# Problem G. Tomorin and the Legendary Stone

TimeLimit:          1 second
MemoryLimit:        256 megabytes

Tomorin is a well-known stone expert. One day, she reads an old notebook that mentions `the legendary stone` hidden in the dungeon. The old book also shows an $n \times m \times q$ map, where the `fatigue` of cell $(i, j, k)$ is $h_{i,j,k}$, and `the legendary stone`" is at $(n, m, q)$. Determined to find it, she plans a journey from the dungeon entrance $(1, 1, 1)$ to the destination, but she's easy to get tired, and one overly steep step could exhaust her.

Formally, in one move, Tomorin may move to one of the six adjacent cells (east, west, south, north, up and down). If she crosses an edge between two adjacent cells $(i, j, k)$ and $(i', j', k')$, she gains a `fatigue value`:

$$|h_{i,j,k} - h_{i',j',k'}| + 2 \times |k - k'|$$

For a path, define its `fatigue cost` as the maximum fatigue value among all steps on that path (i.e., the steepest single step along the route).

Your task is help her to find, among all paths from $(1, 1, 1)$ to $(n, m, q)$, the minimum possible fatigue cost.

## Input

The first line contains three positive integers $n, m$ and $q$, representing the dimensions of the dungeon along the $x, y$, and $z$ axes respectively ($2 \leq n \cdot m \cdot q \leq 2 \times 10^5$).

The next $q$ blocks of lines describe the elevation $h_{i,j,k}$ for each layer $k = 1, 2, \ldots, q$. Each block consists of $n$ lines, and each line contains $m$ space-separated integers. The $j$-th integer in the $i$-th line of the $k$-th block represents $h_{i,j,k}$ ($0 \leq h_{i,j,k} \leq 10^9$).

## Output

Output the minimum possible `fatigue cost` to travel from $(1, 1, 1)$ to $(n, m, q)$.

## Examples

| standard input | standard output |
| --- | --- |
| 2 2 2<br>10 12<br>11 13<br>20 22<br>21 23 | 12 |
| 2 2 2<br>1 3<br>2 4<br>10 12<br>11 13 | 11 |