Name:

Advanced Programming, II Semester, 2011–2012

Quiz 3, 8 March 2012

Answer all questions in the space provided. Use the reverse for rough work, if any.
Don't forget to fill your name!

1. Let $G = (V, E)$ with $|V| = n$ and $|E| = m$. What is the complexity of:

   (a) BFS using an adjacency matrix representation of G. $O(n^2)$

   (b) BFS using an adjacency list representation of G. $O(n + m)$

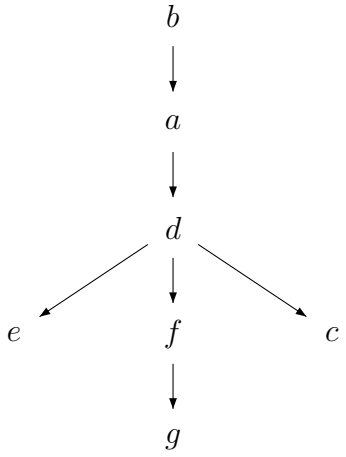
   (c) DFS using an adjacency matrix representation of G. $O(n^2)$

   (d) DFS using an adjacency list representation of G. $O(n + m)$

   (2 marks)

2. Given the following data about DFS on a directed graph, reconstruct the DFS tree.

Vertex	a	b	c	d	e	f	g
Pre(v)	1	0	9	2	3	5	6
Post(v)	12	13	10	11	4	8	7



3. Here are three non-tree edges in the graph of the previous question. Classify them as forward/backward/cross.

   (a) (c, b) — backward edge
   (b) (f, e) — cross edge
   (c) (d, g) — forward edge

   (3 marks)