Homework 0 of CS4550, Winter 2003

You may discuss a particular solution approach to a homework problem with your classmates. However, you are expected to develop the answers independently.
Plagiarism will not be tolerated.

Due date: January 13 at beginning of class

1. (10 points) What's the difference between a POP and a NAP?
Answer: A POP (Point of Presence) is a router used by an ISP to peer with other ISPs (1-to-1 links). An NAP (Network Access Point) is owned and operated by a third party telecommunication company or an Internet backbone provider. NAPs switch traffic among many ISPs (many-to-many).

2. (10 points) What are the two types of services that the Internet provides to its applications? What are some characteristics of each of these services?
Answer: (1) connection-oriented reliable service with connection management, flow control, congestion control, and error control, and (2) connection-less best-effort service with none of above capabilities.

3. (10 points) Browse the Web site for the textbook (http://www.aw.com/kurose-ross). Compare the performance of message switching and packet switching using the Java Applet provide in Chapter 1 of the on-line book.
   1. Set the message size to be 15 kbits. Set the packet size to be 3 kbits for the case of packet switching. Perform 4 experiments and input the results into the following table.

End-to-end latency (seconds)

	Assuming no propagation delay	With propagation delays turned on for L1, L2 and L3
Message switching (Packet size = 15)	**11.25**	**14.25**
Packet switching (Packet size = 3)	**5.25**	**8.25**

   2. Explain why the effects of propagation delay don't multiply even though multiple packets are sent in the case of packet switching.
   Answer: Because the packet transmissions are pipelined.