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Editorial (/contests/abc420/tasks/abc420_f/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 550 points

Problem Statement

You are given an $N \times M$ grid. Each cell contains either `.` or `#`.

The information about the symbols written in the cells is given as N strings $S_1, S_2, \ldots, S_N$, where the same symbol as the j-th character of S_i is written in the cell at the i-th row from the top and j-th column from the left.

How many rectangular regions consisting of at most K cells have all cells containing `.`?

Formally, count the number of integer tuples (l_x, r_x, l_y, r_y) that satisfy the following conditions:

- $1 \leq l_x \leq r_x \leq N$
- $1 \leq l_y \leq r_y \leq M$
- $(r_x - l_x + 1) \times (r_y - l_y + 1) \leq K$
- For all integer pairs (i, j) satisfying $l_x \leq i \leq r_x$ and $l_y \leq j \leq r_y$, the cell at the i-th row from the top and j-th column from the left contains `.`.

Constraints

- N, M, and K are integers.
- $1 \leq N, M \leq 5 \times 10^5$
- $1 \leq N \times M \leq 5 \times 10^6$
- $1 \leq K \leq N \times M$

- S_i is a string of length M consisting of . and #.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{lll}
N & M & K \\
S_1 & & \\
S_2 & & \\
\vdots & & \\
S_N & &
\end{array}
$$

Output

Output the answer.

Sample Input 1 Copy

Copy

```
3 3 4
#..
...
..#
```

Sample Output 1 Copy

Copy

```
19
```

The rectangular regions to count are the following 19:

- A rectangular region represented by $(l_x, r_x, l_y, r_y) = (1, 2, 2, 3)$
- A rectangular region represented by $(l_x, r_x, l_y, r_y) = (2, 3, 1, 2)$
- A rectangular region represented by $(l_x, r_x, l_y, r_y) = (2, 2, 1, 3)$
- A rectangular region represented by $(l_x, r_x, l_y, r_y) = (1, 3, 2, 2)$
- 4 rectangular regions of 1 row and 2 columns consisting only of .
- 4 rectangular regions of 2 rows and 1 column consisting only of .
- 7 rectangular regions of 1 row and 1 column consisting only of .

Sample Input 2 Copy

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Copy

```
7 5 35
.....
.....
.....
.....
.....
.....
.....
```

Sample Output 2 Copy

```
420
```
Copy

Sample Input 3 Copy

```
10 9 25
#.....#..
....#....
.......#.
.........
.......#.
.#.......
.........
#........
........#
.#.....#.
```
Copy

Sample Output 3 Copy

```
984
```
Copy

/#telegram)

♯url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc420%2Ftasks%2Fabc420_f%3Flang%3Den&title=F%20-

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