Homework-1

1. Imagine that you have trained your St. Bernard, Bernie, to carry a box of three 8-mm tapes instead of a flask of brandy. (When your disk fills up, you consider that an emergency.) These tapes each contain 7 gigabytes. The dog can travel to your side, wherever you may be, at 18 km/hour. For what range of distances does Bernie have a higher data rate than a transmission line whose data rate (excluding overhead) is 150 Mbps? How does your answer change if (i) Bernie's speed is doubled; (ii) each tape capacity is doubled; (iii) the data rate of the transmission line is doubled.

2. What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols?

3. In some networks, the data link layer handles transmission errors by requesting that damaged frames be retransmitted. If the probability of a frame's being damaged is *p*, what is the mean number of transmissions required to send a frame? Assume that acknowledgements are never lost.

Homework-2

4. What is the main difference between TCP and UDP?

5. How long was a bit in the original 802.3 standard in meters? Use a transmission speed of 10 Mbps and assume the propagation speed in coax is 2/3 the speed of light in vacuum.

6. List one advantage and one disadvantage of having international standards for network protocols.

7. Which layers are common in the OSI model and TCP/IP model?