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Exercise Sheet 1

ACM Programming Challenges Lab

Exercise 1 – *DFS*

Description Compute DFS numbering (timestamps of discovery and finishing) as discussed in the lecture (cf. slides). To make the numbering unique, you should decide for the vertex with the smallest label whenever you have a choice.

Input The first line of the input contains c ($1 \leq c \leq 10$), the number of test cases. Each test case describes a graph and starts with one line containing two numbers n ($1 \leq n \leq 1K$), the number of vertices and m ($0 \leq m \leq n \cdot (n-1)/2$), the number of edges. The vertices are identified by the numbers $\{0, \ldots, n-1\}$. The next m lines contain two integers a_i, b_i, indicating that $\{a_i, b_i\}$ is an edge of the graph.

Output For each test case you should output two lines. The first line contains the timestamps of discovery seperated by space and ordered by increasing vertex labels. The second line contains the timestamps of finishing seperated by space and ordered by increasing vertex labels.

Sample input

```
2
5 4
0 1
0 2
2 3
2 4
4 1
2 3
```

Sample output

```
0 1 3 4 6
9 2 8 5 7
0 2 4 5
1 3 7 6
```