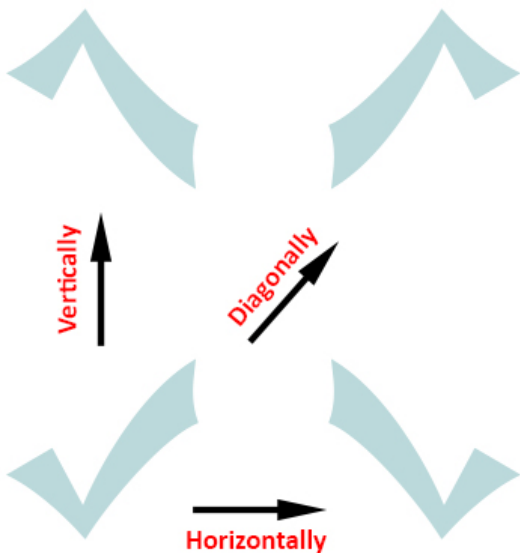# D. Sharapova And Flipping

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

One day, Sharapova was wandering in her town. When she was walking beside a tree, she found a paper with a picture painted on it. There was a question written on the back. The question was "Can you repaint this picture after flipping it Horizontally, Vertically or Diagonally?".

Sharapova isn't good at painting. So she asked you to help him.

Given the picture as an N*M grid of characters '*' and '.' only and the direction of flipping. Can you repaint it after flipping?.

Input
The first line contains two integers N, M ($1 <= N, M <= 10^3$).

The second line contains a word representing the direction of flipping ("Horizontally", "Vertically" or "Diagonally").

The next N lines, each contains M characters. Characters consists of characters '*' and '.' only.

Output
Print N lines, each contains M characters representing the grid after flipping.

Examples

input   Copy
```
6 7
Horizontally
.......
......*.
....*..
.*.*...
..*....
.......
```
output   Copy
```
.......
.*.....
..*....
...*.*.
....*..
.......
```

input   Copy
```
6 7
Vertically
.......
......*.
....*..
.*.*...
..*....
.......
```
output   Copy
```
.......
..*....
.*.*...
....*..
......*.
.......
```

input   Copy
```
6 7
Diagonally
.......
......*.
....*..
.*.*...
..*....
.......
```
output   Copy
```
.......
...*..
..*.*.
...*....
.*.....
.......
```