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Computer Networks

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Assignment 5

Problem 15 (3 points)**:**
Suppose client A initiates a Telnet session with server S. At about the same time, client B also initiates a Telnet session with server S. Provide possible source and destination port numbers for:

(a) the segments sent from A to S,

(b) the segments sent from B to S,

(c) the segments sent from S to A,

(d) the segments sent from S to B.

(e) If A and B are different hosts, is it possible that the source port number in the segments from A to S is the same as that from B to S?

(f) How about if they are the same host?

Problem 16 (4 points)**:**
UDP and TCP use 1's complement for their checksums. Suppose you have the following three 8-bit words: 01010101, 01110000, 11001100.

(a) What is the 1's complement of the sum of these words? Show all work.

(b) With the 1's complement scheme, how does the receiver detect errors?

(c) Is it possible that a 1-bit error will go undetected? An informal argument suffices here.

(d) How about a 2-bit error? Give an example, if it can go undetected.

Problem 17 (3 points)**:**
Consider the protocol rdt 3.0.

(a) Can rdt 3.0 use the same FSM for the receiver side as rdt 2.2? Give an informal explanation of your answer.

(b) The ACK packets flowing from the receiver to the sender do not have sequence numbers (although they contain the sequence number of the packet they are acknowledging). Why are sequence numbers not needed for ACK packets?

(c) Would rdt 3.0 still work correctly if the order of messages can be exchanged in the channel? If not, give an example.