Last name		
First name	Grade	
Group		
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Algorithmics Undergraduate 2^{nd} year - S3 Final Exam #3 (P3) January 5, 2021 - 9 : 30 Answer Sheets

1	
2	
3	
4	
5	

Answers 1 (In the depth of the spanning forest -3 points)

1. Spanning forest and extra-edges for the depth-first search of the graph in figure 1:

2. Meeting orders in prefix **pref** and suffix **suff**:

	0	1	2	3	4	5	6	7	8	9	10
\mathbf{pref}											
\mathbf{suff}											

Answers 2 (Union-Find – 4 points)

1. Nu	1. Number of vertices of each connected component:														
C_1	:		_	C_2 : C_3 :											
2. Edg	2. Edges to add:														
	3. Among the following chains, which can not exist in G ? $3 \leftrightarrow 7$ $11 \leftrightarrow 6$ $0 \leftrightarrow 13$ $4 \leftrightarrow 9$														
4. <i>p</i> a	4. p after adding the edge 7 – 4:														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	
p															

Answers 3 (Distance from start -5 points)

Specifications: dist_range(G, src, dmin, dmax) returns the list of vertices that are at a distance between dmin and dmax from the vertex src in the graph G (with $0 < dmin \le dmax$).

Answers 4 (Get cycle - 5 points)

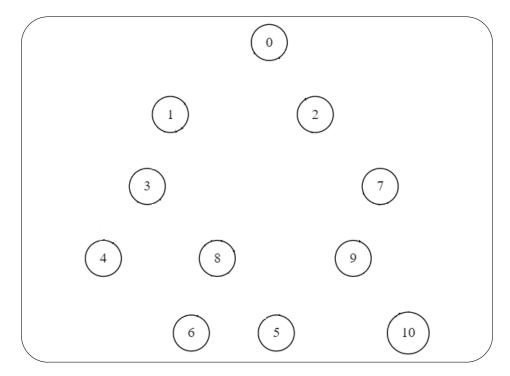
Specifications:

the function $get_cycle(G)$ returns a cycle of the undirected graph G, an empty list if G is acyclic.

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Answers 5 (What is this? - 3 points)

1. The built graph (NG):



- 2. For each vertex s, during the traversal:
 - (a) What does D[s] represent?

(b) What does P[s] represent?