Name:

Advanced Programming, II Semester, 2014–2015

Quiz 3, 11 March 2015

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 worst-case 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. $O(n^2)$

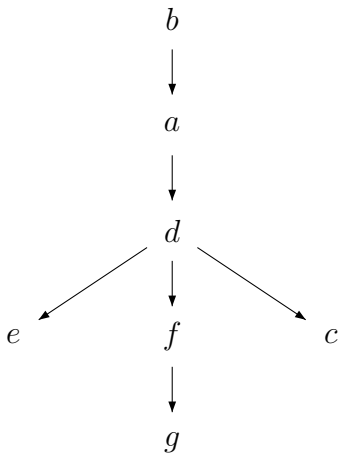
   (d) DFS using an adjacency list representation of G. $O(n + m)$

   (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
Entry(v)	2	1	10	3	4	6	7
Exit(v)	13	14	11	12	5	9	8

(5 marks)



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)