

959 Regions Cut By Slashes - 10/08/24 (medium) (Google)

Google Asked

959. Regions Cut By Slashes

Medium

Topics

Companies

An $n \times n$ grid is composed of 1×1 squares where each 1×1 square consists of a '/', '\', or blank space ' '. These characters divide the square into contiguous regions.

Given the grid `grid` represented as a string array, return the number of regions.

Note that backslash characters are escaped, so a '\' is represented as '\\'.

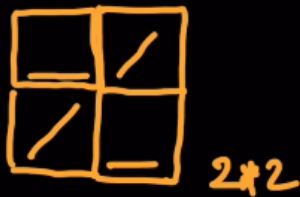
"\" is treated as escaped character by compiler

then if you want '\' then use '\\'

Example 1:

Example :- $grid = \begin{bmatrix} " & / & " \\ " & / & " \end{bmatrix}$

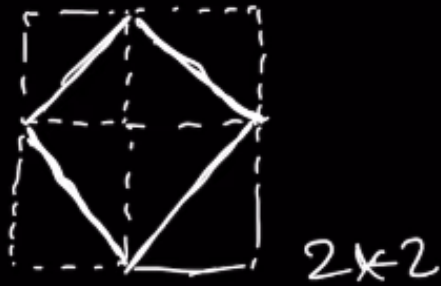
Output = 2



```
grid = [" /"," / "]
```

grid = ["/\\", "\\\""]

