Cells Coloring

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

You are given an $n \times m$ grid. Some of the cells are obstacles, the others are empty. Choose a non-negative integer k and color all empty cells with $k+1$ colors $0, 1, 2, \ldots k$. You can not color two cells in the same row or same column with the same **non-zero** color.

You are given two non-negative integers c and d. For a coloring plan, define z as the number of the cells with color 0. Define the cost of the plan is $ck + dz$.

Find the minimum cost.

Input

The first line contains four integers n, m ($1 \le n, m \le 250$), c and d ($0 \le c, d \le 10^9$).

The i-th line of the next n lines contains a string of m characters. The j-th character is '*' if the cell in the i-th row and the j-th column is an obstacle. The j-th character is '.' if the cell in the i-th row and the j-th column is empty.

Output

Output a line with a single number, representing the answer.

Examples

standard input	standard output
3 4 2 1 .*** *..* **..	4
3 4 1 2 .*** *..* **..	2