Homework of Systems and Network Management 2010

1. Socket Programming (20%)

   Please visit the referenced web sites or books and get familiar with the client-server socket programming. You are requested to write a bi-directional client-server application and turn in an one page report. The report should include (i) the working environment, (ii) description of the communication, and (iii) demonstration. Contents of the interaction between the client and the server are left open. (due on 14st of Oct.)

2. Exercise on Wireshark (20%)

   Please visit the web sites talking about Wireshark, such as www.wireshark.org, and install the protocol analyzer on your computer. Learn and practice the features provided by Wireshark. You are requested to write a 3-page report, which should include (i) installation tips, (ii) functional features, and (iii) execution results of two management applications. Detailed description will be provided later.
   (due on 4th of Nov.)

3. Mobility management (20%)

   Mobility management is to deal with the connection problem as a mobile node moves from one associated base station to another. This assignment aims at investigating the study on management issues of mobile operations. You are asked to give a 2-page report of what you have dug in this area. Since there are many relatively interested topics in this area, the assignment is made to be open. That is to say, you are free to choose an interesting topic by you own and prepare for both oral and written report. For your convenience, several possible mobility problems are listed in the following, you may take them as a reference to determine which topic to work on. (due on 25th of Nov.)

   (i)   What is the speed limit for a moving MN to remain connected in the Wi-Fi (or WiMax) network? What are the criteria and how do you get?

   (ii) What are the operational differences between MIPv4 and MIPv6?

   (iii) What are the differences in mobility between Wi-Fi and WiMax network?

   (iv) What are the current approaches to achieve fast handover in the Wi-Fi (or WiMax) network?

   (v)   When a handover occurs (in the Wi-Fi, WiMax, or 3G network), which operation suffers from the most time-consuming? Why and how?

   (vi) What is so called the triangular routing problem? How can it be solved?

4. Exercise on Net-SNMP (20%)

    Please visit the web sites talking about Net-SNMP, such as www.net-snmp.org, and install this network management software on your computer. Learn and practice the features provided by Net-SNMP. You are requested to write a 3-page report, which should include (i) installation tips, (ii) functional features, and (iii) execution results of two management applications. Detailed description will be provided later. (due on 16th of Dec.)