

# 2943. Maximize Area of Square Hole in Grid

## Description

There is a grid with `n + 2` **horizontal** bars and `m + 2` **vertical** bars, and initially containing `1 x 1` unit cells.

The bars are **1-indexed**.

You are given the two integers, `n` and `m`.

You are also given two integer arrays: `hBars` and `vBars`.

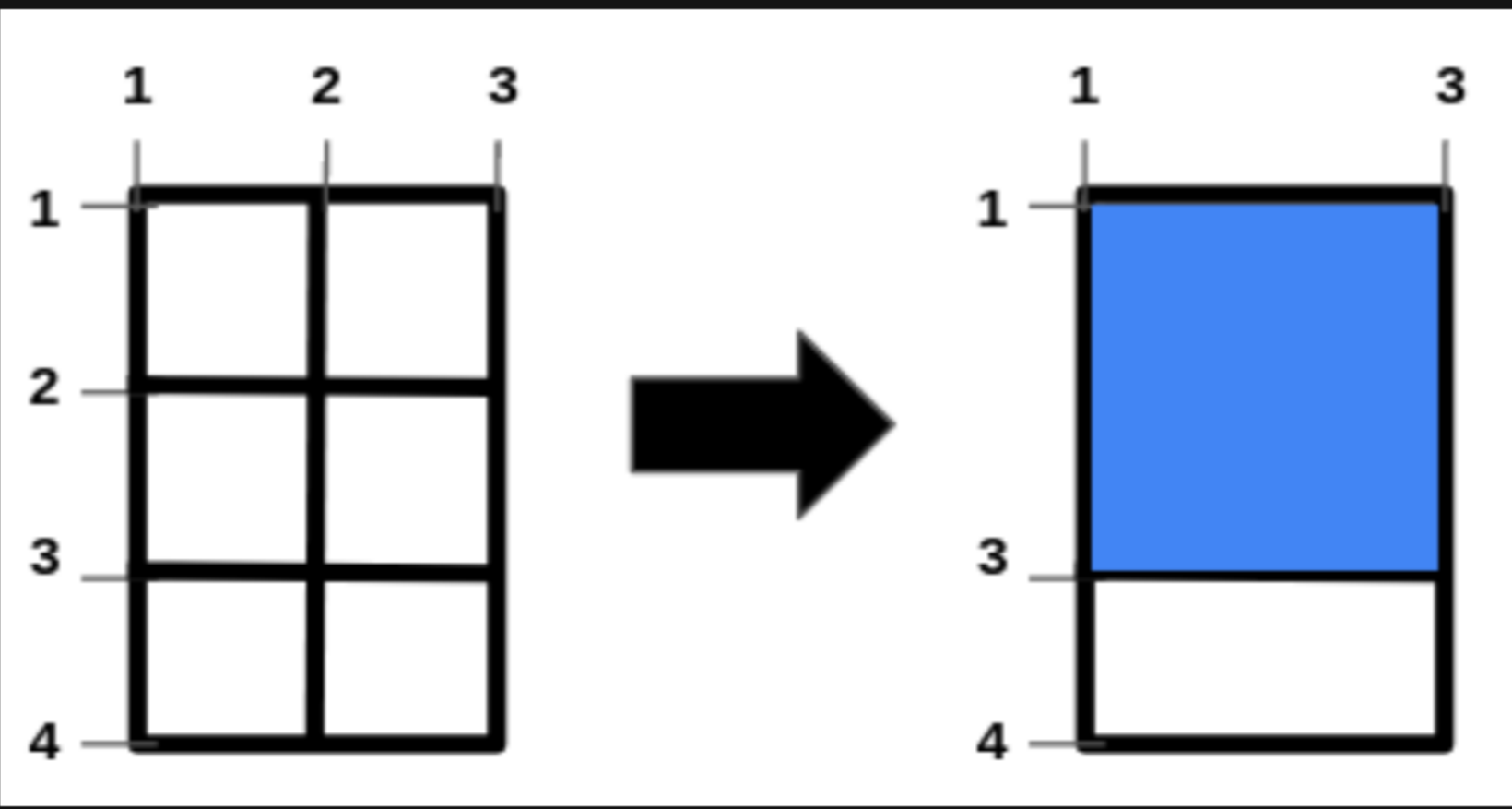
- `hBars` contains **distinct** horizontal bars in the range `[2, n + 1]`.
- `vBars` contains **distinct** vertical bars in the range `[2, m + 1]`.

