

NUMBER OF ISLANDS

EXPLORE STRUCTURE \Rightarrow DFS-ALGO

```

1 1 0 0 0
1 1 0 0 0
0 0 1 0 0
0 0 0 1 1
    
```

4 CONNECTIVITY

```

DFS(G)
INIT()
 $\forall u \in G.Vertices$ 
  if (!u.visited)
    DFS-VISIT(u)
    
```

```

DFS-VISIT(u)
  visit(u)
  for  $v \in u.neighbors$ 
    if (!v.visited)
      DFS-VISIT(v)
    
```

OBSERVATION:

ONCE INSIDE DFS-VISIT, ALL NODES REACHABLE FROM u (DIRECTLY OR VIA ITS NEIGHBORS), WE WOULD REACH ALL SUCH NODES.

THE MAIN DFS WOULD CALL DFS-VISIT FOR ONE NODE IN EACH CONNECTED COMPONENT.

DFS-VISIT(0,0)

DFS-VISIT(2,3)

DFS-VISIT(4,0)

DFS-VISIT(5,4)

OUTPUT = 4

DFS CALLED DFS-VISIT 4 TIMES.