**quiz4**

**Q1**. A transport layer protocol implements timer to address the loss problem. The timer cannot expire if there is no loss. True or False? False

**Q2**. A reliable transport protocol must implement both ACK and NAK if it wants to address bit errors as well as packet loss problems. True or False?

False

**Q3**. Stop-and-Wait: B

A. receiver buffers packets

B. has only 1 bit for the sequence number

C. requires a large sequence number space

D. requires more than 1 bit for the sequence number

**Q4**. Stop-and-Wait cannot provide reliability. True or False? false

**Q5**. For short distances, Stop-and-Wait is always efficient, but it fails to support high throughput only when the distance between the client and server is large. True or False?

False

**Q6**. Pipelining increases throughput (compared to stop-and-wait) linearly with the window size (number packets the sender can have in the pipeline without having to stop and wait for the ACK). True or False?

true

**Q7**. In Go-Back-N, the sender window cannot be equal to the sequence number space. True or False?

**True**

**Q8**. For a 4-bit sequence number field in the packet header, the maximum possible window size for Selective Repeat is C

A.15

B.16

C. 8

D. 7

E. 2(my answer)

**Q9**. To speed up file transfers, a Selective Repeat implementation is using a window size of 8. The sequence number field in the packet header must be at least B (my answer: D)

A. 8-bit long

B. 4-bit long

C. 3-bit long

D. 16-bit long

**quiz5**

**Q1**. TCP receiver may intentionally delay the acknowledgement of a correctly received packet. True or False? True

**Q2**. A TCP receiver receives an in-order segment with expected sequence number, but it has one other segment with pending ACK. Which of the following is a possible action for this receiver if it is using the delayed ACK mechanism? C

A. It sends 2 ACKs one after the other

B. It sends 3 ACKs one after the other

C. It sends one cumulative ACK acknowledging both segments

D. It sends a Duplicate ACK.

**Q3**. TCP is never allowed to retransmit unless there is a timeout. True or False? False

**Q4**. During slow start, congestion window increases: B

A. Linearly

B. Exponentially

C. Logarithmically

D. Does not grow

**Q5**. Maximum segment size (MSS) refers to the number of bytes in a TCP segment including its header. True or False? False, not include the TCP header

**Q6**. A TCP connection is using an MSS=1460 bytes. At the start of slow start, how many bytes the TCP sender can transmit without having to wait for ACK? B

A.1400

B. 1460

C.1500

D. 3000

**Q7**. A TCP sender could still reduce its window size even if there was no triple duplicate ACK or timeout. True or False? true?????????

Transport Layer (1) –

Questions

Q1) Is it possible for an application to enjoy reliable data transfer even when the application runs over UDP? If so, how?

Q2) Suppose that the UDP receiver computes the Internet checksum for the received UDP segment and finds that it matches the value carried in the checksum field. Can the receiver be absolutely sure that no bit errors have occurred? Explain. Would things be different with TCP?

Q3) Consider a reliable data transfer protocol that uses only negative acknowledgements. Suppose the sender sends data only infrequently. Would a NAKonly protocol be preferable to a protocol that uses ACKs? Why? Now suppose the sender has a lot of data to send and the end-to-end connection experiences few losses. In this second case, would a NAK-only protocol be preferable to a protocol that uses ACKs? Why?

Q4) In protocol rdt3.0, the ACK packets flowing from the receiver to the sender do not have sequence numbers (although they do have an ACK field that contains the sequence numbers of the packet they are acknowledging). Why is that the ACK packets do not require sequence numbers?

Q5) Which protocol – Go-Back-N or Selective-Repeat - makes more efficient use of network bandwidth? Why?

Q6) If the RTT from London to Cape Sydney is 120ms and all links in the network have a 155 Mbits/second data-rate, how much data can fit in the “pipe”? Hint: Bandwidth Delay Product. Express your answer in bytes.

Q7) Consider a TCP connection between Host A and Host B. Suppose that the TCP segments travelling from Host A to Host B have source port number x and destination port number y. What are the source and destination port numbers for the segments travelling from Host B to Host A?

Look at the graph in the Figure below that shows how the congestion window is changed over time for a TCP connection. Certain parts of the graph that are of extra interest have been marked with numbers. With the help of the graph, answer the following questions:

(a) What is the difference of the loss events happening at 1 and 2 in the figure? Explain why the effect on the size of the congestion window is different in the two cases.

the event 1 is triple dup ACK and 2 is timeout. In practice, congestion event 2 is much more serious

(b) What is the phase that TCP is in the circled segment marked by 3 called ?

slow start

(c) What is the phase that TCP is in the circled segment marked by 4 called?

AIMD additive increase multiplicative decrese

(d) Why is the congestion window increased more rapidly at 3 than at 4 ?

(e) Why are the peak values at 1 and 2 different ?