You are allowed to **remove** bars that satisfy any of the following conditions:

- If it is a horizontal bar, it must correspond to a value in `hBars`.
- If it is a vertical bar, it must correspond to a value in `vBars`.

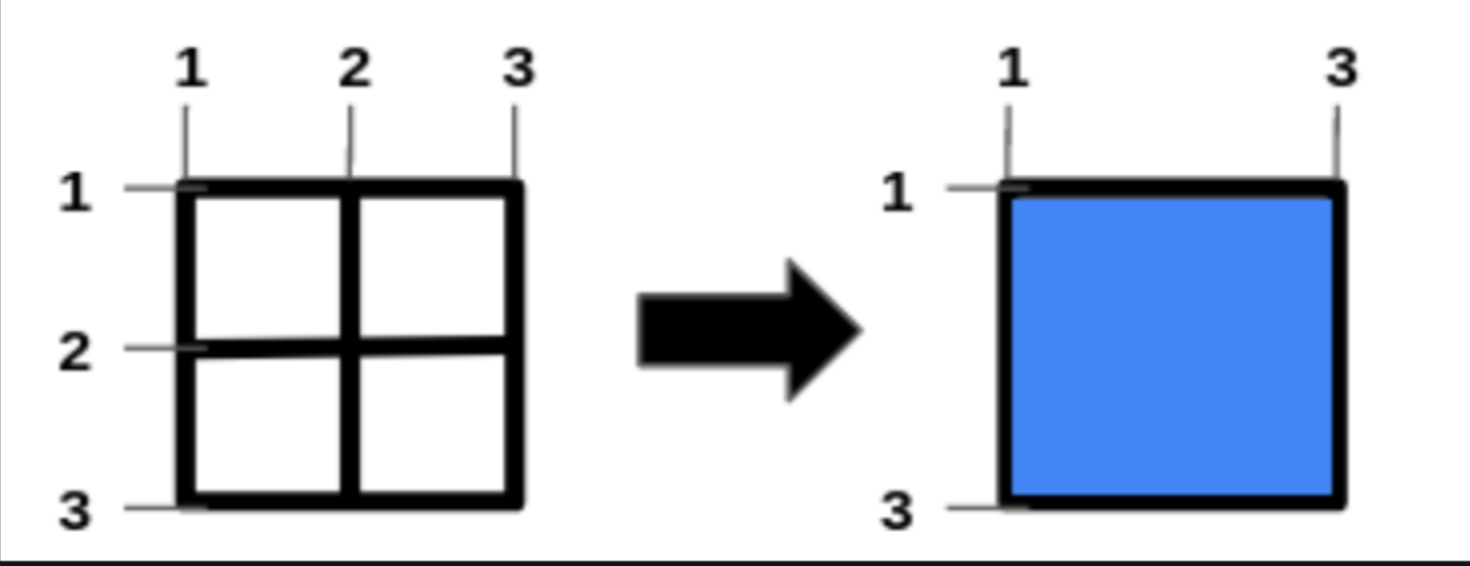
Return *an integer denoting the maximum area of a square-shaped hole in the grid after removing some bars (possibly none).*

