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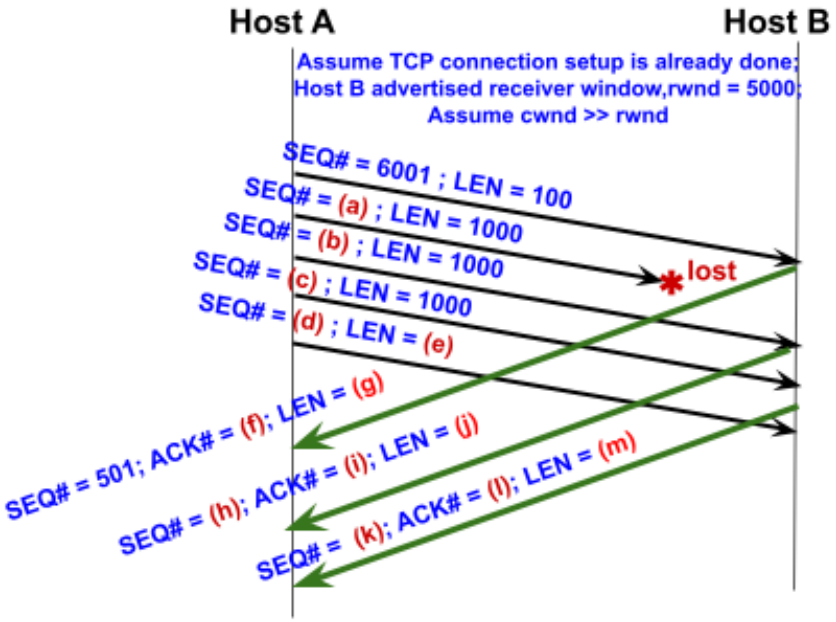
CSE232 Computer Networks (Quiz 2 solution)
Duration-30min, Full marks- 12

November 6, 2024

Q.1. Figure shows TCP communication between Host A and Host B. Assume connection setup is done and the receiver just advertised its window; ***RWND=5000***. Also, the current congestion window value (CWND) is much larger than RWND. Assume Go-back-N sliding window is used. Given these assumptions, fill in the blanks from 'a' to 'm' with appropriate values for sequence numbers (SEQ#), acknowledgment numbers (ACK#), and data length (LEN). ***Consider the maximum possible value while answering the question (e).*** **[6.5]**



Ans

(a) 6101 (b) 7101 (c) 8101 (d) 9101 (e) 1900

(f) 6101 (g) 0 (h) 501 (i) 6101 (j) 0 (k) 501 (l) 6101 (m) 0

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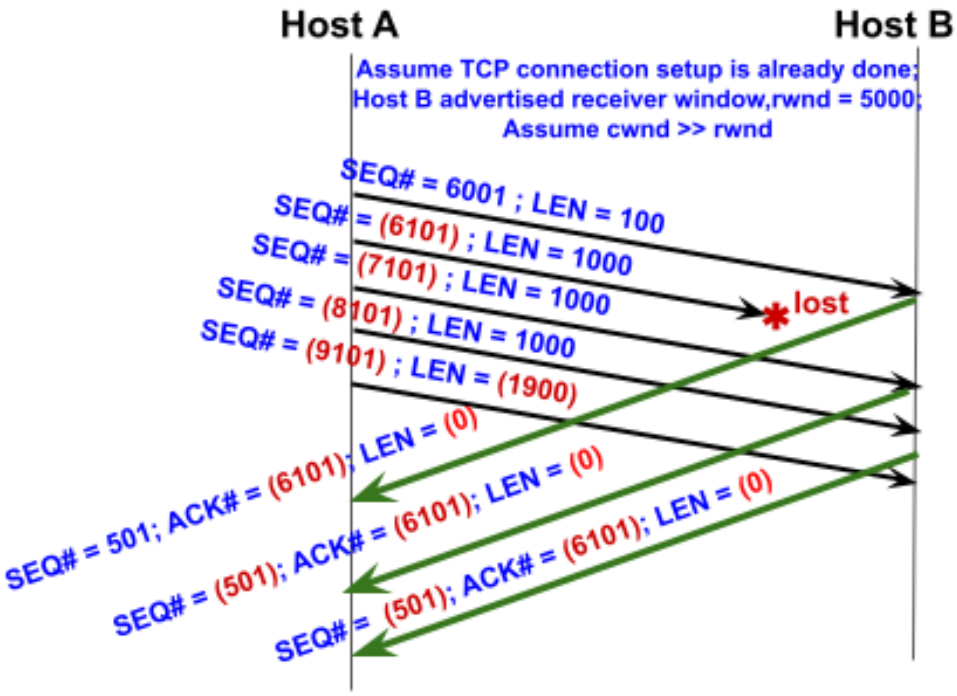

Q.2. Consider the communication and parameter values as shown in Q.1. Would the sender, i .e., Host A, observe "timeout" or "three duplicate ACKs" condition? Justify your answer; no marks without correct justification **[1]**

Ans.

"Timeout": Host A observes TWO dup ACKs (i.e., three ACKs with same number "6101"). Since Host A will not send further segments (window size=0), Host B will not send the third duplicate ACK. Therefore, Host A's timer will expire.

OR

"Three duplicate ACKs": If the response for the last segment from Host A to Host B (i.e., Seq#=9101) is received by Host A before the timer expires (or timeout), host A will observe the "three dup ACK" event.

Q.3. Answer the following questions.

(a) Which TCP flag(s) is/are used during the connection establishment phase? **[1]**
Ans. SYN, ACK

(b) Which TCP flag(s) is/are used during the connection termination phase? **[1]**
Ans. FIN, ACK

(c) Which TCP field is indicated as valid if the URG flag is set? How does the receiver react to such TCP segments? **[1.5]**
Ans. URG=1; indicates Urgent pointer is valid. Urgent pointer points to the offset/data in the TCP segment from where urgent data begins. The receiver processes the urgent data prior to the rest of the segment.

(d) Consider the TCP communication for a real-time time-sensitive application. Which TCP flags will be used to reduce TCP processing time at the receiver? **[1]**

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Ans. PSH=1; indicates the receiver-side TCP protocol to deliver the segment immediately to the application, without any buffering.

_____ THE END _____