task	karla	severina
source file	`karla.pas` `karla.c` `karla.cpp`	`severina.pas` `severina.c` `severina.cpp`
input data	stdin	
output data	stdout	
time limit (Intel Celeron 2.66Ghz)	1 sec	2 sec
memory limit (heap)	32 MB	64 MB
memory limit (stack)	8 MB	
points	**100**	**100**
	200	

The map of some area can be presented as a rectangular grid of squares arranged in M rows and N columns.

```
....vvvvv#..........        Legend
....vvvvv#....####..
...vvvvv#........#..        . empty square
...vvvv#.........#..        # rock
...vvvv#...##sss.#..        v water
...vvvvvvvv.#ssss#..        s forest
...vvvvvvvv###ss#...
...vvvvvvvv..#ss#sss
....vvvvvvv#.#..#sss
########...#.#ss#sss
...........#.#sss#ss
...........#.#...#ss
..##########.#...#ss
..#........#.#...#ss
....#......#.#......
....#........#......
```

Karla is located in the **top-left** square and she must get to the **bottom-right** square using a sequence of moves. Each move is a step onto a neighboring square in any of the four directions (up, down, left, right). However, she doesn't want to swim through the water or walk through the forest (she can't go over rock at all).

We can **build at most K bridges** or **burn down at most L forests** to help her.

Each bridge must be built in the horizontal or vertical direction **only above water** and can be of any length. If two bridges intersect, they are built one above another so it is not possible to move from one bridge to another.

Burning one forest means erasing exactly one forest area. A forest area is a maximal set of forest squares such that there is a path that consists of only horizontal or vertical moves between every two squares.

Write a program that will find the bridges that have to be built and the forests that have to be burned in order to allow Karla to get from the start to the final position.

input data

The first line of input contains two integers M and N, $1 \le M, N \le 50$.

The second line contains two integers K and L, $1 \le K, L \le 10$.

Each of the following M lines contains a sequence of N characters – the map of the area. The top-left and bottom-right squares will be empty.

output data

Output the final layout of the map after building and burning.

Each horizontal segment of a built bridge should be represented by a '**–**' (minus), each vertical segment by '**|**' (vertical line), and squares where two bridges intersects by '**+**' (plus). Squares with burned forest should be represented by a '**.**' (dot), like empty square. Each bridge has to be fully built, and each forest has to be fully burned.

Note: the test data will be such that a solution, although not necessarily unique, always exists.

examples

input

```
5 8
2 2
.#ssssss
.##ss.ss
.vsv#s.s
.vss###s
.vsvs.s.
```

output

```
.#......
.##.....
.-.|#s..
.v..###.
.v.vs.s.
```

input

```
16 20
2 1
....vvvvv#..........
....vvvvv#....####..
...vvvvv#........#..
...vvvv#.........#..
...vvvv#...##sss.#..
...vvvvvvvv.#ssss#..
...vvvvvvvv###ss#...
...vvvvvvvv..#ss#sss
....vvvvvvv#.#..#sss
########...#.#ss#sss
...........#.#sss#ss
...........#.#...#ss
..##########.#...#ss
..#........#.#...#ss
....#......#.#......
....#........#......
```

output

```
....vvvvv#..........
....vvvvv#....####..
...vvvvv#........#..
...vvvv#.........#..
...vvvv#...##sss.#..
...vvvvvv|v.#ssss#..
...vvvvvv|v###ss#...
...------+-..#ss#...
....vvvvv|v#.#..#...
########...#.#ss#...
...........#.#sss#..
...........#.#...#..
..##########.#...#..
..#........#.#...#..
....#......#.#......
....#........#......
```

severina

A word needs to be divided into smaller pieces in such a way that each piece is from some given set of words.

Write a program that will find the **number of different ways** to divide the given word.

Since that number can be really big, you have to output the **remainder of it divided by 1337377**.

input data

The first line of input contains the given word with a maximum length of 300 000 characters.

The second line contains an integer N, 1 ≤ N ≤ 4000.

Each of the next N lines contains one word from the set. Each word will be at most 100 characters long. There will be no two identical words and all the characters will be lowercase letters of the English alphabet.

output data

The first and only line of output should contain the number from the task description modulo 1337377.

examples

input

```
abcd
4
a
b
cd
ab
```

output

```
2
```

input

```
afrikapaprika
4
afr
ika
pap
r
```

output

```
1
```

input

```
ababababababababababababababababababababab
3
a
b
ab
```

output

```
759775
```