Problem 9.2 **Big Green, Bankruptcy, and the Giant Maze of Doom**

Overview: Find the length of the shortest path between two locations in a maze of numbers.

Description: Big Green corporation really, *really* doesn't want to file for Chapter 7 bankruptcy. In desperation, it has decided to kidnap employees from rival corporations and give them an offer they can't refuse: sabotage the companies they work for, or get thrown into the Giant Maze of Doom (GMD). For decades, many believed the GMD to be a mere urban legend, one of those stories mothers told their children back in the day to keep them in line. Alas, for the handful of loyal software engineers from the rival corporation, the GMD is, without a doubt, pure reality.

The GMD is divided into *r* rows and *c* columns of squares. There is an integer on each square, representing the number of squares the engineers must move in any cardinal direction (up, down, left, or right) to avoid the land mines and fire-breathing dragons. Surrounding the GMD is a bottomless pit, so moving past the edge of the maze is not recommended. If a move would put an engineer out of bounds, he or she cannot move at all in the direction.

But however bleak life is looking for these faithful employees, hope is in the air! If the engineers land on a special square, a trapdoor will be revealed and they will fall back into the real world. As one of these trustworthy engineers, you are the only one with a laptop, and thus the only one that can write a program that will determine the minimum number of moves necessary to escape the GMD and spread news of Big Green's evil plans to the world. The fate of our technological future rests in your hands – good luck!

Consider the following 3 x 5 GMD configuration:

```
12123
02314
21235
```

Locations (*x*, *y*) are numbered starting at (1, 1) in the upper-left corner, with *x* increasing down and *y* increasing to the right. Some locations and their valid moves are listed below:

Location	Value	Valid moves
(1, 1)	1	Right (1, 2); down (2, 1)
(3, 3)	2	Left (3, 1); up (1, 3); right (3, 5)
(2, 5)	4	Left (2, 1)
(2, 4)	1	Left (2, 2); up (1, 3); right (2, 4); down (3, 3)
(2, 3)	3	None
(2, 1)	0	None
(3, 5)	5	None

The minimum number of moves from (1, 1) to (3, 5) is 4: right (1, 2), down (3, 2), right (3, 3), right (3, 5).

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Time Allocation: 1 second

Input: The first line of the input contains two integers *r c*, separated by exactly one space, representing the number of rows and columns in the maze.

The next *r* lines each contain a string of *c* integers, representing the sequence of values in each location of the *r*-th row of the maze.

The next line contains two integers x_{start} y_{start}, separated by exactly one space, representing the row and column index of the starting location.

The last line contains two integers x_{end} y_{end}, separated by exactly one space, representing the row and column index of the ending location.

Output: The output should consist of a single integer *k* representing the number of moves needed to get from the starting location to the ending location.

If the starting and ending locations are the same, output `0`. If there is no possible path from the starting to the ending location, output `-1`.

The output is to be formatted exactly like the sample output given below.

Assumptions: *r* and *c* will each be an integer between 1 and 100, inclusive.
The sequence of digits will contain only the digits `0123456789`, with each digit representing exactly one square.
x_{start}, y_{start}, x_{end}, and y_{end} will each be between 1 and 100, inclusive. The starting location and ending location may be the same.
All input will be valid.

Sample Input #1:

```
2 2
11
01
1 1
2 2
```

Sample Output #1:

```
2
```

Sample Input #2:

```
3 4
1023
0112
3211
1 1
1 3
```

Sample Output #2:

```
-1
```