Output = 5

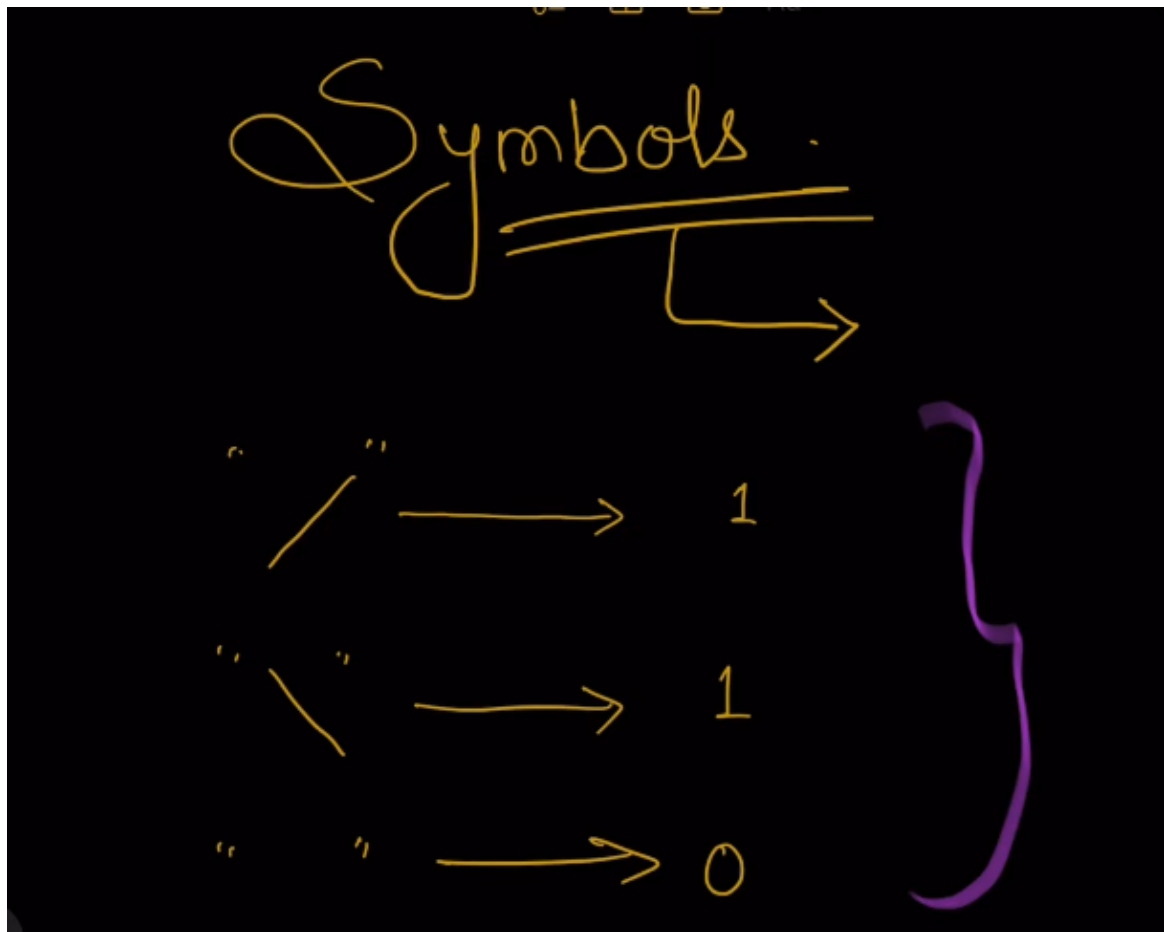


```
grid = ["/\\", "\\\""]
```

Tips:

when symbol related problem come

try karo ki - kya isko me aise form me represent kar sakta hu numerical me



now try using 0 and 1

Example :- grid = $\begin{bmatrix} \text{"/"} & \text{"\"} \\ \text{"\"} & \text{"/"} \end{bmatrix}$


Output = 2

⇒

0	1
1	0

1 + 1

= 2



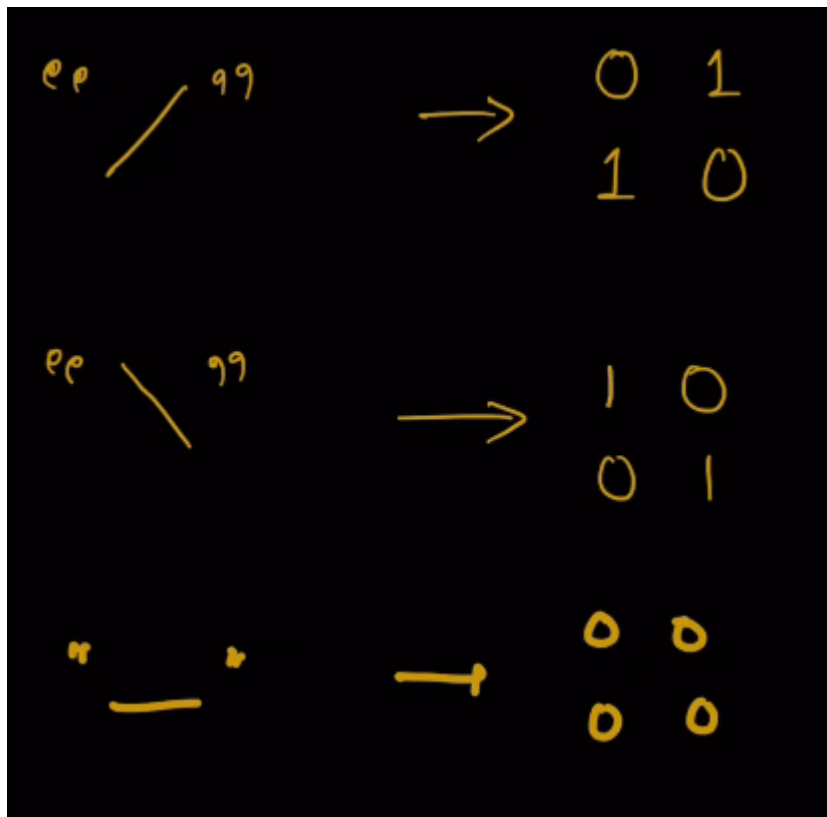
2*2

here we test DFS on 0 if there is no
another 0 on right , left, uop and
down
then make it visited and +1 it



