Problem 711: Number of Distinct Islands II

Problem Information

Difficulty: Hard
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

You are given an

m x n

binary matrix

grid

. An island is a group of

1

's (representing land) connected

4-directionally

(horizontal or vertical.) You may assume all four edges of the grid are surrounded by water.

An island is considered to be the same as another if they have the same shape, or have the same shape after

rotation

(90, 180, or 270 degrees only) or

reflection

(left/right direction or up/down direction).

Return

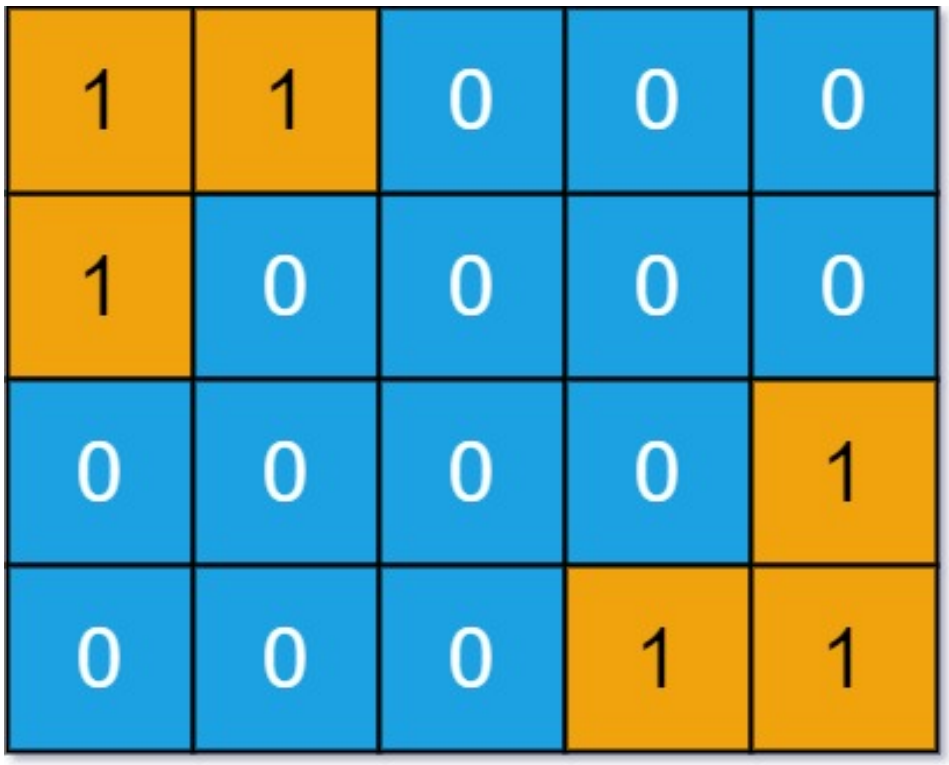
the number of

distinct

islands

.

Example 1:



Input:

grid = [[1,1,0,0,0],[1,0,0,0,0],[0,0,0,0,1],[0,0,0,1,1]]

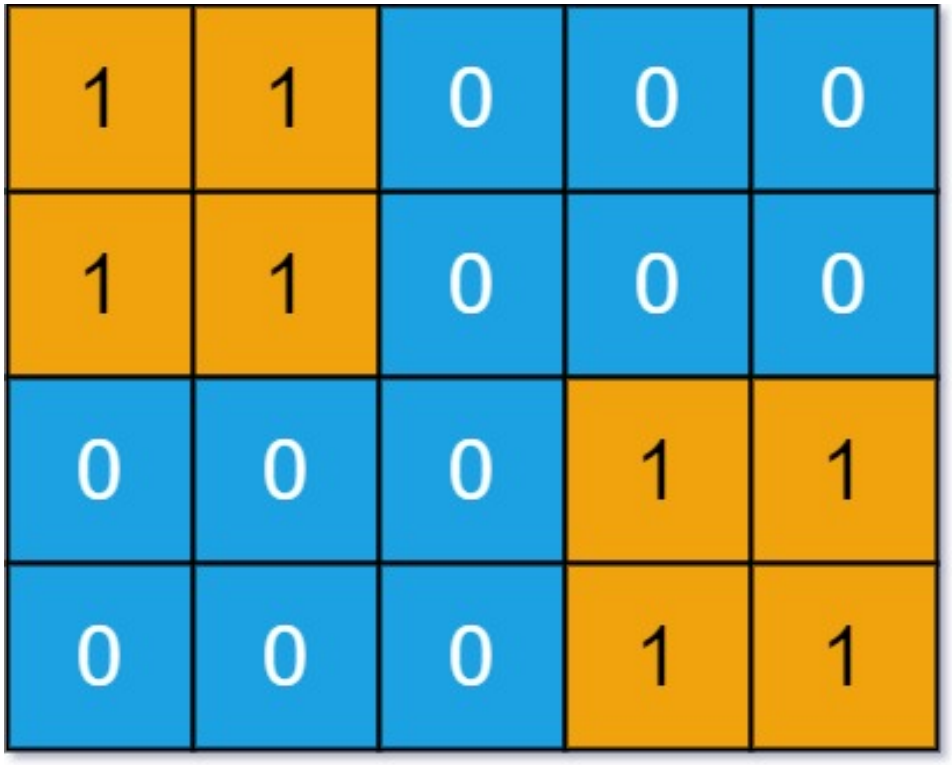
Output:

1

Explanation:

The two islands are considered the same because if we make a 180 degrees clockwise rotation on the first island, then two islands will have the same shapes.

