

Algoritmi e strutture dati - Primavera 2016

Esercizi di programmazione

1. Stable Marriage

Input Specification

You will be given as input two text files **men.txt** and **women.txt**.

The first file (**men.txt**) will be of the following structure. The first line will contain the number of men (n) and then followed by a $n \times (n+1)$ matrix, each of its row specifying the ID of a man and his list of preferences for women to marry.

The second file (**women.txt**) will be of the following structure. The first line will contain the number of women (n) and then followed by a $n \times (n+1)$ matrix, each of its row specifying the ID of a woman and her list of preferences for men to marry.

Output Specification

The output must contain a list of n couples of form (m,w) representing that man m will marry women w . Store this results in a file named **marriages.txt**.

Sample Input									
man.txt					women.txt				
3					3				
1	1	3	2		1	1	2	3	
2	2	1	3		2	3	1	2	
3	2	3	1		3	1	2	3	

Sample Output	
marriages.txt	
1	2
2	3

3 2

2. Strongly Connected Components

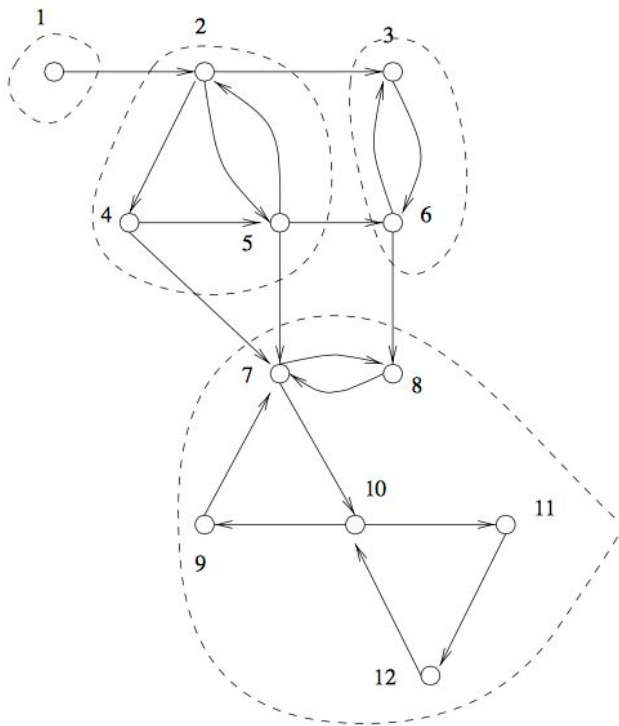
Input Specification

You will be given as input a file named **graph.txt**. This file will have in the first line the number of nodes of the directed graph and then followed by the adjacency list specifying the structure of the graph.

Output Specification

The output must contain the number of strongly connected components, followed by the nodes that each of these components contain. Store the output in a file named **scc.txt**.

Graph Example:



Sample Input
graph.txt
12
1 2

2 3 4 5
3 6
4 5 7
5 2 6 7
6 3 8
7 8 10
8 7
9 7
10 9 11
11 12
12 10

Output Sample
scc.txt
4
1
2 4 5
3 6
7 8 9 10 11 12

Allowed Programming Languages

You may use any programming language of the following: C, C++, JAVA, Python.

Submission procedure:

Please follow these instructions carefully:

Create a folder and name it in the following format **yourname_yoursurname_matricola** for example **mario_rossi_1673378**. Put all the files inside this folder after you have named every problem solution **yourname_yoursurname_matricola_problemmumber**, for example problem one **mario_rossi_1673378_1**.

Then you either submit the zipped version of the folder by emailing it at terolli@di.uniroma1.it or share it on Google Drive with terolli@di.uniroma1.it .

IL COMPITO VA CONSEGNATO ENTRO LA MEZZANOTTE DEL 30 APRILE 2016

GOOD LUCK :)