

Birla Institute of Technology & Science, Pilani
Data Structures & Algorithms (CS F211)
Lab Makeup Exam

(Closed Book)

DSA Lab Exam

Time: 3 Hours

Total Marks: 40

Exam Problem Specific Instructions:

- There are four problems to solve: P1, P2, and P3. The problems are arranged in increasing order of difficulty. Weightage of each problem is approximately proportional to its difficulty level (P1 = 10, P2 =10, and P3=20).
- Please complete your program for solving one problem, and then proceed to solve other problems. You will get marks only when your program gives correct output. You will not get any marks if your program is incomplete or it gives incorrect output.
- This is a closed book exam. You cannot use any notes or books (either softcopy or hard copy).Internet and network access will be disabled. You will not get any sheet for rough work. You can do rough work in text file on the computer.

Warnings (Possible Reasons for Cancellation of Lab Exam):

- Possession of any previously written code (irrespective of size, relevance, ownership, medium)
 - Possession of any removable media or mobile.
 - Attempt to access any machine other than allotted local machine and the Online Judge Server.
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Problem 1

Finding transitive closure matrix of a directed graph

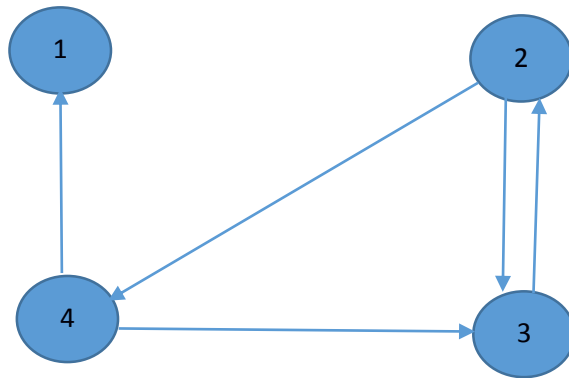
Input Format:

Adjacency list representation of a directed graph will be given in the following format:

The first line of the input will specify the number of vertices in the directed graph. From second line onwards adjacent vertices of each vertex will be listed per row in the following format:

Vertex number blank Number of adjacent vertices blank first adjacent vertex blank second Adjacent vertex blank.....

All entries will be in sorted order. Vertices will be numbered in sequential order starting from 1.....



Example Graph G1

Sample Input (For G1):

```

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

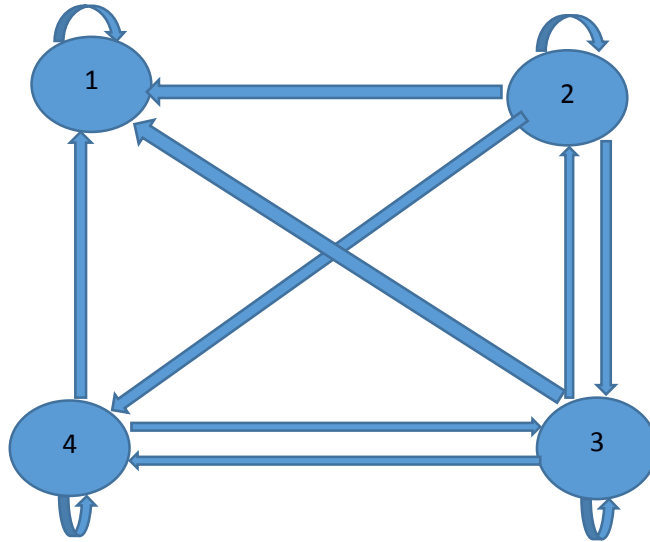
Problem 1 of 3

Output Format:

Output the transitive closure matrix one row of the matrix in each line so that the matrix elements are separated by a blank space.

Sample Output (For G1):

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



G*: transitive closure graph for G1