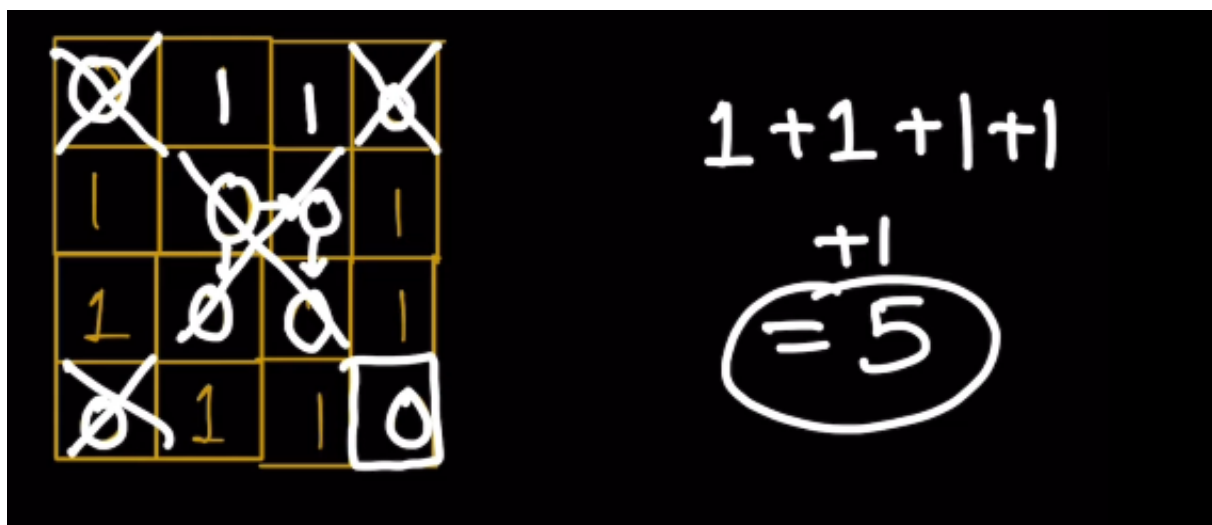
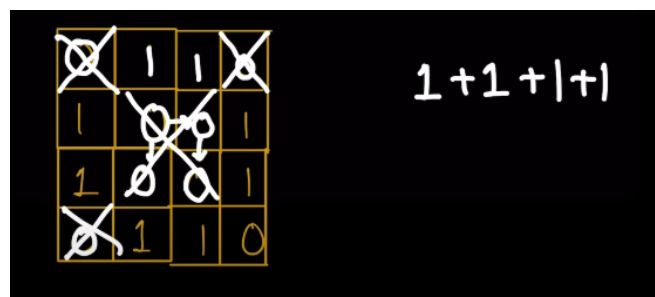
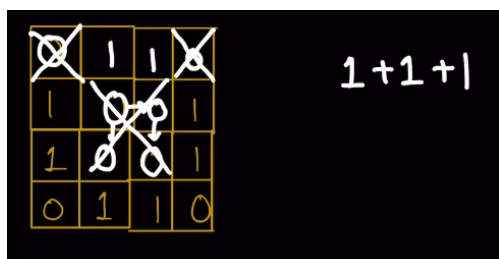
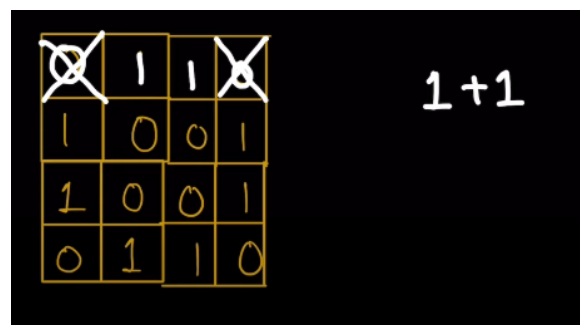
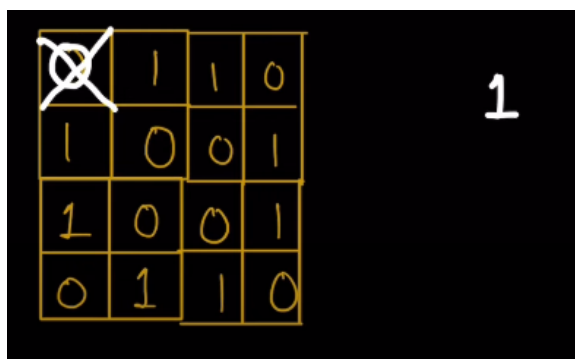
but there is the probelm if i slect all
symbol as 1

