from the grid. You may assume that the answer is always at most 10^{18} .

Input and output samples:

Input:	Output:
3 4 5	7
ERAT	
ATSR	
AUTU	
TARTU	

Input:	Input:
2 2 10	78732
AA	
AA	
AAAAAAAAAA	