### Example 1:



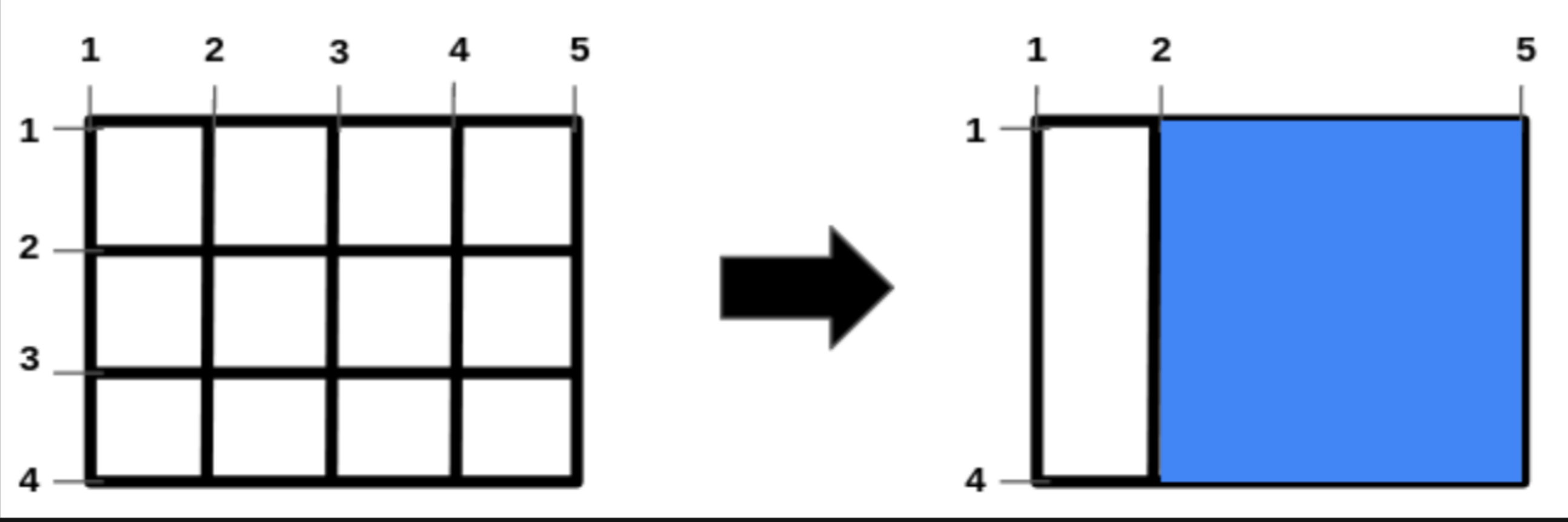
**Input:** `n = 2, m = 1, hBars = [2,3], vBars = [2]`  
**Output:** `4`  
**Explanation:** The left image shows the initial grid formed by the bars. The horizontal bars are in the range `[1,4]`, and the vertical bars are in the range `[1,3]`. It is allowed to remove horizontal bars `[2,3]` and the vertical bar `[2]`. One way to get the maximum square-shaped hole is by removing horizontal bar 2 and vertical bar 2. The resulting grid is shown on the right. The hole has an area of 4. It can be shown that it is not possible to get a square hole with an area more than 4. Hence, the answer is 4.

### Example 2:



**Input:** `n = 1, m = 1, hBars = [2], vBars = [2]`  
**Output:** `4`  
**Explanation:** The left image shows the initial grid formed by the bars. The horizontal bars are in the range `[1,3]`, and the vertical bars are in the range `[1,3]`. It is allowed to remove the horizontal bar `[2]` and the vertical bar `[2]`. To get the maximum square-shaped hole, we remove horizontal bar 2 and vertical bar 2. The resulting grid is shown on the right. The hole has an area of 4. Hence, the answer is 4, and it is the maximum possible.

### Example 3:



**Input:** `n = 2, m = 3, hBars = [2,3], vBars = [2,3,4]`  
**Output:** `9`  
**Explanation:** The left image shows the initial grid formed by the bars. The horizontal bars are in the range `[1,4]`, and the vertical bars are in the range `[1,5]`. It is allowed to remove horizontal bars `[2,3]` and vertical bars `[2,3,4]`. One way to get the maximum square-shaped hole is by removing horizontal bars 2 and 3, and vertical bars 3 and 4. The resulting grid is shown on the right. The hole has an area of 9. It can be shown that it is not possible to get a square hole with an area more than 9. Hence, the answer is 9.

### Constraints:

- `1 <= n <= 109`
- `1 <= m <= 109`
- `1 <= hBars.length <= 100`
- `2 <= hBars[i] <= n + 1`
- `1 <= vBars.length <= 100`
- `2 <= vBars[i] <= m + 1`
- All values in `hBars` are distinct.
- All values in `vBars` are distinct.

