

**PES University**  
**Department of CSE**  
**Data Structures and its Applications Lab**  
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**Week 11a - DFS**

Find number of components in an undirected graph using DFS implemented using adjacency matrix and also print to which component a particular vertex belongs.

**Input:**

The input begins with the number of test cases **T** in a single line. Each test case begins with the number **N** of the order of the adjacency matrix of the undirected graph, followed by the adjacency matrix on the next line. An adjacency matrix is represented in **N** lines having **N** integers (0s or 1s) separated by a space in each line.

**Output:**

For every test case print the number of the components in the graph followed by the component number of each vertex in the next line.

That is if there are 3 components {1,4,5} and {2,3} and {6,7}

{1,4,5} component number is 1 and that of {2,3} is 2 and {6,7} is 3.

**Note:** There may be more than a way of assigning component numbers to a vertex, that is in previous example {1,4,5} as 2, {2,3} as 1 and {6,7} as 3, but make sure you follow the dfs order starting from vertex 1 and later calling the dfs on the very next unvisited node. That is in last example after calling dfs(1) 1,4,5 are visited later you should call dfs(2) as it is the first unvisited component.