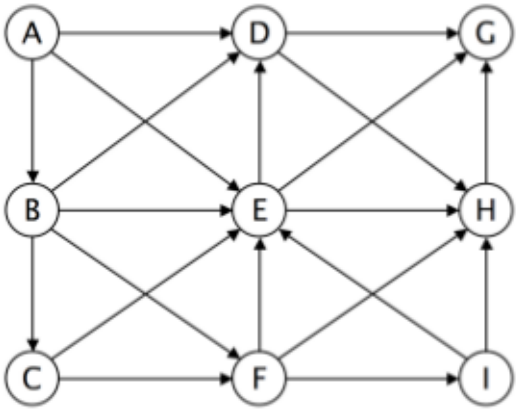
Homework 13

1. Spring 2008 Final Questions 1a and 1b

Consider the following directed graph.



A. Run *depth-first search*, starting at vertex A. Assume the adjacency lists are in lexicographic order, e.g., when exploring vertex E, consider E-D before E-G or E-H. Complete the list of vertices in *preorder* (the order they are first discovered by DFS).

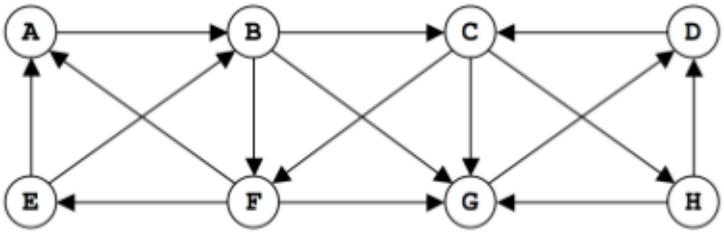
A B C E D G H F I

B. Run *breadth-first search*, starting at vertex A. Assume the adjacency lists are in lexicographic order. Complete the list of vertices in the order in which they are enqueued.

A B D E C F G H I

2. Fall 2008 Final Questions 1a and 1b

Run *depth-first search* on the digraph below, starting at vertex A. As usual, assume the adjacency sets are in lexicographic order, e.g., when exploring vertex F, the algorithm considers the edge $F \to A$ before $F \to E$ or $F \to G$.



A. Complete the *preorder* of the vertices (the order in which the vertices are first visited).

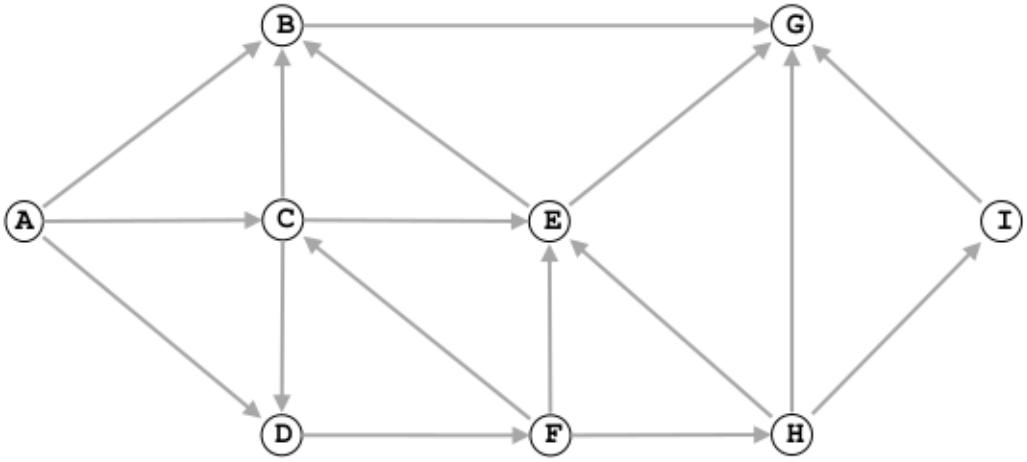
A B C F E G D H

B. Complete the *postorder* of the vertices (the order in which the vertices are last visited).

E G D F H C B A

3. Fall 2010 Final Question 3a

Run *depth-first search* on the digraph below, starting at vertex A. Assume the adjacency lists are in sorted order: for example, when exploring vertex F, the algorithm considers the edge $F \to C$ before $F \to E$ or $F \to H$.



List the vertices in preorder and postorder.

preorder: A B G C D F E H I
postorder: G B E I H F D C A