# Find the Safest Path in a Grid

You are given a **0-indexed** 2D matrix `grid` of size `n x n`, where `(r, c)` represents:

- A cell containing a thief if `grid[r][c] = 1`
- An empty cell if `grid[r][c] = 0`

You are initially positioned at cell `(0, 0)`. In one move, you can move to any adjacent cell in the grid, including cells containing thieves.

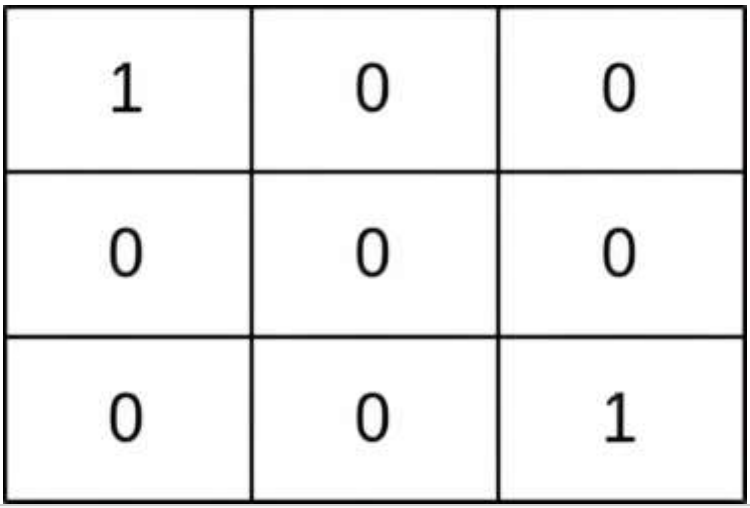
The **safeness factor** of a path on the grid is defined as the **minimum** manhattan distance from any cell in the path to any thief in the grid.

Return *the* ***maximum safeness factor*** *of all paths leading to cell* `(n - 1, n - 1)`.

An **adjacent** cell of cell `(r, c)`, is one of the cells `(r, c + 1)`, `(r, c - 1)`, `(r + 1, c)` and `(r - 1, c)` if it exists.

The **Manhattan distance** between two cells `(a, b)` and `(x, y)` is equal to `|a - x| + |b - y|`, where `|val|` denotes the absolute value of val.

**Example 1:**

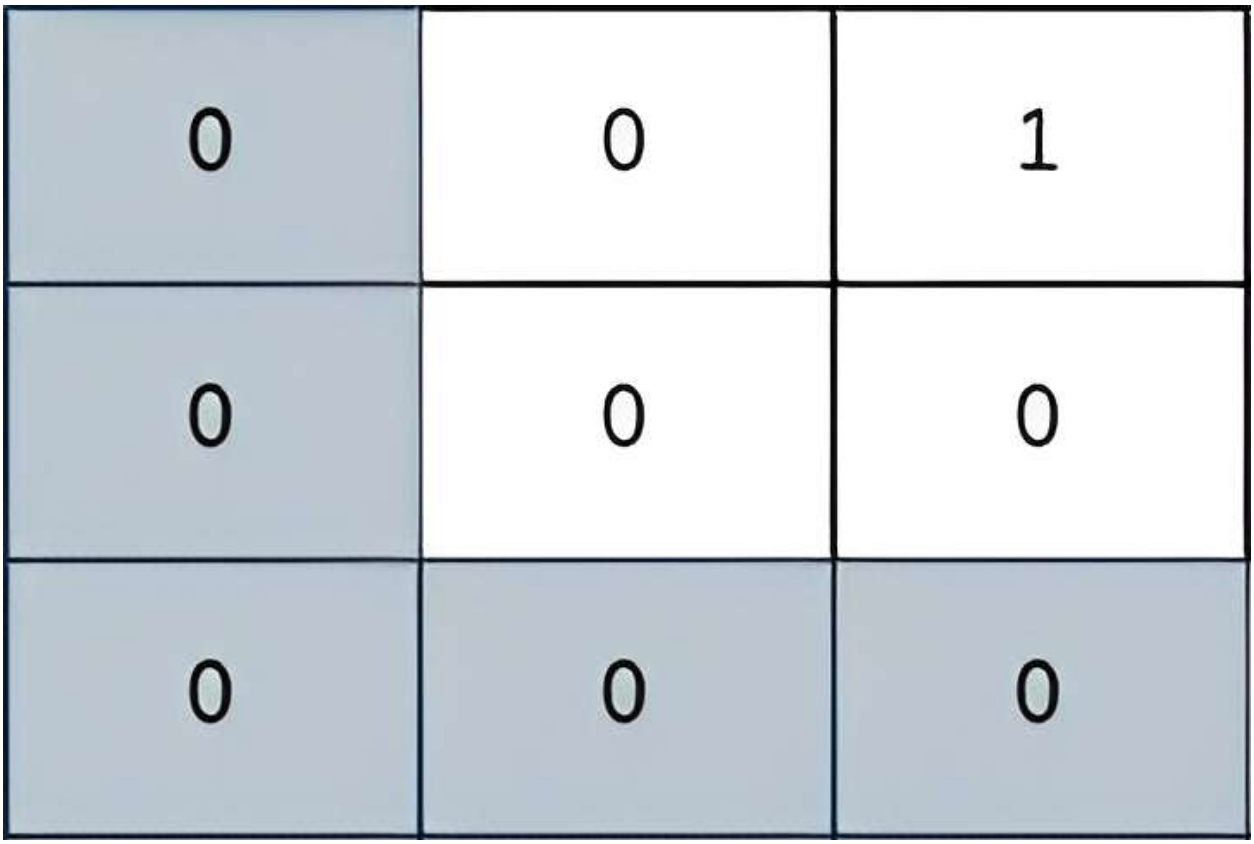



```
Input: grid = [[1,0,0],[0,0,0],[0,0,1]]

Output: 0

Explanation: All paths from (0, 0) to (n - 1, n - 1) go through the thieves in ce
lls (0, 0) and (n - 1, n - 1).
```