Example 2:



Input:

grid = [[1,1,0,0,0],[1,1,0,0,0],[0,0,0,1,1],[0,0,0,1,1]]

Output:

1

Constraints:

m == grid.length

n == grid[i].length

1 <= m, n <= 50

grid[i][j]

is either

0

or

1

.

Code Snippets

C++:

```
class Solution {
public:
int numDistinctIslands2(vector<vector<int>>& grid) {

}
};
```

Java:

```
class Solution {
public int numDistinctIslands2(int[][] grid) {

}
}
```

Python3:

```
class Solution:
def numDistinctIslands2(self, grid: List[List[int]]) -> int:
```

Python:

```
class Solution(object):
def numDistinctIslands2(self, grid):
"""
:type grid: List[List[int]]
:rtype: int
"""
```

JavaScript:

```
/**
* @param {number[][]} grid
* @return {number}
*/
var numDistinctIslands2 = function(grid) {

};
```

TypeScript:

```
function numDistinctIslands2(grid: number[][]): number {

};
```

C#:

```
public class Solution {
public int NumDistinctIslands2(int[][] grid) {

}
}
```

C:

```
int numDistinctIslands2(int** grid, int gridSize, int* gridColSize) {

}
```

Go:

```
func numDistinctIslands2(grid [][]int) int {

}
```

Kotlin:

```
class Solution {
fun numDistinctIslands2(grid: Array<IntArray>): Int {

}
}
```

Swift:

```
class Solution {
func numDistinctIslands2(_ grid: [[Int]]) -> Int {

}
}
```

Rust:

```
impl Solution {
pub fn num_distinct_islands2(grid: Vec<Vec<i32>>) -> i32 {

}
}
```

Ruby:

```
# @param {Integer[][]} grid
# @return {Integer}
def num_distinct_islands2(grid)

end
```

PHP:

```
class Solution {

/**
* @param Integer[][] $grid
* @return Integer
*/
function numDistinctIslands2($grid) {

}
```

```
}
```

Dart:

```
class Solution {
int numDistinctIslands2(List<List<int>> grid) {

}
}
```

Scala:

```
object Solution {
def numDistinctIslands2(grid: Array[Array[Int]]): Int = {

}
}
```

Elixir:

```
defmodule Solution do
@spec num_distinct_islands2(grid :: [[integer]]) :: integer
def num_distinct_islands2(grid) do

end
end
```

Erlang:

```
-spec num_distinct_islands2(Grid :: [[integer()]]) -> integer().
num_distinct_islands2(Grid) ->
.
```

Racket:

```
(define/contract (num-distinct-islands2 grid)
(-> (listof (listof exact-integer?)) exact-integer?)
)
```

Solutions

C++ Solution:

```
/*
* Problem: Number of Distinct Islands II
* Difficulty: Hard
* Tags: graph, hash, search
*
* Approach: Use hash map for O(1) lookups
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(n) for hash map
*/

class Solution {
public:
int numDistinctIslands2(vector<vector<int>>& grid) {

}
};
```

Java Solution:

```
/**
* Problem: Number of Distinct Islands II
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* Tags: graph, hash, search
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* Time Complexity: O(n) to O(n^2) depending on approach
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*/

class Solution {
public int numDistinctIslands2(int[][] grid) {

}
}
```

Python3 Solution:

```
"""
Problem: Number of Distinct Islands II
Difficulty: Hard
Tags: graph, hash, search
```

```
Approach: Use hash map for O(1) lookups
Time Complexity: O(n) to O(n^2) depending on approach
Space Complexity: O(n) for hash map
"""

class Solution:
def numDistinctIslands2(self, grid: List[List[int]]) -> int:
# TODO: Implement optimized solution
pass
```

Python Solution:

```
class Solution(object):
def numDistinctIslands2(self, grid):
"""
:type grid: List[List[int]]
:rtype: int
"""
```

JavaScript Solution:

```
/**
* Problem: Number of Distinct Islands II
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TypeScript Solution:

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function numDistinctIslands2(grid: number[][]): number {

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C# Solution:

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public class Solution {
public int NumDistinctIslands2(int[][] grid) {

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```
*/

int numDistinctIslands2(int** grid, int gridSize, int* gridColSize) {

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Go Solution:

```
// Problem: Number of Distinct Islands II
// Difficulty: Hard
// Tags: graph, hash, search
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// Approach: Use hash map for O(1) lookups
// Time Complexity: O(n) to O(n^2) depending on approach
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func numDistinctIslands2(grid [][]int) int {

}
```

Kotlin Solution:

```
class Solution {
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