Homewo

- Due Apr 24 at 11:59pm
- Points 7
- Questions 7
- Available Apr 14 at 10am - May 1 at 11:59pm
- Time Limit None
- Allowed Attempts 5

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	40 minutes	7 out of 7

⚠ Correct answers are hidden.

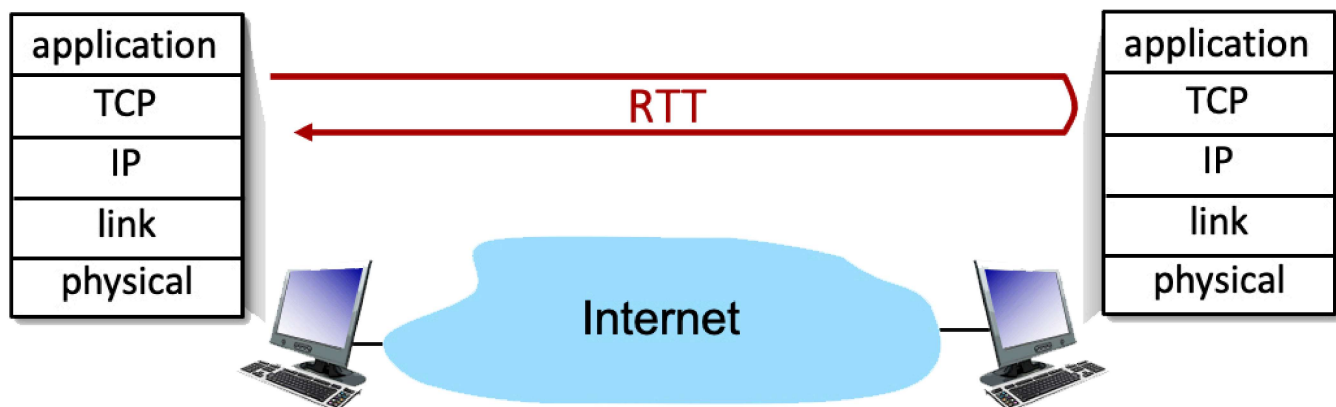Score for this attempt: 7 out of 7
Submitted Apr 24 at 1:02pm
This attempt took 40 minutes.

Question 1
1 / 1 pts

Suppose that TCP's current estimated values for the round trip time (estimatedRTT) and deviation in the RTT (DevRTT) are 360 msec and 40 msec, respectively. The next measured values of the RTT is 430.

Compute TCP's new value of DevRTT, estimatedRTT, and the TCP timeout value after the measured RTT value is obtained. Use the values of $\alpha = 0.125$, and $\beta = 0.25$.
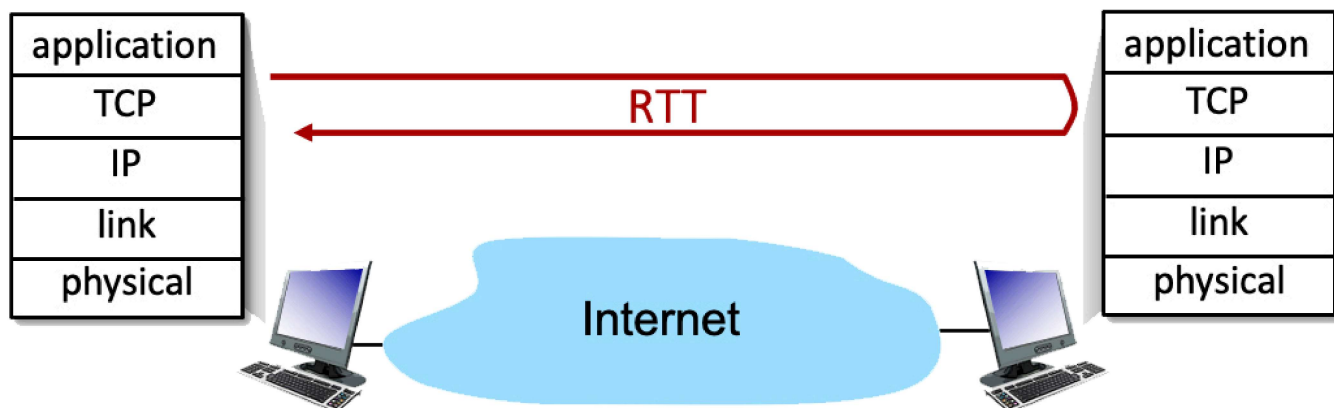
○ estimatedRTT:
○ estimatedRTT:

