

Introduction to Networking

Homework 3

Handed out: Wednesday, February 12, 2003

Due back: Wednesday, February 26 (at the start of class)

Notes: To be done individually

If you don't have the textbook, please see us for a copy of the problems

1. Textbook problem 4-1
2. Textbook problem 4-3
3. Textbook problem 4-4 (a), (c), (h)
4. Textbook problem 4-5
5. Textbook problem 4-6
6. Textbook problem 4-7
7. Textbook problem 4-8
8. Textbook problem 4-13
9. Textbook problem 4-16
10. Textbook problem 4-20
11. Textbook problem 4-25

Extra Credit Problems

Textbook problem 4-11

Read about the Floyd-Warshall algorithm for all-pairs shortest paths. What is the $O()$ of this algorithm? How does it compare to the $O()$ of Dijkstra? Consider the network of textbook problem 4-3. What would the cost of computing all pairs of shortest paths be using Dijkstra? How about using Floyd-Warshall? What might a distributed version of Floyd-Warshall look like (you are **not** being asked to design such an algorithm)? Would Floyd-Warshall be useful in computing multicast routing trees?

What is a Virtual Private Network (or VPN)?

Discuss how NAT can help to secure a home network. Hint: by default, are server processes (i.e., processes doing passive opens) visible to the outside world?

What is a stateful inspection firewall, and how is it related to a NAT box?