Last name	_		
First name		Crada	
Group		Grade	
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Algorithmics Undergraduate 2^{nd} year - S3# Final Exam #3 (P3) May 12, 2021 - 9 : 30 Answer Sheets

1	
2	
3	
4	

Answers 1 (Warshall - Union-Find - 4 points)

1. Connected components (vertex sets):



2. Fill in the adjacency matrix of the transitive closure of G_1 (no value = false, 1 = true)

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

3. Which vectors could correspond to the result?

	yes	no
P_1		
P_2		
P_3		
P_4		

Answers 2 (Get Back - 4 points)

Specifications:

The function acyclic(G) checks whether the digraph G is acyclic.

Reminder: imperatively use a single mark vector with 3 values

Answers 3 (Density – 6 points)

1. For a simple connected graph:

(a) The least dense minimal value of p :	Graph type:	
(b) The most dense minimal value of p :	Graph type:	

2. Specifications:

The function $density_components(G)$ returns the list of the *densities* of the connected components of the simple undirected graph G.

Answers 4 (Levels - 6 points)

Specifications:

The function levels(G) returns the list L of length exc(src) + 1 in which each value L[i] contains vertices at a distance i from src in G