

## Numbers of islands using Disjoint sets

1. Get 1D array (parent []) from matrix [][] of length  $m \times n$ .  
for each  $mat[i][j]$  matches  $(i, j)$  to  $(n \times i + j)$ .  
Index  $(n \times i + j)$  represents  $mat[i][j]$ , parent  $[n \times i + j]$  represents which subset the  $mat[i][j]$  belongs
2. Count the islands
3. Loop through matrix  $mat[][]$ .  
if found island  $x$  (points to root parent  $s$ ),  
check the adjacent neighbours.  
If any present, they should be in same subset.  
If any present, and not in same subset, then  
merge  $y$  to subset  $s$  by setting  $y$  as the  
parent element of  $s$  and count -- (union operation)
4. While one island is merged, the number of island ~~will~~ will be decremented by 1. After we unite them all, we get the number of islands.

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