Problem 2975: Maximum Square Area by Removing Fences From a Field

Problem Information

Difficulty: Medium
Acceptance Rate: 24.73%
Paid Only: No
Tags: Array, Hash Table, Enumeration

Problem Description

There is a large `(m - 1) x (n - 1)` rectangular field with corners at `(1, 1)` and `(m, n)` containing some horizontal and vertical fences given in arrays `hFences` and `vFences` respectively.

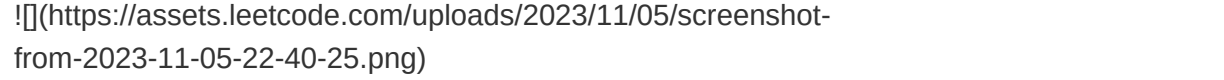
Horizontal fences are from the coordinates `(hFences[i], 1)` to `(hFences[i], n)` and vertical fences are from the coordinates `(1, vFences[i])` to `(m, vFences[i])`.

Return _the**maximum** area of a **square** field that can be formed by **removing** some fences (**possibly none**) or _`-1` _if it is impossible to make a square field_.

Since the answer may be large, return it **modulo** `109 + 7`.

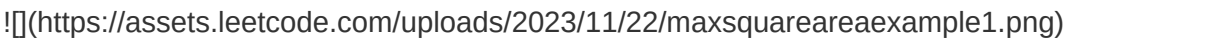
Note: The field is surrounded by two horizontal fences from the coordinates `(1, 1)` to `(1, n)` and `(m, 1)` to `(m, n)` and two vertical fences from the coordinates `(1, 1)` to `(m, 1)` and `(1, n)` to `(m, n)`. These fences **cannot** be removed.

Example 1:



Input: m = 4, n = 3, hFences = [2,3], vFences = [2] **Output:** 4 **Explanation:** Removing the horizontal fence at 2 and the vertical fence at 2 will give a square field of area 4.

Example 2:



Input: m = 6, n = 7, hFences = [2], vFences = [4] **Output:** -1 **Explanation:** It can be proved that there is no way to create a square field by removing fences.

Constraints:

* `3 <= m, n <= 109` * `1 <= hFences.length, vFences.length <= 600` * `1 < hFences[i] < m` * `1 < vFences[i] < n` * `hFences` and `vFences` are unique.

Code Snippets

C++:

```
class Solution {
public:
int maximizeSquareArea(int m, int n, vector<int>& hFences, vector<int>&
vFences) {

}
};
```

Java:

```
class Solution {
public int maximizeSquareArea(int m, int n, int[] hFences, int[] vFences) {

}
}
```

Python3:

```
class Solution:
def maximizeSquareArea(self, m: int, n: int, hFences: List[int], vFences:
List[int]) -> int:
```