



Professional way to prepare programming contest problems

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Fossil Excavation[TEST]

time limit per test: 2.5 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

You are in charge of an alien fossil excavation site, currently situated on Mars. You and your team need to quickly extract the K fossils from the excavation site, which can be described as an $N \times N$ grid. Each individual cell has coordinates (x, y) , $(1 \leq x, y \leq N)$ where x means that the cell is in the x -th row and y means that the cell is in the y -th column. You must bring all K fossils to your base, located at cell $(1, 1)$. Also, because you are on Mars, you will be traversing the rocky planet using your Rover for Terrestrial Exploration(RTE), which runs on fuel.

The grid itself contains only four different kinds of characters:

. signifying an empty space. It takes 0 fuel to traverse this cell.

+ signifying a rocky path. It takes 1 fuel to traverse this cell.

signifying a giant boulder. It is not possible to traverse this cell.

F signifying a fossil. Aside from the fact that it contains a fossil, it is a normal cell, and can be traversed with 0 fuel.



Problem: **fossil-excavation**, id=222254
Owner: Patrick Deng (omeganot)
Note: [click here to add note](#)
Statements: [english](#)
Checker: std::wcmp.cpp (2)
Validator: [fossil_excavation_validator.cpp](#) (2)
Tests: [tests](#) (1)
Solutions: **None** (0/0)
Package: **None**
Verification: ([start](#))

[Review problem](#)

[Show warnings](#)

Access: OWNER, Write:1, Read:0
Revision: 7 / 7
Invokers waiting: 50

[View changes](#)

[https://polygon.codeforce...ganot/fossil-excavation](https://polygon.codeforces.com/ganot/fossil-excavation)

ADDED file-tests/checker-tests/2
ADDED file-tests/validator-tests/2

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1 The fossils themselves are incredibly heavy; the i -th fossil weighs w_i kilograms. As such, you have a giant, super high-tech wheelbarrow to carry the bones around for you. The wheelbarrow can carry at most M kilograms at a time. You can not take apart the fossils and put part of it on the wheelbarrow for efficiency, since the fossils must remain intact. However, because it is a high-tech wheelbarrow, new fossils can be placed into it instantaneously. After you bring the wheelbarrow to your base, all the fossils in it can instantaneously be removed as well (You may require multiple trips to the base to deposit fossils since the wheelbarrow may not be sturdy enough to carry them all at once).

You and your team are currently in the base, enjoying your breakfast. You would like to know the minimum fuel it will take for all bones to be relocated to your base, so that they can be shipped to the Intergalactic Museum of Planetary Life as soon as possible.

Input

The first line of input contains four integers, N , K , and M ($1 \leq N \leq 500, 1 \leq K \leq 10, 1 \leq M \leq 1000$).


The next N lines represent the excavation site. Each line will have N characters.

Finally, the next K lines contain information on the fossils themselves. The i -th of these K lines will consist of three numbers, x_i , y_i , and w_i ($1 \leq x_i, y_i \leq N, 1 \leq w_i \leq 500$).

Output

Output the answer as an integer on a single line.

Example

input	
<pre> 10 4 7 #####F+##### ###++++###. #...++### F+...++++ .+...##### ...##### ++...#### ###...+F. </pre>	

```
###.+.+++.  
....##+.+F  
5 1 2  
8 9 5  
1 5 6  
10 10 1
```

output

6

Note

In the sample case, it is optimal to first place fossils 2 and 4 into the high-tech wheelbarrow and bring them to the base. Then, you can bring the other two fossils to the base in any order. You will have to traverse rocky cells at least 6 times, so the answer is 6. It can be shown that there is no better answer.

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Platform for creating programming competition problems
Judging on: Intel(R) Core(TM) i3-8100 CPU @ 3.60GHz
Execution time: 56 ms.