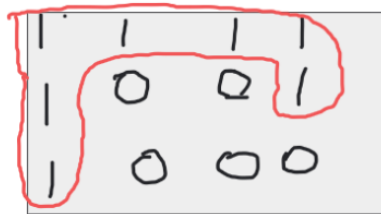
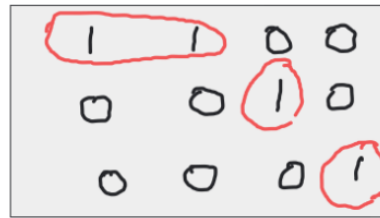


Given an $m \times n$ 2D binary grid which represents a map of '1's (land) and '0's (water), return the number of islands.

An island is surrounded by water and is formed by connecting adjacent lands horizontally or vertically. You may assume all four edges of the grid are all surrounded by water.



Number of islands
1



3

4 options to travel
up, left, right, down
 $(x-1, y)$

$(x, y-1) \leftarrow (x, y) \rightarrow (x, y+1)$
 $(x, y) \downarrow (x, y+1)$

this problem belongs to Graph theory
it is an eg for DFS (Depth First Search)