

Number Of Islands 2

You are given a **n,m** which means the row and column of the 2D matrix and an array of size **k** denoting the number of operations. Matrix elements is 0 if there is water or 1 if there is land. Originally, the 2D matrix is all 0 which means there is no land in the matrix. The array has **k** operator(s) and each operator has two integer **A[i][0]**, **A[i][1]** means that you can change the cell **matrix[A[i][0]][A[i][1]]** from sea to island. Return how many island are there in the matrix after each operation. You need to return an array of size **k**.

Note : An island means group of 1s such that they share a common side.

Example 1:

Input: n = 4

m = 5

k = 4

A = {{1,1},{0,1},{3,3},{3,4}}

Output: 1 1 2 2

Explanation:

0. 00000

00000

00000

00000

1. 00000

01000

00000

00000

2. 01000

01000

00000

```

    00000
3.  01000
    01000
    00000
    00010
4.  01000
    01000
    00000
    00011

```

Example 2:

Input: $n = 4$
 $m = 5$
 $k = 4$
 $A = \{\{0,0\}, \{1,1\}, \{2,2\}, \{3,3\}\}$

Output: 1 2 3 4

Explanation:

```

0.  00000
    00000
    00000
    00000
1.  10000
    00000
    00000
    00000
2.  10000
    01000

```

```
    00000
    00000
3.  10000
    01000
    00100
    00000
4.  10000
    01000
    00100
    00010
```

Your Task:

You don't need to read or print anything. Your task is to complete the function `numOfIslands()` which takes an integer `n` denoting no. of rows in the matrix, an integer `m` denoting the number of columns in the matrix and a 2D array of size `k` denoting the number of operators.

Expected Time Complexity: $O(m * n)$

Expected Auxiliary Space: $O(m * n)$

Constraints:

$1 \leq n, m \leq 100$

$1 \leq k \leq 1000$