NOW choose another symbol notation



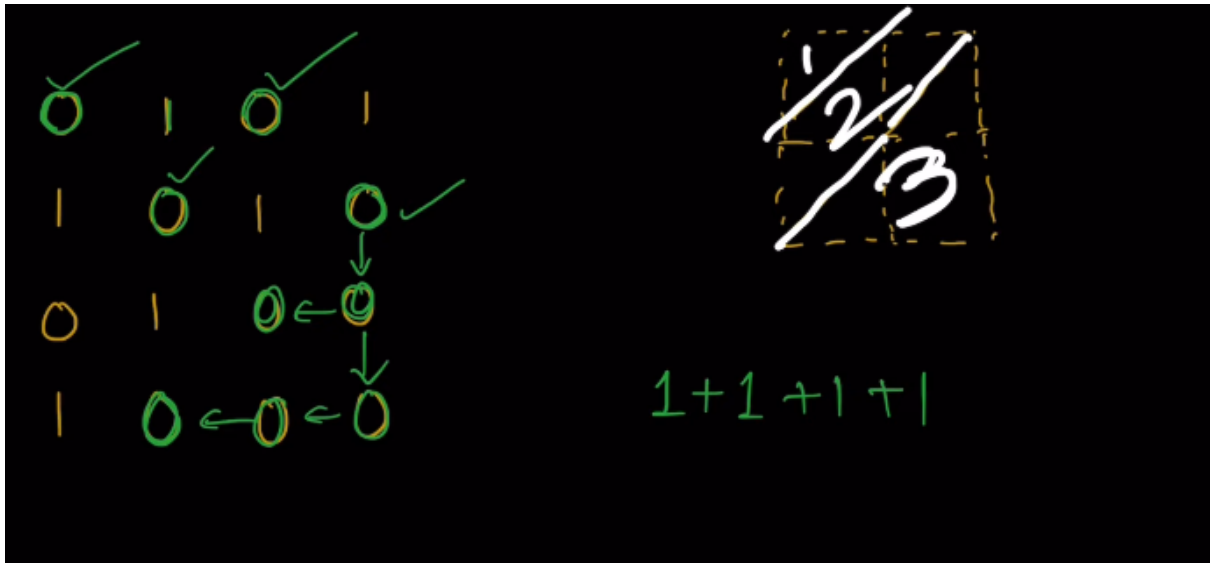
Now finding pattern for

```
gird = ["/\\", "\\\/"]
```



