**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.

False

b. The size of the TCP rwnd never changes throughout the duration of the connection.

False

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.

True

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.

False

e. The TCP segment has a field in its header for rwnd.

True

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.

False. Not necessarily >=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.

False

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?

Data in first segment = 110-90 = 20

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?

The first segment of sequence number. 90

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?

3 Segments. .

Sequence Number ACK

Segment 1: 43 80

Segment 2: 80 44

Segment 3: 44 81

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?

TCP SYN packet with port 977. It will trigger the server to create a connection socket.

b. How many bytes is a TCP SYN segment? What flags are set in a TCP SYN segment?

Bytes: 20 Bytes (header only)

Flags: SYN bit set to 1

c. What must happen for Host B to complete this connection?

SYN bit set to 1.

Receive ACK bit.