**Example 2:**




**Input:** grid = [[0,0,1],[0,0,0],[0,0,0]]

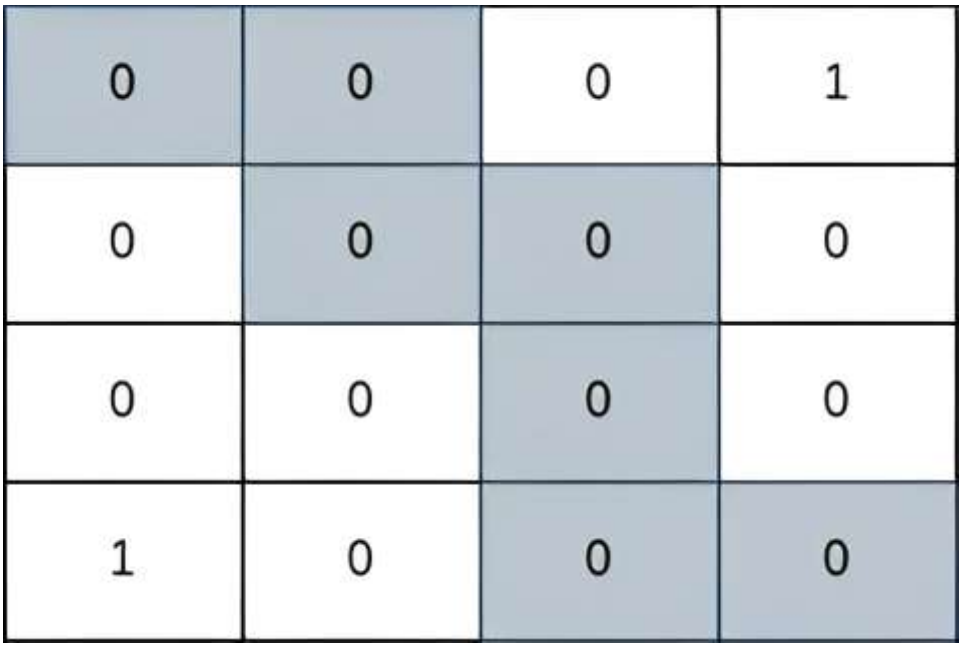
**Output:** 2

**Explanation:** The path depicted in the picture above has a safeness factor of 2 since:

- The closest cell of the path to the thief at cell (0, 2) is cell (0, 0). The distance between them is | 0 - 0 | + | 0 - 2 | = 2.

It can be shown that there are no other paths with a higher safeness factor.

**Example 3:**




```
Input: grid = [[0,0,0,1],[0,0,0,0],[0,0,0,0],[1,0,0,0]]

Output: 2

Explanation: The path depicted in the picture above has a safeness factor of 2 si
nce:

- The closest cell of the path to the thief at cell (0, 3) is cell (1, 2). The di
stance between them is | 0 - 1 | + | 3 - 2 | = 2.

- The closest cell of the path to the thief at cell (3, 0) is cell (3, 2). The di
stance between them is | 3 - 3 | + | 0 - 2 | = 2.

It can be shown that there are no other paths with a higher safeness factor.
```

**Constraints:**

- `1 <= grid.length == n <= 400`
- `grid[i].length == n`

- `grid[i][j]` is either `0` or `1`.
- There is at least one thief in the `grid`.