College of Computer Science
Northeastern University
COM 1721: Freshman Honors Seminar

Fall 2002
Handout 4
8 October 2002

Quiz 1

Name: ________________________________

1. Recall that a directed graph is *strongly connected* if there is a path from every node to every other node in the graph. Also, the *diameter* of a strongly connected graph is the maximum distance between any two nodes in the graph. Recall that the *distance* from one node u to another node v is the number of hops in the shortest path from u to v.

(a) Draw a strongly connected directed graph with 6 nodes that has the smallest possible diameter.

(b) Draw a strongly connected directed graph with 6 nodes that has the largest possible diameter. For **extra credit**, argue why your graph has the largest possible diameter among all strongly connected graphs of 6 nodes.

2. Give brief definitions of the terms *web crawler* and *PageRank* that appear in the article on Google that was assigned as reading last week.