Problem K. Bombing

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

JAG land is a country, which is represented as an $M \times M$ grid. Its top-left cell is $(1, 1)$ and its bottom-right cell is (M, M).

Suddenly, a bomber invaded JAG land and dropped bombs to the country. Its bombing pattern is always fixed and represented by an $N \times N$ grid. Each symbol in the bombing pattern is either '`X`' (bomb) or '`.`' (empty).

Here, suppose that a bomber is in (b_r, b_c) in the land and drops a bomb. The cell $(b_r + i - 1, b_c + j - 1)$ will be damaged if the symbol in the i-th row and the j-th column of the bombing pattern is '`X`' $(1 \leq i, j \leq N)$.

Initially, the bomber reached $(1, 1)$ in JAG land. The bomber repeated to move to either of 4-directions and then dropped a bomb just L times. During this attack, the values of the coordinates of the bomber were between 1 and $MN + 1$, inclusive, while it dropped bombs. Finally, the bomber left the country.

The moving pattern of the bomber is described as L characters. The i-th character corresponds to the i-th move and the meaning of each character is as follows.

'`U`' — up, '`D`' — down, '`L`' — left and '`R`' — right.

Your task is to write a program to analyze the damage situation in JAG land. To investigate damage overview in the land, calculate the number of cells which were damaged by the bomber at least K times.

Input

The first line of the input contains four integers N, M, K and L $(1 \leq N \leq M \leq 500, 1 \leq K \leq L \leq 2 \cdot 10^5)$. The following N lines represent the bombing pattern. B_i is a string of length N. Each character of B_i is either '`X` or '`.`'. The last line denotes the moving pattern. S is a string of length L, which consists of either '`U`', '`D`', '`L`' or '`R`'. It's guaranteed that the values of the coordinates of the bomber are between 1 and $MN + 1$, inclusive, while it drops bombs in the country.

Output

Print the number of cells which were damaged by the bomber at least K times.

Examples

standard input	standard output
2 3 2 4 XX X. RDLU	3
8 10 1 3 XXX.XX.. .XX...X. XX.XXXXX .... XXX.X..X .X.XX..X ..X.X.X. X.XX..X. RRD	63