now to check for this

```
gird = ["/", "/ ", "/ "]
```

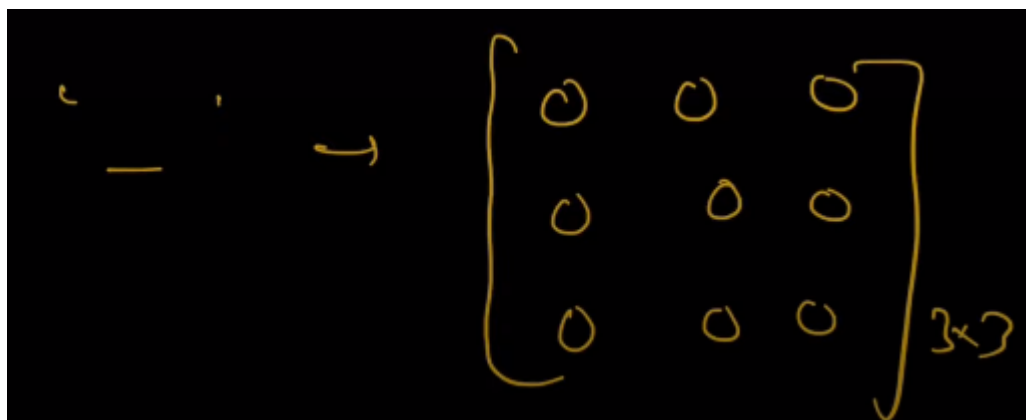
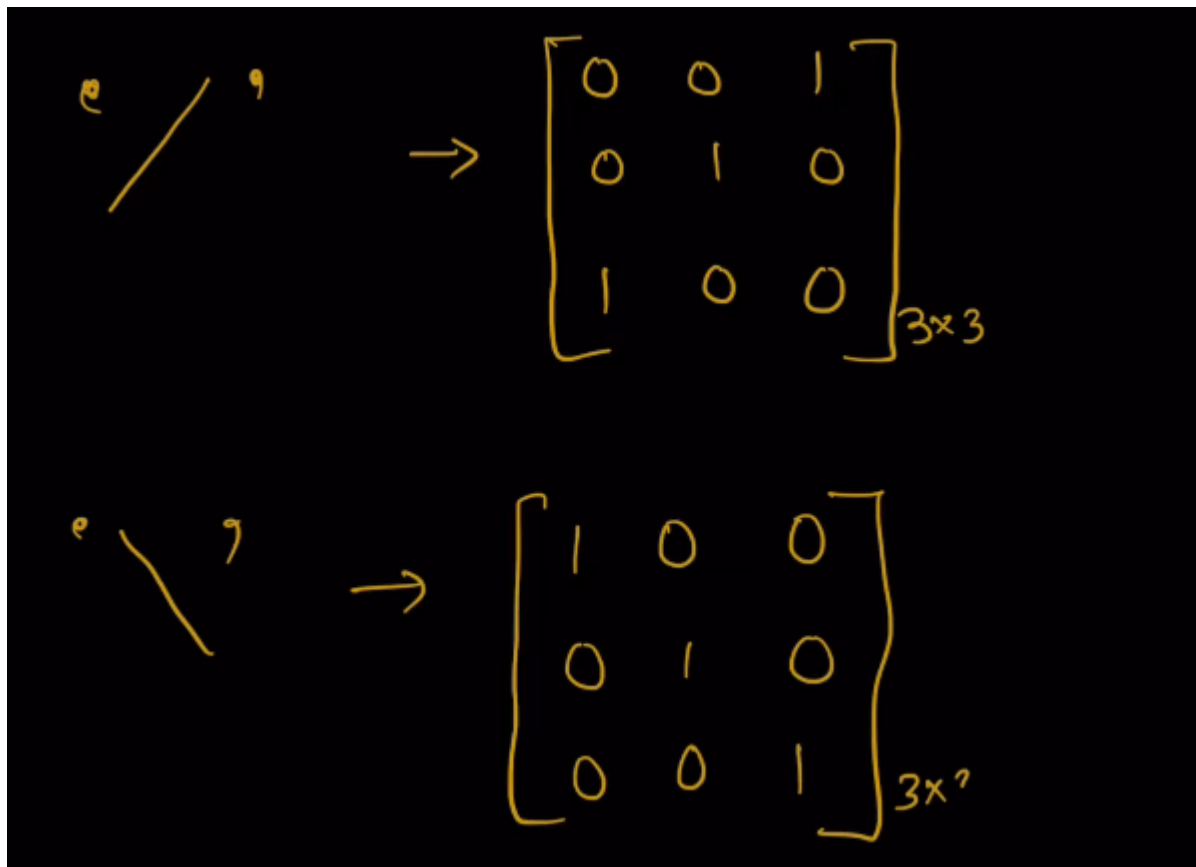


but it failed here

because we only have 3 region , but it has 5 region which is not acceptable

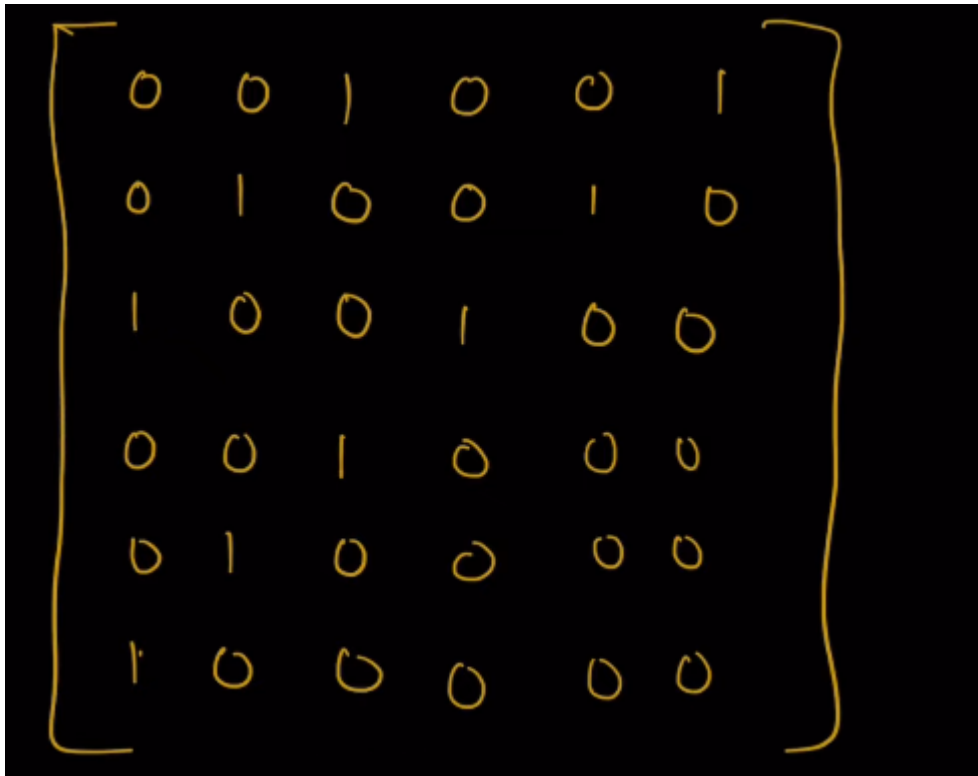
This also fail to represent when 0 or " " comes

