Time complexity is a function describing the amount of time an algorithm takes in terms of the amount of input to the algorithm.

Space complexity is a function describing the amount of memory or space an algorithm takes in terms of the amount of input to the algorithm.

**class** Solution {

**public** int numIslands(char[][] grid) {

**if** (grid == **null** || grid.length == 0 || grid[0].length == 0) {

**return** 0;

}

int row = grid.length;

int col = grid[0].length;

int ans = 0;

// Time complexity is O(m\*n), space complexity is O(m\*n)

**for** (int i =0; i < row; i++) {

**for** (int j=0;j < col; j++) {

**if** (grid[i][j] == '1') {

DFS(grid, i, j);

ans++;

}

}

}

**return** ans;

}

**public** void DFS(char[][] grid, int x, int y) {

**if** ( x<0 || y<0 || x > grid.length-1 || y > grid[0].length-1 || grid[x][y] == '0') {

**return**;

}

grid[x][y] = '0';

DFS(grid,x-1,y);

DFS(grid,x+1,y);

DFS(grid,x,y-1);

DFS(grid,x,y+1);

}

}