694. Number of Distinct Islands

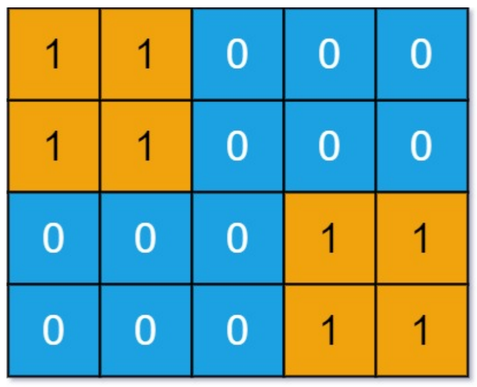
Medium 1527 87 Add to List Share

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 and only if one island can be translated (and not rotated or reflected) to equal the other.

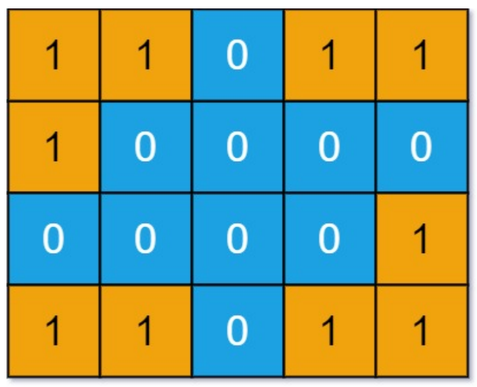
Return *the number of **distinct** islands*.

Example 1:




```
Input: grid = [[1,1,0,0,0],[1,1,0,0,0],[0,0,0,1,1],[0,0,0,1,1]]
Output: 1
```

Example 2:




```
Input: grid = [[1,1,0,1,1],[1,0,0,0,0],[0,0,0,0,1],[1,1,0,1,1]]
Output: 3
```

Constraints:

- `m == grid.length`
- `n == grid[i].length`
- `1 <= m, n <= 50`
- `grid[i][j]` is either `0` or `1`.

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Java Autocomplete

```java
class Solution {

    private int[][] grid;
    private boolean[][] seen;
    private Set<Pair<Integer, Integer>> currentIsland;
    private int currRowOrigin;
    private int currColOrigin;

    private void dfs(int row, int col) {
        if (row < 0 || row >= grid.length || col < 0 || col >= grid[0].length) return;
        if (grid[row][col] == 0 || seen[row][col]) return;
        seen[row][col] = true;
        currentIsland.add(new Pair<>(row - currRowOrigin, col - currColOrigin));
        dfs(row + 1, col);
        dfs(row - 1, col);
        dfs(row, col + 1);
        dfs(row, col - 1);
    }

    public int numDistinctIslands(int[][] grid) {
        this.grid = grid;
        this.seen = new boolean[grid.length][grid[0].length];
        Set<Set<Pair<Integer, Integer>>> islands = new HashSet<>();
        for (int row = 0; row < grid.length; row++) {
            for (int col = 0; col < grid[0].length; col++) {
                this.currentIsland = new HashSet<>();
                this.currRowOrigin = row;
                this.currColOrigin = col;
                dfs(row, col);
                if (!currentIsland.isEmpty()) islands.add(currentIsland);
            }
        }
        return islands.size();
    }
}
```