○ estimatedRTT: 368.05 msec DevRTT: 40.75 msec Timeout: 531.05 msec

○ estimatedRTT: 358.97 msec   DevRTT: 66.01 msec   Timeout: 623.01 msec

○ estimatedRTT: 378.66 msec DevRTT: 41.04 msec Timeout: 542.80 msec

○ estimatedRTT: 368.05 msec DevRTT: 47.50 msec Timeout: 558.05 msec

○ estimatedRTT: 366.25 msec DevRTT: 42.50 msec Timeout: 536.25 msec

○ estimatedRTT: 367.50 msec DevRTT: 45.00 msec Timeout: 547.50 msec

○ estimatedRTT: 372.97 msec DevRTT: 45.31 msec Timeout: 554.22 msec

◉ estimatedRTT: 368.75 msec DevRTT: 47.50 msec Timeout: 558.75 msec

○ estimatedRTT: 373.90 msec DevRTT: 44.31 msec Timeout: 515.15 msec

Question 2

1 / 1 pts

Suppose that TCP's current estimated values for the round trip time (estimatedRTT) and deviation in the RTT (DevRTT) are 360 msec and 40 msec, respectively. The next measured values of the RTT is 430.

Compute TCP's new value of DevRTT, estimatedRTT, and the TCP timeout value after the measured RTT value is obtained. Use the values of $\alpha = 0.115$, and $\beta = 0.025$.

○ estimatedRTT: 378.66 msec DevRTT: 48.58 msec Timeout: 572.98 msec

○ estimatedRTT: 368.75 msec DevRTT: 47.50 msec Timeout: 558.75 msec

○ estimatedRTT: 367.50 msec DevRTT: 45.00 msec Timeout: 547.50 msec

◉ estimatedRTT: 368.05 msec DevRTT: 40.75 msec Timeout: 531.05 msec

○ estimatedRTT: 373.90 msec DevRTT: 44.31 msec Timeout: 515.15 msec

○ estimatedRTT: 366.25 msec DevRTT: 42.50 msec Timeout: 536.25 msec

○ estimatedRTT:

○ estimatedRTT:

○ estimatedRTT: 372.97 msec DevRTT: 45.31 msec Timeout: 554.22 msec

○ estimatedRTT: 368.05 msec DevRTT: 47.50 msec Timeout: 558.05 msec

○ estimatedRTT: 370.10 msec DevRTT: 46.24 msec Timeout: 555.07 msec

⋮⋮

Question 3

1 / 1 pts

What does the reception of three duplicate acknowledgments (3DA) primarily indicate to a TCP sender about the network and the transmitted data?

○ It signals a temporary disruption in the routing path, and the sender should try an alternative path

○ It strongly suggests that there is severe congestion in the network, and the sender should drastically reduce its rate

◉ It is a reliable indication that a specific segment has been lost but subsequent segments have likely been received

○ It implies that the receiver is overwhelmed and cannot process the incoming data in order

⋮⋮

Question 4

1 / 1 pts

What is the primary purpose of the retransmission timer in TCP?

◉

To provide an upper bound on how long a sender will wait for an acknowledgment (ACK) before assuming a segment was lost

○ To signal the receiver about the sender's current sending rate

○ To ensure that the receiver processes packets in the order they were sent

○ To regulate the growth of the congestion window during the slow start phase

⋮⋮

Question 5

1 / 1 pts

Besides reducing the congestion window to one MSS, what is a fundamental aspect of how TCP Tahoe reacts upon detecting a packet loss due to a timeout?

○ It signals the application layer about the detected loss and potential data corruption.

◉ It generally assumes a more severe network congestion scenario compared to a 3DA event

○ It immediately enters a fast recovery phase to aggressively resume transmission

○ It sends a probe packet to the receiver to assess the current network conditions

⋮⋮

Question 6

1 / 1 pts

When a TCP receiver receives a data segment with a sequence number higher than expected, what action does it typically take that contributes to the eventual generation of triple duplicate ACKs by the receiver?

◉

It acknowledges the highest in-order sequence number it has received so far (sending a duplicate ACK for the expected sequence number)

○ It sends a negative acknowledgment (NACK) indicating the missing sequence number

○ It discards the out-of-order segment immediately without acknowledging

○

It buffers the out-of-order segment and waits for the missing segment without sending any immediate acknowledgment

Question 7

1 / 1 pts

Scenario: Consider a TCP connection where the sender and receiver communicate over a link with a 20 ms round-trip delay. The sender's initial sequence number is **3000**, and it sends an initial window of **3 segments**, each segment containing **600 bytes** of data. All three segments are transmitted back-to-back at time **t = 0 ms**:

1. Segment 1 has sequence numbers **[3000 : 3599]**

2. Segment 2 has sequence numbers **[3600 : 4199]**

3. Segment 3 has sequence numbers **[4200 : 4799]**

Suppose **Segment 2** is lost in the network, while Segments 1 and 3 arrive at the receiver. Assume each arriving segment is processed immediately upon arrival.

- Segment 1 arrives at the receiver at **t = 10 ms**, and the receiver sends an ACK for bytes up to **3599**.

- Segment 3 arrives at **t = 11 ms**, but it has sequence numbers **[4200 : 4799]**, which are "out of order." What **ACK number** does the receiver send to the sender upon receiving Segment 3 out of order?

3,600

Quiz Score: 7 out of 7