ADA Lab 4

~~Ans solution~~

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func count_islands (grid):
    r = len(grid) ;    c = len(grid[0])
    dus = Disjoint UnionSet (r*c)

    for i from 0 → r:
        for j from 0 → c:
            if not grid: 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 (i*c +j, (i-1)*c + j+1)

            if i-1 ≥ 0 & j-1 ≥ 0 & grid[i-1][j-1] == 1 :
                            dus.Union (i*c +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.
```