Last name	
First name	
Group	

Grade

1	
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Algorithmics
Undergraduate 2nd year - S3#
Final Exam #3 (P3)
14 December 2019
Answer Sheets

Answers 1 (**Spanning Forest** − *2 points*)

Spanning forest and extra-edges for the depth-first search of the graph G_1:

Answers 2 (**Union-Find** − 3 *points*)

1. Number of vertices of each connected component:

   C_1 : _____ C_2 : _____ C_3 : _____

2. Edges to add: _____

3. Among the following chains, which can not exist in G?

   ☐ $3 \leftrightsquigarrow 7$ ☐ $11 \leftrightsquigarrow 6$ ☐ $0 \leftrightsquigarrow 13$ ☐ $4 \leftrightsquigarrow 9$

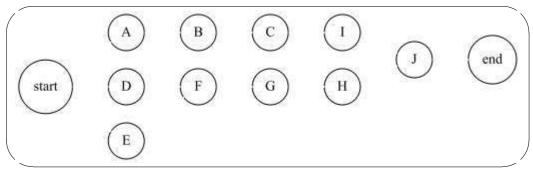*Answers 3* (**Bipartite graph (Graphes bipartis) − *5 points***)

Specifications:
The function `bipartite(G)` tests whether the graph G is bipartite.

Answers 4 (Eat Crepes − 8 points)

1. Graph that represents the recipe:

2. (a) Topological sort to complete :

$start$ - D -   -   - B -   -   - G -   -   -   - end
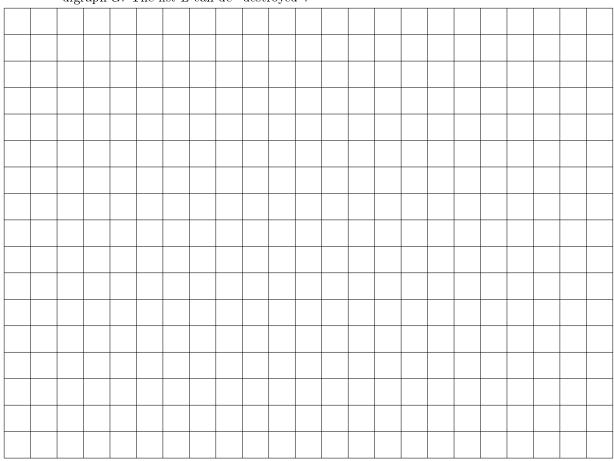
    (b) **Specifications:**
        The function `topologicalSort`(G) returns a topological sort for the acyclic digraph G,
        where all the vertices are reachable from the vertex 0.

(c) **Specifications:**

The function `is_tri_topo` $(G,\ L)$ tests if L can be a topological sort for the acyclic digraph G. The list L can de "destroyed".

Answers 5 (**What does it do?** − *4 points*)

1. Result returned by `build`(G_3):

	0	1	2	3	4	5	6	7	8
V									

2. The function `what`

   (a) `what`(G_3) returns:

   (b) `what`(G) represents:

   (c) Property of the digraph G so that `what`(G) does not "crash"?