



Adama Science and Technology University
Data Communication and Computer Networks Worksheet 2

I. Give short and brief answers for the following Questions

1. Identify the main tasks that perform by data link layer and where data link layer implemented?
2. List sub layer of data link layer and from these sublayers which one is responsible to perform the following tasks?
 - a. Performing function that depend upon types of medium and how this sublayer prevent collision while transmitting data?
 - b. Managing traffic, flow and error control activities
 - c. What is the protocol in this sub layering responsible to perform logical link control function?
3. List and discuss error detection and correction mechanism that used in networking.
4. Discuss what is addressing in data link layer, what is the size of link-layer addresses, and how data link layer perform this addressing?
5. Compare and contrast framing technique and give a reason for why flags are needed when we use variable-size frames.
6. What are the protocols used for channel access control in MAC and which are responsible for multiple channel access control?
7. While transmitting a frame from sender to receiver which method is responsible for temporarily delaying outgoing acknowledge so that they can be hooked onto the next outgoing data frame.
8. As the data link frame moves through an internetwork the Ethernet frame header is modified at each step, describe why this must happen at each router?
9. In the Stop-and-Wait Protocol, assume that the sender has only one slot in which to keep the frame to send or the copy of the sent frame. What happens if the network layer delivers a packet to the data-link layer at this moment?
10. How many devices can transmit data at the same instance in Ethernet and how collision handled in this network?

II work out

11. Assume that the sender A and receiver B agreed to use CRC and Check Sum error detection mechanisms to exchange error free data between them.
 - a. Perform the following based on CRC binary division mechanism within a given datagram 1010101010 and a divisor of polynomial function x^4+x^3+1 and check if receiver receive an error free data.
 - b. In the same case if the sender A send four set of data which given as 446F, 938C, 896E and 965D to the receiver B. Calculate check sum value and analyze if Receiver B receive error free data.
12. Perform the following by assuming even parity, find the parity bit for each of the following data units.
 - a. 1001011 b. 0001100 c. 1000000

Stay home
stay safe!