WE will Try 3x3 pattern now

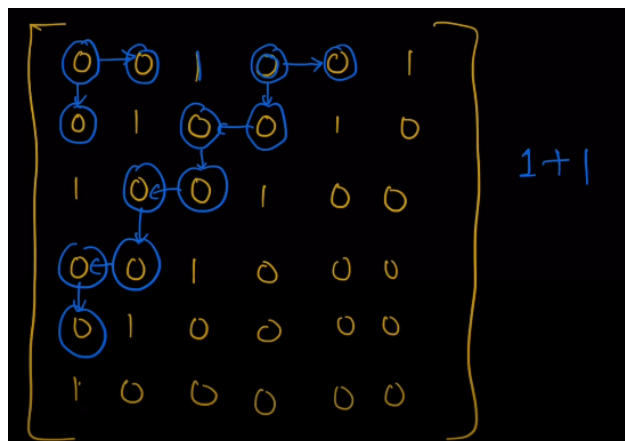
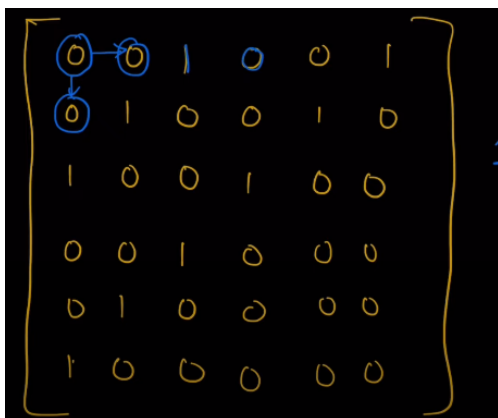


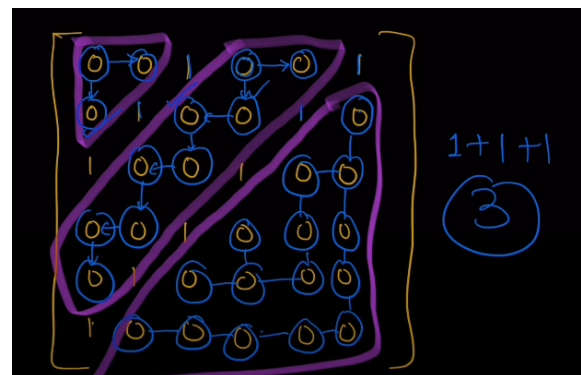
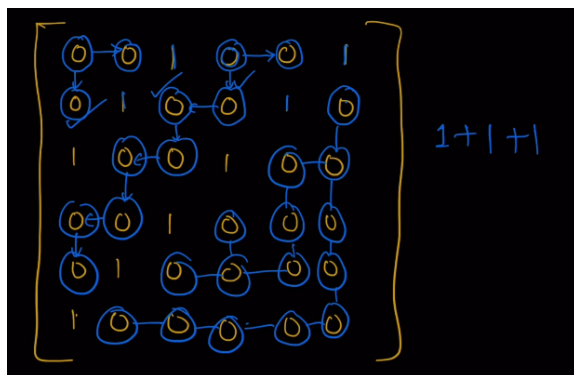
now to check for this

```
gird = ["/ /", "/ " ]
```



