

COS244 Tutorial From Lecture 12 & 13

1. What is stop and wait flow control? What happens if an ACK frame get lost in the stop and wait protocol?
2. Are the following TRUE or FALSE? Why?
 - a. Unrestricted flow control generally has a better channel utilisation than the stop and wait flow control.
 - b. Unrestricted flow control really amounts to no flow control.
 - c. Unrestricted and stop and wait flow control are special cases of a sliding window protocol.
 - d. Sliding window protocols can work with any size windows.
 - e. The go-back-n algorithm will resend several frames even if just one fails to arrive at its destination.
 - f. For the selective repeat protocol, the receiving window size is independent of the sending window size.
3. What important role does an acknowledgment play in a flow control protocol?
4. Consider the go-back-n algorithm with a window size of 7 (with 3 bits for the sequence number). Describe the actions of both sending and receiving protocols, specifying variable values and buffer contents, in the following cases. What is the current state of each protocol after responding to the events specified?
 - a. Station A sends frames 0 through to 6. Station B receives them in order, but frame 4 was damaged.
 - b. Station A sends frames 0 through to 6, and station B receives them in order. Station B sends one data frame to A after receiving frame 4 but before receiving frame 5. Assume A receives that frame correctly.
 - c. Same scenario as in (b) but the data frame sent to A is damaged.
 - d. Station A has 12 frames to send to B, but B has nothing to send to A.
5. Consider the selective repeat algorithm with window sizes of 4 (with 3 bits for the sequence number). Describe the actions of both sending and receiving protocols, specifying variable values and buffer contents, in the following cases. What is the current state of each protocol after responding to the events specified?
 - a. Station A sends frames 0 through to 3. All except frame 2 arrive. Frame 2 is lost.
 - b. Station A sends frames 0 through to 3. They arrive at B in the order 0,1,3,2.
 - c. Station A sends frames 0 through to 3. Station B receives frames 0 and 1, and sends a piggyback acknowledgment, which A receives.
 - d. Same scenario as in (c), but the acknowledgment gets lost.
6. What are the two major divisions of the data link layer and what are their major functions?
7. What is an Ethernet transceiver?
8. What is an Ethernet NIC?
9. Are the following TRUE or FALSE? Why?

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- a. Ethernet is a seven-layer protocol similar to the OSI model.
 - b. A high percent utilisation for a common bus network is an indication that the network is performing efficiently and meeting the needs of its users.
 - c. The pad field in an Ethernet frame is optional.
 - d. In a token ring network stations take turns sending frames in order of their arrangement on the ring.
 - e. Token ring has no central control.
10. Why does an Ethernet frame have a maximum size? Minimum size?
11. What purpose does the token serve in a token ring network?
12. Discuss the content and purpose of each field in the token frame of a token ring network.
13. What is an orphan frame?