

Contest Duration: 2025-08-24(Sun) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250824T2100&p1=248>) - 2025-08-24(Sun) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250824T2240&p1=248>) (local time) (100 minutes)

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## F - kirinuki

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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  $S_1, S_2, \dots, S_N$ , 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.
- $1 \leq N, M \leq 5 \times 10^5$
- $1 \leq N \times M \leq 5 \times 10^6$
- $1 \leq K \leq N \times M$

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

## Input

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

```
N M K
S1
S2
⋮
SN
```

## Output

Output the answer.

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### Sample Input 1

Copy

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

Copy

### Sample Output 1

Copy

```
19
```

Copy

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 .

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### 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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