Problem D
Diamond Discovery

Time limit: 10 seconds
Memory limit: 512 megabytes

Problem Description

You've landed on a mysterious island somewhere in the world. Legend has it that on the island, there is a buried treasure consisting of stacks of diamonds. The island's terrain can be described as an $n \times m$ rectangular grid, where each cell is denoted by integer coordinates (x, y) where $1 \leq x \leq n$ and $1 \leq y \leq m$. The land in each cell has an uniform height, and you have a topographic map containing altitude information about the island: the cell at (i, j) has height $h_{i,j}$.

You begin your journey at (x_s, y_s) and the treasure is located at (x_t, y_t). You can move from the cell at (x_u, y_u) to the one at (x_v, y_v) under the following conditions:

1. $1 \leq x_u, x_v \leq n$ and $1 \leq y_u, y_v \leq m$ must hold.
2. $|x_u - x_v| + |y_u - y_v| = 1$ must hold.
3. You have brought a ladder of non-negative integer length to the island. If the height difference $|h_{x_u,y_u} - h_{x_v,y_v}| \leq l$, where l is the length of your ladder, then you can make the move. The ladder will be with you at all times.
4. You have brought k "Potions of Leaping" to the island. If you have at least one potion left, then you can consume one potion and make the move regardless of height difference.

Find the minimum length of the ladder to prepare so that you can reach the treasure.

Input Format

The first line contains the three space-separated integers n, m, k.

Then n lines follow, each containing m space-separated integers. They represent the topographic map; the j^{th} integer on the i^{th} line is the height $h_{i,j}$.

The last line contains the four space-separated integers x_s, y_s, x_t, y_t.

Output Format

Output an integer, the minimum length of the ladder you should prepare.

Technical Specification

- $1 \leq n, m \leq 10^5, 1 \leq n \times m \leq 10^5$
- $0 \leq k \leq 10^5$
- $1 \leq h_{i,j} \leq 10^9$

- $1 \leq x_s, x_t \leq n, 1 \leq y_s, y_t \leq m$
- $(x_s, y_s) \neq (x_t, y_t)$

Sample Input 1

```
3 3 0
1 1 7
7 4 8
6 9 7
1 1 3 3
```

Sample Output 1

```
3
```

Sample Input 2

```
3 3 1
1 1 7
7 4 8
6 9 7
1 1 3 3
```

Sample Output 2

```
1
```

Hint

In the first sample, preparing a ladder of length 3 and moving along the blue arrows is the optimal solution.

In the second sample, you can prepare a ladder of length 1 and use the potion to move from $(1, 2)$ to $(1, 3)$.

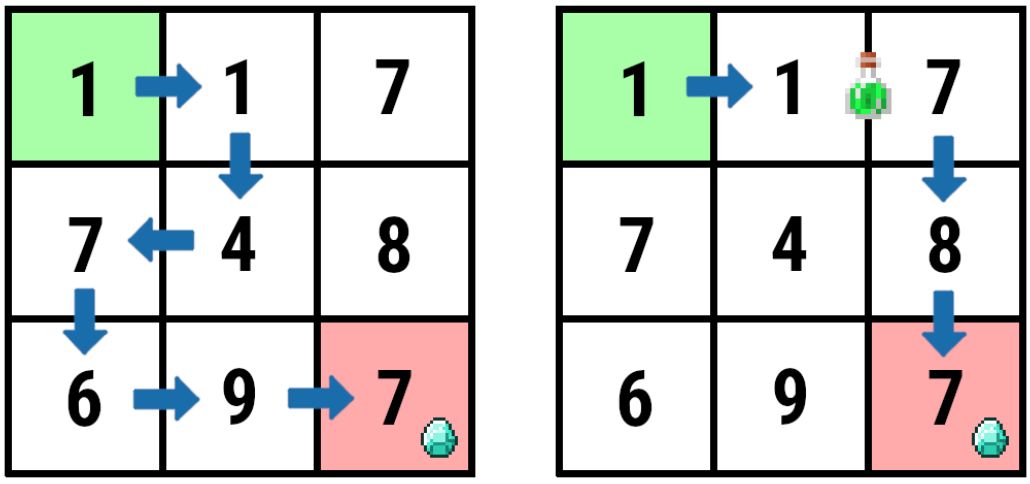

Figure 1: Sample inputs.