Lab6

Q1

A TCP sender is just about to send a segment of size 100 bytes with sequence number 1234 and ack number 436 in the TCP header. What is the highest sequence number up to (and including) which this sender has received all bytes from the receiver?

Answer: 1334 because the size of the segment is 100 and the sequence number is 1234 so 100 + 1234.

Q2

A TCP sender is just about to send a segment of size 100 bytes with sequence number 1234 and ack number 436 in the TCP header. Is it possible that the receiver has received byte number 1335?

Answer: No

Q3

A TCP sender maintains a SmoothedRTT of 100ms. Suppose the next SampleRTT is 108ms. Which of the following is true of the sender?

Answer: Whether it increases the timeout depends on the deviation

Q4

A TCP sender maintains a SmoothedRTT of 100ms and DevRTT of 8ms. Suppose the next SampleRTT is 108ms. What is the new value of the timeout in milliseconds? (Numerical question)

Answer:

Estimated = 0.125 \* 108 + 0.875 \* 100 = 101ms

DevRTT = 0.25 \* 108 – 101 + 0.75 \* 8 = 7.75ms

Timeout Interval = 101 + 4 \* 7.75 = 132ms

Q5

Which is the purpose of the receive window field in a TCP header?

Answer: Flow control , to control the amount od data sent by the TCP

Q6

Roughly how much time does it take for both the TCP sender and receiver to establish connection state since the connect() call?

Answer: 1.5RTT

Q7

TCP uses cumulative ACKs like Go-back-N, but does not retransmit the entire window of outstanding packets upon a timeout. What mechanism lets TCP get away with this?

Answer: Receive window-based flow control

Q8

A sender that underestimates the round-trip time of a connection may unnecessarily induce a TCP timeout

Answer: True

Q9

Which of the following services use TCP?

Answer: SMTP, HTTP, FTP

Q10

Ben Bitdiddle home network connection can upload at 125,000 bytes per second.His router has a 00,000 byte first in first out buffer for packets awaiting transmission.

If the buffer is completely full, how long will it take for the buffer to clear?

Answer:

1 seconds = 125,000

125,000 / 100 = 1,250 per 1 ms

100,000 / 1,250 = 80 ms

Final answer = 0.8 seconds

Q11

Ben Bitdiddle home network connection can upload at 125,000 bytes per second. His router has a 00,000 byte first in first out buffer for packets awaiting transmission.

At time 0, Ben’s client starts sending 1,000-byte packets at 150 packets/s. When will the first packet be dropped by the router?

Answer: 4 seconds

Q12

Alyssa P. Hacker and Ben Bitdiddle communicate over a kink with a capacity of 100 pkts/sec. The latency (RTT) on this link is 100 ms.

If a sliding window protocol with acknowledgement packets is used, and there is a FIXED window size of 4 packets, what is the maximum rate of traffic on the link?

Answer: 40 pkts/s