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HW3

3) 01010011 + 01100110 = 10111001

10111001 + 01110100 = 100101101

00101101 + 00000001 = 00101110

Take complement

**Checksum** = 11010001

UDP employs 1s Complement as it yields the checksum whereas the sum does not

If a bit of the checksum is 0 then the receiver will detect it as an error.

All single bit errors must be detected, two bit errors may go unnoticed.

14) A NAK protocol would not be efficient to use in the scenario because the sender sends

packets with low frequency. This means that if the last packet sent is not correct, it may take a while before it is corrected. The receiver needs the next packet to detect error and the sender does not send for a long time. If the sender is frequently and consistently sending packets at a low loss rate, a NAK protocol would work swimmingly.

27) a. Seq #: 207 b. Ack #: 207 c. Ack #: 127

SourcePort: 302 SourcePort: 80

DestinationPort: 80 DestinationPort: 302



28) TCP flow control is a mechanism implemented to level data transfer rates between sender

and receiver. This stops receivers from being overburdened with more data than they can read.

36) A fast retransmit is not enacted upon the first duplicate ACK because it assumes that it

may not yet be lost and is still moving towards its destination. After receiving three

duplicate ACKs it is assumed that the packet it lost so the sender will retransmit. This helps relieve congestion of the links between hosts.

40) a. [1, 6] u [23, 26]

b. [7, 16] u [18, 22]

c. Triple duplicate ACK

d. Timeout

e. ssthresh: 32

f. ssthresh: 21

g. ssthresh: 14

h. Round: 7

i. windowSize: 7 ssthresh: 4

j. windowSize: 4 ssthresh: 21

k. 52 Packets