Worksheet 8

1. True or false?
   a. Host A is sending Host B a large file over a TCP connection. Assume Host B has no data to send Host A. Host B will not send acknowledgments to Host A because Host B cannot piggyback the acknowledgments on data.
   b. The size of the TCP rwnd never changes throughout the duration of the connection.
   c. Suppose Host A is sending Host B a large file over a TCP connection. The number of unacknowledged bytes that A sends cannot exceed the size of the receive buffer.
   d. Suppose Host A is sending a large file to Host B over a TCP connection. If the sequence number for a segment of this connection is m, then the sequence number for the subsequent segment will necessarily be m + 1.
   e. The TCP segment has a field in its header for rwnd.
   f. Suppose that the last SampleRTT in a TCP connection is equal to 1 sec. The current value of TimeoutInterval for the connection will necessarily be ≥ 1 sec.
   g. Suppose Host A sends one segment with sequence number 38 and 4 bytes of data over a TCP connection to Host B. In this same segment the acknowledgment number is necessarily 42.

2. Suppose Host A sends two TCP segments back to back to Host B over a TCP connection. The first segment has sequence number 90; the second has sequence number 110.
   a. How much data is in the first segment?
   b. Suppose that the first segment is lost but the second segment arrives at B. In the acknowledgment that Host B sends to Host A, what will be the acknowledgment number?

3. Consider the Telnet example we discussed. A few seconds after the user types the letter 'C' (with seq=42, ACK=79), the user types the letter 'R.' After typing the letter 'R,' how many segments are sent, and what is put in the sequence number and acknowledgment fields of the segments?

4. TCP connection management.
   a. A server process in Host B has a welcoming socket at port 977. What will trigger the server process to create a connection socket?
   b. How many bytes is a TCP SYN segment? What flags are set in a TCP SYN segment?
   c. What must happen for Host B to complete this connection?