**IC EX 2A: Assignment 2**

Chapter 2 Questions - On this assignment you may discuss these answers with your classmates, but each student must submit their own assignment for their grade.  Enter your answers online through Webclass to the questions for each part.

Q2 on Page 58:

a) What are the three general parts of messages?   
*Answer: The data field, header, and the trailer.*

b) What does the data field contain?   
*Answer: The data field contains the content delivered by the message, also referred to as the payload.*

) What is the definition of a header?   
*Answer: The message header is everything that comes before the data field. But, for an HTTP request message, the entire message is the header, there is no data field.*

d) Is there always a data field in a message?   
*Answer: No, the entire message is the header in an HTTP request message, there is no data field.*

e) What is the definition of a trailer?   
*Answer: A message may have a trailer. The trailer consist of everything that comes after the data field.*

f) Are trailers commonly used in messages?   
*Answer: No. Many messages are internet traffic and HTTP messages do not have trailers.*

g) Distinguish between what headers are and what header fields are.   
*Answer: The header contains small sections called fields. The fields contain useful data. For example, a frame or packet has a destination address field, which allow switches or routers along the way to pass on the frame or packet they receive.*

Q4 on Page 62:

a) Distinguish between connectionless and connection-oriented protocols.   
*Answer: Connectionless protocols do not establish a connection before transmitting. This is comparable to email that is sent without notification. Connection-oriented protocols establish a connection before transmitting. This is comparable to an initial greeting to start a conversation on the telephone.*

b) Which protocols can have sequence numbers?   
*Answer: Connection-oriented protocols can have sequence numbers.*

c) What are the advantages that sequence numbers bring to connection-oriented protocols?   
*Answer: Sequence numbers can indicate the transmission order of each message during the connection. Messages can be discovered that have lost pieces. A number of messages can be transmitted without waiting for a reply. Long messages can be fragmented into many smaller messages and can be reassembled in proper order by their sequence numbers.*

d) Explain fragmentation and reassembly.   
*Answer: Long messages can be fragmented (separated) into many smaller messages so they may fit in packets. The packets can be received out of order but reassembled reliably by the order of the sequence numbers of the messages.*

e) What is the disadvantage of connection-oriented protocols?   
*Answer: Connection-oriented protocols have the major disadvantage of placing a heavy burden on the network and computers attached. They can consume a great deal of bandwidth with their many Opens, Closes, Acknowledgements, and other supervisory messages and they are referred to as heavyweight protocols.*

f) Are most protocols connectionless or connection-oriented?   
*Answer: Most protocols are connectionless and unreliable to keep the network traffic volume to a minimum and reserve the connection-oriented protocols to the end-to-end messages.*

g) Are most protocols reliable or unreliable?   
*Answer: Most protocols are connectionless and unreliable to keep the network traffic volume to a minimum and reserve the connection-oriented protocols to the end-to-end messages.*