# Problem J. Edit distance on table

- Time Limit: 3 sec

## Problem Statement

You have a table with $H$ rows and $W$ columns. Each cell of the table contains a letter.

You are going to construct a string by the following steps.

- Step 1: Pick up a cell in the table and let $S$ be a string of length $1$ containing the letter in the cell.
- Step 2: Do either

  - stop building $S$, or
  - select a cell from four cells which shares an edge with the current one. Then, append the letter in the cell to $S$, and move to the cell. Then, repeat step 2.

You also have a string $T$. Your mission is to minimize the edit distance between $S$ and $T$.

The edit distance (also known as Levenshtein distance) between string $U$ and $V$ is the minimum number of steps required to convert $U$ into $V$ by using the following operations.

- Replace a character in $U$ with another one.
- Insert a character into $U$.
- Delete a character from $U$.

## Input

The input consists of a single test case in the following format.

$H$ $W$
$c_{1,1}c_{1,2}\ldots c_{1,W}$
$c_{2,1}c_{2,2}\ldots c_{2,W}$
$\vdots$
$c_{H,1}c_{H,2}\ldots c_{H,W}$
$T$

$H$ and $W\,(2 \le H, W \le 100)$ represents the height and the width of the table respectively.
$c_{i,j}\,(1 \le i \le H, 1 \le j \le W)$ is a character in the cell in the $i$-th row and the $j$-th column. $T$ is a non-empty string. The length of $T$ doesn't exceed $2{,}000$. $c_{i,j}$ and $T$ consist of lowercase English letters.

## Output

Output the minimum possible edit distance between $S$ and $T$ in one line.

| Sample Input | Sample Output |
|---|---|
| 2 2<br>ab<br>ar<br>abracadabra | 2 |