HOME WORK ASSIGNMENT#1
CS 4/59995 ST: INTERNET ENGINEERING

Fall 2007, Department of Computer Science, Kent State University

Due Date: _____SEP 20_____ (7x100=700 points)

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1. (MEASUREMENT) An Internet Distance Map is defined as a graph which measures distance(s) between all pairs of internet hosts. (a) What quantities can be considered as distance? Suggest best four most useful factors you would like to include in a distance metric. Argue why you consider your factors to be useful and measurable. (b) Measuring distance between all host pairs is daunting. What strategies (or forms of information) can you suggest to tackle the scale challenge? (Hint: you may want to read the paper [Jamin etc. al, 2001] in webbook and few others).

2. (INTRO) Search the RFCs and explain briefly the purpose of the following protocols: (a) RTP (b) NTP, (c) RTCP, (d) RSVP, (e) SNMP, (f) RTSP, (g) BGP, and (h) MPLS Make a table listing the most relevant RFC number(s) and how they relate to.

3. (INTRO) Search Internet to find few networked *Instruments* which can be operated remotely by Internet users. List most interesting three of them. Make a short webpage in your departmental website linking them and send the link with subject header “My Favorite “Internet Instrument”.

4. (INTRO) Analyze the operations and functionalities of three Internet Telescopes. Design a mini ‘protocol’ for ‘Internet Telescope Protocol’- which can be used by all providers of Telescopes to plug in their telescope easily and users to access those.

5. (LAN: Comers 7.5) Assume one megabytes of file must be transferred across a network. Ignoring headers and delays caused by waiting for access, how long would it take to send the files across an Ethernet? Across a LocalTalk network? Across a Fast Ethernet?

6. (LAN: Comers 7-6) Explain why Ethernet has a minimum and a maximum frame size. Explain what will happen if two stations are assigned the same hardware address?

7. (LAN: Comers 10.10-11) Fig-10.9 (in CN&I, by Commers, Also in lecture slide) shows that a switch with four ports simulates six bridges. Extend the figure to have five ports. Now write and equation that gives the number of simulated bridges needed as a function of the number of ports.