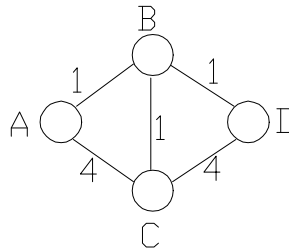# 2.993: Principles of Internet Computing
Homework #7
Due: 4/13/99

1. In the figure shown above, assume that link BA goes down, so that B routes A through C. If B uses split horizon (explained in Lecture 14), it will report to C an infinite distance to A, since B uses C to reach A. Similarly, D also reports to C an infinite distance to A. Now, suppose the CA link goes down.

   (a) What distance to A will C report to B and D?
   (b) What is the distance to A that D reports to B?
   (c) What does B think the shortest path to C is?
   (d) What does B tell C about its distance to A?
   (e) What is C's route to A now?
   (f) What does C tell D?
   (g) When does this cycle end?

2. The traffic matrix shown below represents the number of packets waiting at the input queues of a switch to be transferred to their corresponding output ports. Determine the minimum number of time-slots required to transfer all packets from the input ports to the output ports.

   Output

   Input

	1	2	3	4
1	2		3	1
2		4	3	
3	3			2
4		1		4

3. Draw a 16-by-16 Banyan switching fabric. Trace how packets with labels: 0100, 1010, and 1110, presented to the 1st, 5th, and 12th input ports will be routed through the fabric.