

# Week 6. Review Questions

## SECTION 3.5

R14. True or false?

- 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.
- The size of the TCP rwnd never changes throughout the duration of the connection.
- 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.
- 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  $m + 1$ .
- The TCP segment has a field in its header for rwnd.
- 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.
- 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.

R15. 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.

- How much data is in the first segment?
- 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?

R16. Consider the Telnet example discussed in Section 3.5. A few seconds after the user types the letter 'C,' 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?

## SECTION 3.7

R17. Consider two hosts, A and B, transmitting a large file to a server C, over a bottleneck link with rate  $R$ . To transfer the file, the hosts use TCP with the same parameters (including MSS and RTT) and start their transmissions at the same time. Host A uses a single TCP connection for the entire file, while Host B uses 9 simultaneous TCP connections, each for a portion (i.e., a chunk) of the file. What is the overall transmission rate achieved by each host at the beginning of the file transfer? Is this situation fair?

R18. True or false? Consider congestion control in TCP. When the timer expires at the sender, the value of ssthresh is set to one half of its previous value.