CSUS
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE
Department of Computer Science

CSc/CpE 138 Computer Networks and Internets
Spring 2017
Ghansah

Assignment #1 (Intro to Computer Networks)
Due:

Do the following problems in Chapter 1 of Kurose and Ross Text (6th Edition)

Q1 (**R11 modified**). Suppose there is exactly TWO packet switches between a sending host, *A* and a receiving host, *B*. The transmission rates on the three links between hosts A and B are *1 Gbps, 10 Gbs,* and *100 Mbps* respectively. Assuming that the switch uses store-and-forward packet switching, what the total end-to-end delay to send a packet of length *100 GB*? (Ignore queueing, packet processing, but INCLUDE PROPAGATION DELAY (*1 ms*) which is the same on all three links)

Q2. Repeat question 1 assuming the switch uses circuit switching. Let *10ms* be the connection set-up time.

Q3 (R12). a) What advantage does a circuit-switched network have over a packet-switched network? b) What advantage does TDM have over FDM in a circuit-switched network?

Q4 (P24). Suppose you would like to urgently deliver 10TB data from Boston to Los Angeles. You have available a 1 Gbps dedicated link for data transfer. Would you prefer to transmit the data via this link or instead use FedEx overnight delivery? Assume overnight delivery means 12 hours. Give reasons for your answer.

Q5 (P6 a, b, and c). Network Performance Problem. This elementary problem begins to explore propagation delay and transmission delay, two central concepts in data networking. Consider two hosts, A and B, connected by a single link of rate R bps. Suppose that the two hosts are separated by m meters, and suppose the propagation speed along the link is s meters/sec. Host A is to send a packet of size L bits to Host B.

a. Express the propagation delay , dprop, in terms of m and s.
b. Determine the transmission time of the packet, dtrans, in terms of L and R.
c. Ignoring processing and queueing delays, obtain an expression for the end-to-end delay.

In the following Traceroute Problems if the given domain name does not work use a different one.

Q6. (P18-Traceroute problem)

Q7. (P19- Traceroute problem using traceroute.org Website). Please note that not all the links in the various countries listed work as advertised. If any link does not work use a

different one. Also, you are free to use a different website other than treaceroute.org to solve this problem but you should clearly identify which website you used.
Q8. R28. Suppose Alice and Bob are sending packets to each other over a computer network. Suppose Trudy positions herself in the network so that she can capture all the packets sent by Alice and send whatever she wants to Bob; she can also capture all the packets sent by Bob and send whatever she wants to Alice. List some of the malicious things Trudy can do from this position
Q9. R20

SUBMISSION: Electronic Submission Only (**IN SacCT according to the format given in the course syllabus**)! No paper submission will be accepted.