

Queen Moves

This question is graded for 1%!

Statement

NUS SoC is holding a computer chess competition, on boards of different sizes! Fluffy the Hamster wants to write their own chess engine to participate, but he has never played chess before.

One part of his engine involves computing the danger his queen is in. Here, he wants it to calculate the number of square the queen can reach (*without capturing any enemy pieces*).

To this end, the engine knows:

- The size of the board (H rows, W columns).
- The current position of the queen ($F = \text{File}, R = \text{Rank}$).
- The positions of pieces blocking the queen's movement.
(As we want to avoid capturing, enemy and friendly pieces block the queen in the same way.)

(Chess notes: A file is a column of squares, while a rank is a row of squares.)

The bottom-left corner of the board is position ($F = 1, R = 1$). Similarly, the top-left corner is position ($F = 1, R = H$), and the bottom-right is ($F = W, R = 1$).

Given its current position on the board and all obstacles, help Fluffy count the number of squares his queen can reach (including the original square itself).

Constraints

- $1 \leq H, W \leq 100$
- $1 \leq F \leq W, 1 \leq R \leq H$.
- The square occupied by the queen is not an obstacle.

Input

The first line of the input contains 4 integers, $W H F R$.

This is followed by H lines, describing each of the H ranks of the board. Each line is W characters long, and consists only of either `#` or `.` characters. The `#` character represents an obstacle, and `.` represents empty space.

Output

Print the number of squares reachable by a queen move, starting from the position (F, R) .

Examples

Sample Input	Expected Output
<pre>4 4 3 3 ##.. ...# ##.# .#.#</pre>	7

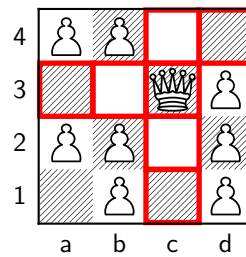


Figure 1: The corresponding board for the sample input.

Notes

1. A skeleton file has been given to help you. You should not create a new file or rename the file provided. You should develop your program using this skeleton file.
2. You are free to define your own helper methods and classes (or remove existing ones) if it is suitable but you must put all the new classes, if any, in the same skeleton file provided.

Queens in Chess

In the game of chess, the queen is a piece that can move *any* number of squares, horizontally, vertically, or along the two diagonals.

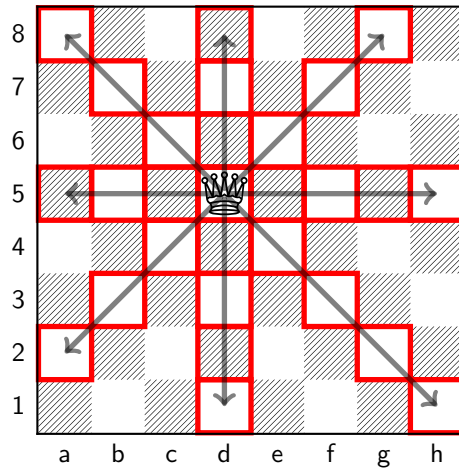


Figure 2: The squares the queen can move to are marked in red.

However, if any friendly piece (i.e. of the same colour) blocks the way, the queen cannot go past that piece.

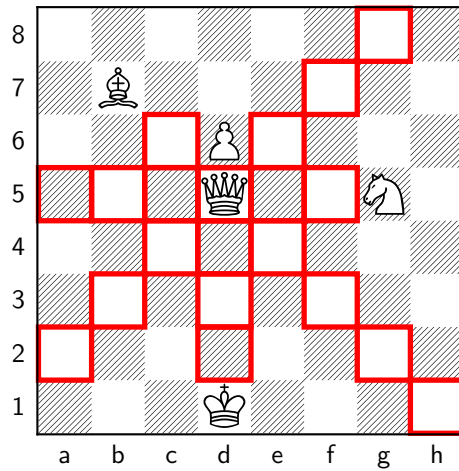


Figure 3: The squares the queen can move to are marked in red.

Skeleton File

You are given the skeleton file `QueenMoves.java`. You should see the following contents when you open the file:

```
/**
 * Name      :
 * Matric. No :
 */

import java.util.*;

public class QueenMoves {
    private void run() {
    }

    public static void main(String args[]) {
        QueenMoves runner = new QueenMoves();
        runner.run();
    }
}
```