CS4392/5376: Computer Networks/Communication Networks
Summer II 2021

Review #1 Solution

- Full name only: _____
- Release date: July 16th, 2021 (Friday)
- Due date: **July 21st, 2021 (Wednesday) before midnight, 11:59 PM**
- Total 5 points

1. [True or False] The *alternating-bit* protocol is the same as the *GBN* protocol with a sender and receiver window size of 1.

[1 pt]

- True

2. [True or False] With the *SR*, it is possible for the sender to receive an ACK for a packet that falls outside of its current window.

[1 pt]

- True
- True. Suppose the sender has a window size of 3 and sends packets 1, 2, 3 at t0. At t1 (t1 > t0) the receiver ACKS 1, 2, 3. At t2 (t2 > t1) the sender times out and resends 1, 2, 3. At t3 the receiver receives the duplicates and re-acknowledges 1, 2, 3. At t4 the sender receives the ACKs that the receiver sent at t1 and advances its window to 4, 5, 6. At t5 the sender receives the ACKs 1, 2, 3 the receiver sent at t3. These ACKs are outside its window.

3. Host A and B are communicating over a TCP connection, and Host B has already received from A all bytes up through byte 126. Suppose Host A then sends two segments to Host B back-to-back. The first and second segments contain 80 and 40 bytes of data, respectively. In the first segment, the sequence number is 127, the source port number is 302, and the destination port number is 80. Host B sends an acknowledgment whenever it receives a segment from Host A.

   a. In the second segment sent from Host A to B, what are the sequence number, source port number, and destination port number?

[1 pt]

- In the second segment from Host A to B, the sequence number is 207, source port number is 302 and destination port number is 80.

   b. If the first segment arrives before the second segment, in the acknowledgement of the first arriving segment, what are the acknowledgment number, the source port number, and the destination port number?

[1 pt]

- If the first segment arrives before the second, in the acknowledgement of the first arriving segment, the acknowledgement number is 207, the source port number is 80 and the destination port number is 302.

   c. If the second segment arrives before the first segment, in the acknowledgment of the first arriving segment, what is the acknowledgement number?

[1pt]

- If the second segment arrives before the first segment, in the acknowledgement of the first arriving segment, the acknowledgement number is 127, indicating that it is still waiting for bytes 127 and onwards.