Contest Duration: 2025-12-13(Sat) 23:00 (http://www.timeanddate.com/worldclock/fixedtime.html?
iso=20251213T2100&p1=248) - 2025-12-14(Sun) 00:40 (http://www.timeanddate.com/worldclock/fixedtime.html?
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D - Teleport Maze   Editorial (/contests/abc436/tasks/abc436_d/editorial)   🇯🇵 / 🇬🇧

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 400 points

Problem Statement

There is a maze consisting of a grid with H rows and W columns. Let (i, j) denote the cell at the i-th row from the top and j-th column from the left. The type of cell (i, j) is given as a character $S_{i,j}$, where each character has the following meaning:

- . : Empty cell
- # : Obstacle cell
- Lowercase English letter (a - z): Warp cell

In the maze, you can perform the following two types of actions any number of times in any order:

- Walk: Move from the current cell to a cell that is one cell away in one of the four directions (up, down, left, right). However, you cannot move to an obstacle cell or outside the grid.
- Warp: When you are at a warp cell, move to any warp cell with the same character written on it.

Determine whether it is possible to move from cell $(1, 1)$ to cell (H, W), and if possible, find the minimum total number of actions required.

Constraints

- $1 \le H, W \le 1000$

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- $H \times W \geq 2$
- H and W are integers.
- $S_{i,j}$ is ., #, or a lowercase English letter.
- $S_{1,1} \neq$ #
- $S_{H,W} \neq$ #

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{l}
H \quad W \\
S_{1,1}S_{1,2}\ldots S_{1,W} \\
\vdots \\
S_{H,1}S_{H,2}\ldots S_{H,W}
\end{array}
$$

Output

If it is possible to move from cell $(1, 1)$ to cell (H, W), print the minimum total number of actions required; otherwise, print -1.

Sample Input 1

Copy

Copy

```
3 4
..a.
####
ba#b
```

Sample Output 1

Copy

Copy

```
5
```

You can move from cell $(1, 1)$ to cell $(3, 4)$ by performing actions as follows:

1. Move from cell $(1, 1)$ to cell $(1, 2)$ by walking.
2. Move from cell $(1, 2)$ to cell $(1, 3)$ by walking.
3. Move from cell $(1, 3)$ to cell $(3, 2)$ by warping.
4. Move from cell $(3, 2)$ to cell $(3, 1)$ by walking.
5. Move from cell $(3, 1)$ to cell $(3, 4)$ by warping.

The total number of actions is 5, which is the minimum.

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Sample Input 2 Copy

```
3 4
..a.
####
b.#b
```
Copy

Sample Output 2 Copy

```
-1
```
Copy

It is impossible to move from cell $(1, 1)$ to cell $(3, 4)$.

Sample Input 3 Copy

```
4 4
xxxx
xxxx
xxxx
xxxx
```
Copy

Sample Output 3 Copy

```
1
```
Copy

Sample Input 4 Copy

```
7 11
u..#y..#...
k..#.z.#.k.
iju#...#x..
###########
..x#.t.#..n
abc#y..#...
..z#..t#.y.
```
Copy

Sample Output 4 Copy

```
12
```
Copy

#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc436%2Ftasks%2Fabc436_d%3Flang%3Den&title=D%20-

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