# Quiz 6

**Due** Apr 18 at 2:15pm **Points** 6 **Questions** 4
**Available** Apr 18 at 2pm - May 3 at 9:15am **Time Limit** 15 Minutes

# Instructions

Please provide as many details as possible, so we may give your partial credits (in case the final answer is not correct).

## Attempt History

| | Attempt | Time | Score |
|---|---|---|---|
| **LATEST** | Attempt 1 | 8 minutes | 6 out of 6 |

Correct answers are hidden.

Score for this quiz: **6** out of 6
Submitted Apr 18 at 11:08pm
This attempt took 8 minutes.

### Question 1 — 2 / 2 pts

**If a TCP host wants to send out a file containing 100,000 bytes. Assuming the MSS is 500 bytes, then what is the acknowledgement number received by the sender in response to the 5$^{th}$ segment it sends out (assume perfect network): (Suppose the first sequence number is 0.)**

Your Answer:

The sender starts with a sequence number of 0. The acknowledgement number in the received ACK segment is always the next expected byte that the receiver is waiting for. After sending the 5th segment, the receiver has received a total of 5 * 500 = 2500 bytes. Therefore, the

acknowledgement number received by the sender in response to the 5th segment it sends out will be 2500, as the receiver is now expecting the next byte with sequence number 2500.

## Question 2

2 / 2 pts

**Suppose Host A sends out two TCP segments to Host B. The first segment has sequence number 90 and the second segment has sequence number 110:**

**a) How much data is in the first segment? (1 point)**

**b) Suppose the first segment gets lost and the second segment arrived at Host B. In the acknowledgement sent back by Host B, what will be the acknowledgement number? (1 point)**

Your Answer:

a) To determine the amount of data in the first segment, we can look at the difference between the sequence numbers of the two segments. Amount of data in the first segment = (110 - 90) = 20 bytes.

b) If the first segment gets lost and the second segment arrives at Host B, Host B will send an acknowledgement for the last in-order byte it received plus one. Since Host B hasn't received the first segment, it still expects data starting from sequence number 90. Therefore, the acknowledgement number sent back by Host B will be 90.

## Question 3

1 / 1 pts

**[Single choice] Besides retransmitting segments using timeout events, TCP also performs retransmissions in response to the duplicated ACKs. This is called TCP fast retransmission. Please describe under which condition below a TCP retransmission will be triggered. (1 point)**

- If sender receives 3 dup ACKs for any data
- If sender receives 3 dup ACKs for the same data
- If sender receives 2 dup ACKs for any data
- If sender receives 2 dup ACKs for the same data

## Question 4

1 / 1 pts

**[Single choice] When a TCP fast retransmission is triggered, what segment(s) will be retransmitted? (1 point)**

- The unacknowledged segment with the largest sequence number;
- The acknowledged segment with the smallest sequence number;
- The unacknowledged segment with the smallest sequence number;
- All the unacknowledged segments;

Quiz Score: **6** out of 6