Last name	
First name	
Group	

Grade	

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

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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?

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

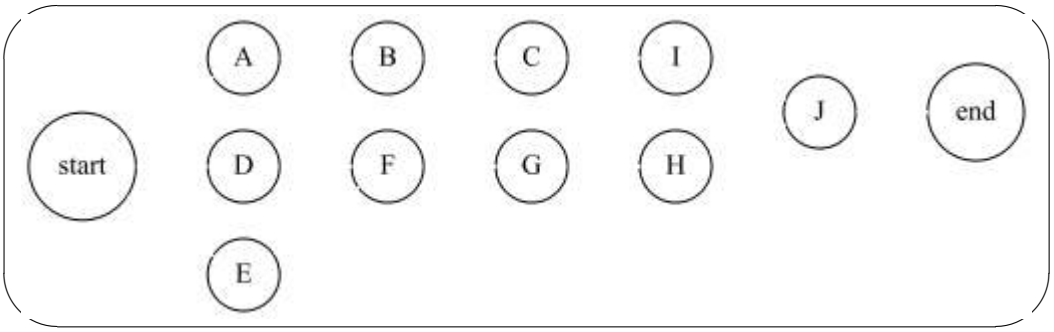
Answers 3 **(Bipartite graph (Graphes bipartis) –** ***5 points*****)**

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"?