

ADA Lab 4

~~Ans~~ ~~return~~

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func count-islands (grid):
    r = len(grid); c = len(grid[0])
    dus = DisjointUnionSet(r*c)

    for i from 0 → r:
        for j from 0 → c:
            if not grid[i][j]: continue

            if i+1 < r & grid[i+1][j] == 1: dus.Union(ic+j, (i+1)*c+j)
            if i-1 ≥ 0 & grid[i-1][j] == 1: dus.Union(ic+j, (i-1)*c+j)
            if j+1 < c & grid[i][j+1] == 1: dus.Union(ic+j, ic+j+1)
            if j-1 ≥ 0 & grid[i][j-1] == 1: dus.Union(ic+j, ic+j-1)
            if i+1 < r & j+1 < c & grid[i+1][j+1] == 1: dus.Union(ic+j,
                                                                    (i+1)*c+j+1)
            if i+1 < r & j-1 ≥ 0 and grid[i+1][j-1] == 1:
                dus.Union(ic+j, (i+1)*c+j-1)
            if i-1 ≥ 0 and j+1 < c & grid[i-1][j+1] == 1:
                dus.Union(ic+j, (i-1)*c+j+1)
            if i-1 ≥ 0 & j-1 ≥ 0 & grid[i-1][j-1] == 1:
                dus.Union(ic+j, (i-1)*(c+j-1))

    for i from 0 → r:
        for j from 0 → c:
            if grid[i][j] == 1: x = dus.find(ic+j)
                if c[x] == 0: number-of-islands++
                    c[x]++

    return number-of-islands.
    
```