Electrical, Computer, and Systems Engineering

ECSE 4760: Computer Communication Networks

Homework set 6. Due Dates:

For On-Campus and Live Students Due Tuesday, November 30th
For Tape-delayed Students Due Friday, December 5th

Notes:

1. Be brief.
2. **SUBMIT THIS HOMEWORK USING WEBCT DROP BOX.**
3. 4000 level students need to answer only Reading Assignment question 1 and Homework Problems 1, 2, 3, 4 and 5.
4. 6000 level students need to answer all questions.

Reading Assignment

1. Read and summarize Chapter 5, Sections 5.1-5.7 of the Kurose/Ross textbook. Your summary should not exceed two pages. This is intended to help you catch up with your reading of the textbook. (15 pts)

Homework Problems

1. ALOHA and Slotted ALOHA: Do Problems 8 (part a and b) and 9 in Chapter 5, page 474 of the Kurose/Ross textbook. (25 points)

2. Throughput of a Broadcast Channel with Polling: Do Problem 11 in Chapter 5, page 474-475 of the Kurose/Ross textbook. (20 points)

3. CSMA/CD design for 10 Mbps and 100 Mbps: Suppose the maximum round trip propagation delay (RTPD) for Ethernet is 46.4 microseconds. This yields a minimum packet size of 512 bits (or 64 bytes), i.e., 464 bits corresponding to propagation delay, plus 48 bits of jam signal. What happens to the minimum packet size if the propagation delay (RTPD) is held constant and the signaling rate rises to 100Mbps ? What should the maximum RTPD be if we would like to keep the minimum packet size of 512 bits (for compatibility reasons). (20 pts)

4. **Concepts: CDMA** Do Problem 5 in Chapter 5, pg 474 of the Kurose/Ross textbook. (15 points)

5. **Concepts: ARP** Do Review Question 10 of Chapter 5, pg 473 of the Kurose/Ross textbook. Additional question: Why is ARP invoked even if IP determines that the destination node is not directly connected ? (15 points)

Additional question for 600 level students

6. Do Problem 17, Chapter 5, pg 476-477 of the Kurose/Ross textbook. (50 points)