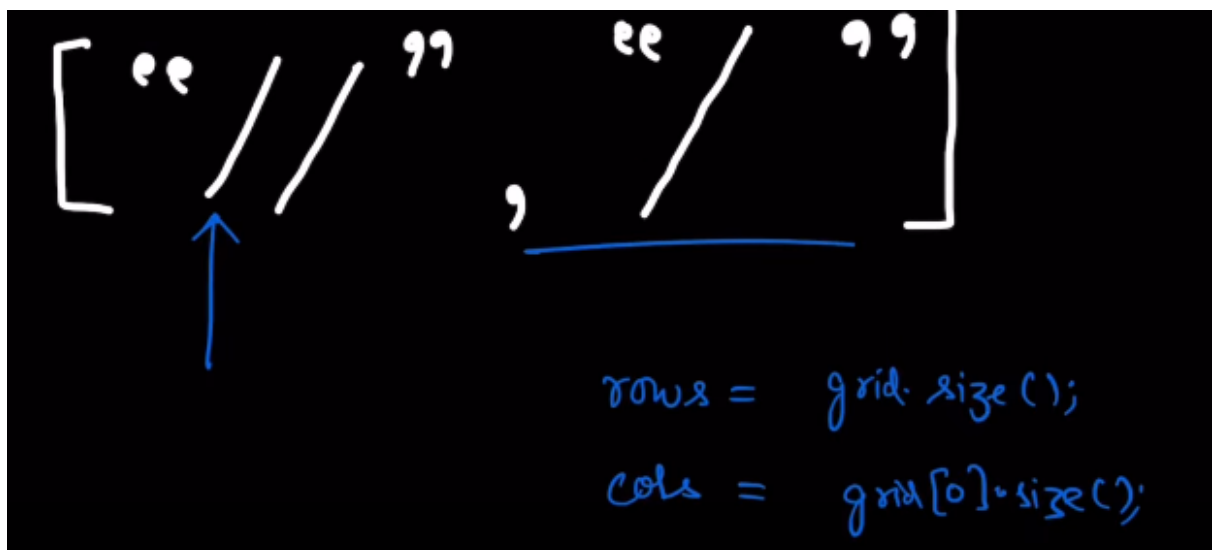
LETS START





this work completely fine
so we will use 3x3 pattern

Coding it



```
matrix[rows*3][cols*3];
```

for "/"

	0	1	2	3	4	5
0	0	0	1	0	0	0
1	0	1	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0

[0][2]
 [1][1]
 [2][0]

```

for (i = 0; i < rows; i++) {
    for (j = 0; j < cols; j++) {
        if (grid[i][j] == "/") {

```

```

        if (grid[i][j] == "/") {
            matrix[i*3][j*3+2] = 1;
            matrix[i*3+1][j*3+1] = 1;
            matrix[i*3+2][j*3] = 1;
        }

```



for "\\"

```
} else if (grid[i][j] == "\\") {  
    matrix[i*3][j*3] = 1  
    matrix[i*3+1][i*3+1] = 1  
    matrix[i*3+2][i*3+2] = 1  
}
```



To find "0" or " "

matrix → DFS

Solution

```
class Solution {  
public:  
  
    void numberOfIslandDFS(vector<vector<int>>& matrix, int i  
        if(i<0 || i>=matrix.size() || j<0 || j>=matrix[0].siz  
            return ;  
        }  
  
        matrix[i][j] = 1;  
        numberOfIslandDFS(matrix, i+1, j);
```

```

        numberOfIslandDFS(matrix, i-1, j);
        numberOfIslandDFS(matrix, i, j+1);
        numberOfIslandDFS(matrix, i, j-1);
    }

int regionsBySlashes(vector<string>& grid) {
    int rows = grid.size();
    int cols = grid[0].size();
    int region =0;
    // initialize the matrix with zero so written 0i here
    vector<vector<int>> matrix(rows*3, vector<int>(cols*3));

    for (int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
            if(grid[i][j]=='/'){
                matrix[i*3][j*3+2]=1;
                matrix[i*3+1][j*3+1]=1;
                matrix[i*3+2][j*3]=1;
            }
            else if(grid[i][j]=='\\'){
                matrix[i*3][j*3]=1;
                matrix[i*3+1][j*3+1]=1;
                matrix[i*3+2][j*3+2]=1;
            }
        }
    }

    //apply concept of island problem
    for(int i=0;i<matrix.size();i++){
        for(int j=0;j<matrix[0].size();j++){
            if(matrix[i][j]==0){
                numberOfIslandDFS(matrix, i, j);
                region+=1;
            }
        }
    }
    return region;
}

```

```
}  
};
```