Number of Rectangle Islands

Given a rectangular matrix containing only the values “0” and “1”, where the values of “1” always appear in the form of a rectangular island and the islands are always separated row-wise and column-wise by at least one line of “0”s, count the number of islands in the given matrix. Note that the islands can only be diagonally adjacent.  
  
Input: Matrix of elements with values either 0 or 1  
Output: An integer which is the count of all rectangular islands

# Example

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

[**1**, **1**, 0, **1**],

[0, 0, **1**, 0],

[0, 0, **1**, 0]]

=> Output: 3

# Constraints

Time Complexity: O(MN)  
Auxiliary Space Complexity: O(1)  
  
The islands are all rectangular and the islands are always separated row-wise and column-wise by at least one line of “0”s.

# Solution

Goal is to count each top-leftmost corner of each rectangular island. To do this we want to:

1. Create islandCount integer to count number of rectangle islands and initialize it to 0
2. Iterate backwards through the matrix
3. If current cell is “1” then check to see if cell directly above is a “1” and check to see if the cell to the left is a “1”
   1. If either is a “1”, continue to next cell
   2. If both are not a “1”, add one to our rectangle island count, continue to next cell
4. Return islandCount

# Resources

[http://www.geeksforgeeks.org/count-number-islands-every-island-separated-line](http://www.geeksforgeeks.org/count-number-islands-every-island-separated-line/)/