CNT3004: Computer Network Concepts (Spring 2011)

Homework 3: Chapter 15,19,20,21,25
(assigned 03/30; due: 04/11 in class with hardcopy handed in)

Name: _____ **PID:** _____

Note: You need to compute the final numerical results for all computing questions (i.e., you cannot just list the formula as the final result).

1. Knowledge questions:
   a. How is a repeater different from an amplifier (chapter 15)?
   b. What is the advantage of using VLAN instead of physical LAN?
   c. What are the two IP prefixes that are commonly used as private IP addresses? What is the private IP prefix used by UCF?
   d. What is the full name of ARP? Is the size of ARP packet fixed? Explain.
   e. Why so many networks and routers either block ICMP packets or do not respond with ICMP error messages?
   f. What is the full name of DHCP, NAT, DNS, TLD, RR, MTU, ICMP, TTL?
   g. What are the commands for DNS query in Windows and Unix, respectively? What are the commands for traceroute in Windows and Unix, respectively?

2. Calculate the HLEN (in IPv4) value in a packet header if the total length of the packet is 1200 bytes, 1176 of which is data from the upper layer.

3. In an IPv4 datagram, the M bit is 0, the value of HLEN is 5, the value of total length is 200, and the offset value is 200. What is the number of the first byte and the number of the last byte in this datagram? Is this the last fragment, the first fragment, or a middle one? (Question 24 in Chapter 20)

4. Suppose you open a startup company "flashNetwork" and want to set up your company network. Your network has the following servers:
   DNS server: "dns.flashNetwork.com" with IP as "128.119.12.40"
   Web server: "flashNetwork.com" with two IP as "128.119.12.55" and "128.119.12.56". Internet users can also access the web server by "www.flashNetwork.com".
   Email server: "mail.flashNetwork.com" with IP as "128.119.12.60"

   Your company's email address is "username@flashNetwork.com".

   a). What resource records (RRs) do you need to provide to the upper-level ".com" Registrar?
   b). What RRs do you need to put in your company's DNS server?

5. **Try to install "wireshark" on your own computer to try it out for monitoring your network traffic**. Try to see captured ARP packets, DNS packets, etc.   (No written assignment for this question)

Important: I won't receive any assignment after April 12, 2:45pm. If for any reason you cannot come to my class that day, please send me an email with your assignment attached before the April 12's class begins.