Chapter 5+6 Assignment 7

Note:

1. Due time: 8th June 2017

P5. Consider the 5-bit generator, G= 10011, and suppose that D has the value 1010101010. What is the value of CRC?

P21. Suppose nodes A and B are on the same 10Mbps Ethernet bus, and the propagation delay between the two nodes is 245 bit times. Suppose A and B send frames at the same time, the frames collide, and then A and B choose different values of K in the CSMA/CD algorithm. Assuming no other nodes are active, can the retransmissions from A and B collide? For our purposes, it suffices to work out the following example. Suppose A and B begin transmission at t =0 bit times. They both detect collisions at t =245 bit times. They finish transmitting a jam signal at t = 245 + 48 = 293 bit times. Suppose K_A =0 and K_B = 1. At what time does B schedule its retransmission? At what time does A begin transmission? (Note: The nodes must wait for an idle channel after returning to Step 2 -- see protocol.) At what time does A's signal reach B? Does B refrain from transmitting at its scheduled time?

P23. Suppose four nodes, A, B, C, and D, are all connected to a hub via 10Mbps Ethernet cables. The distances between the hub and these four nodes are 300m, 400m, 500m, and 700m, respectively. Recall that the CSMNCD protocol is used for this Ethernet. Assume that the signal propagation speed is $2*10^8$m/sec.

a. What is the minimum required frame length?

b. If all frames are 1500 bits long, find the efficiency of this Ethernet.

P37. In this problem, you will put together much of what you have learned about Internet protocols. Suppose you walk into a room, connect to Ethernet, and want to download a web page. What are all the protocol steps that take place starting from powering on your PC to getting the web page? Assume there is nothing in our DNS or browser caches when you power on your Pc. (Hint: the steps include the use of Ethernet, OHCP, ARP, ONS, TCP, and HTTP protocols.) Explicitly indicate in your steps how you obtain the IP and MAC addresses of a gateway router. Please note that the knowledge related with this problem will be introduced in the next week.

Preview: Please answer the following question after reading Chapter 6 and referring to the

ftp://public.sjtu.edu.cn/chapt6.pdf .

1、 What are MAC methods for WiFi, Bluetooth, WiMax and Cellular network respectively?

2、 Why WiFi can’t CSMA/CD?

3、 What are RDT approaches for WiFi, Bluetooth, WiMax and Cellular network respectively? error detection + retransmisstion or error correction?

4、 What are the FDD and TDD? Please give two examples to explain each.