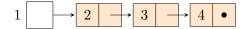
CIS 3223 Homework 5

Name:

Dr Anthony Hughes

Temple ID (last 4 digits:

Covert the following edge list of the undirected graph G given in s-t format to an adjacency list using an array linked list.



What are the advantages and disadvantages of using a linked list?

Advantages:

Disadvantages:

Perform a dfs on the following undirected graph G = (V, E) starting at vertex A; use the ordering given in the adjacency list representing E.

Push neighbors onto the stack in reverse order.

$$V = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$E\{1\} = [2, 7]$$

$$E{2} = [2, 3, 4]$$

$$E{3} = [2, 4]$$

$$E{4} = [2, 3]$$

$$E{5} = [6, 8]$$

$$E\{6\} = [5, 7]$$

$$E\{7\} = [1, 6]$$

$$E{8} = [5, 9, 10]$$

$$E{9} = [8, 10]$$

$$E\{10\} = [8, 9]$$

parent stack pre post

parent										
pre										
post										
vertex	1	2	3	4	5	6	7	8	9	10

Draw the resulting spanning tree of G (horizontally) consisting of the **tree edges(red)**. Add pre/post numbers.

Perform a dfs on the following digraph G = (V, E); whenever there is a choice of vertices, pick the one that is alphabetically first (so start with vertex a). $V = \{a, b, c, d, e, f, g, h\}$ Adjacency list E: $E\{a\} = [b, d]$ Data: $E\{b\} = [c]$ parent \mathbf{a} $E\{c\} = [a]$ 1 pre $E\{d\} = [c, g]$ post $E\{e\} = [a, f, h]$ \mathbf{f} b \mathbf{d} h vertex \mathbf{c} \mathbf{e} \mathbf{a} \mathbf{g} $E\{f\} = [g]$ $E\{g\} = [c, h]$ $E\{h\} = []$. non-tree parent vertex tree pre post Non-tree edge analysis Non-tree edge analysis

Draw a spanning tree (horizontally), include pre/post numbers and **back** edges (black).