(Last Day Where You Can Still Cross)

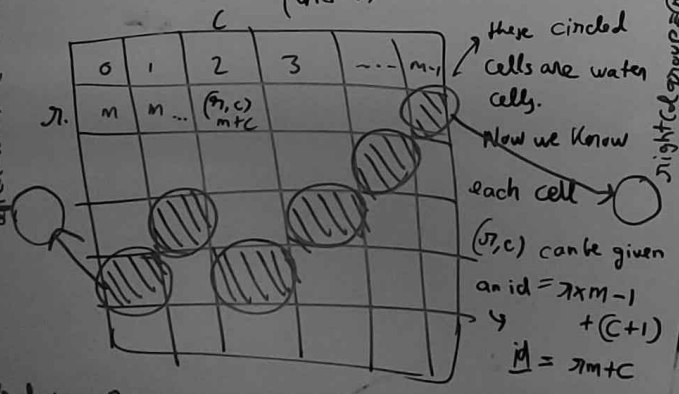
(Editorial Soln) (Amazing DSU trick!)

Explaining the DSU solution → (a) connect all the water cells check if rightmost cell is connected to leftmost or not.

(b) Connect all Land cells, by travelling the water cells from the back and removing them one by one and making connection and check if 1st row & Last row are connected or not.

Connecting water Cells.

(n × m)



While doing DSU

create two extra virtual nodes.

left = (n-1)×(m-1)+1

right = (n-1)×(m-1)+2

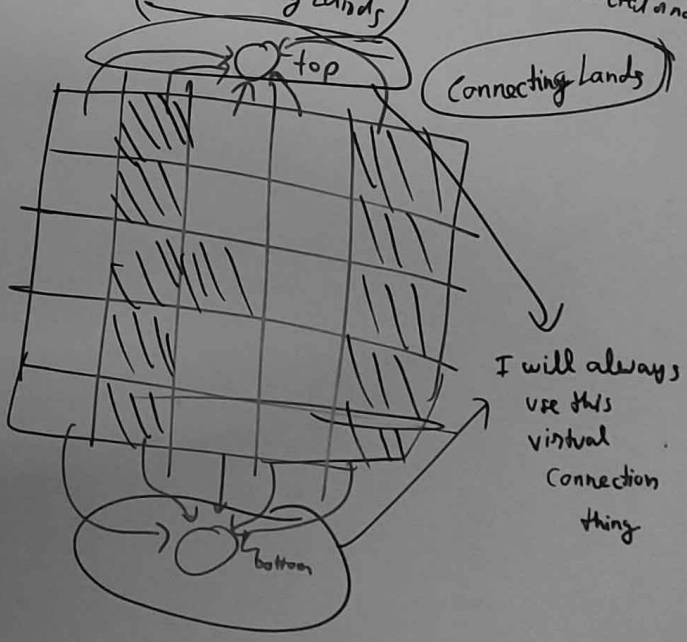
Whenever a cell in leftmost col is involved do

left ⟹ uni(left, id)

right ⇒ uni(right, id)

check root(left) == root(right)

Connecting Lands



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The soln which I coded up and was very slow.

Do a binary search.

cells[N][2] = { {x1, y1}, {x2, y2}, {x3, y3}, {x4, y5}, {x5, y5}, ... }

lo → mid. hi

On the binary search,

from (0 to mid) → fill those cells with Water. → then try to do a BFS from top row and check if its possible to reach the bottom cell or not.

if Yes → lo = mid+1

if No → hi = mid-1