LIST OF EXPERIMENTS FOR NETWORKS LABORATORY (S6 B.TECH.)

1. Use the following tools to explore and summarize the network environment available in your system:
    - ping
    - tracert/traceroute
    - ip/ifconfig/ipconfig
    - dig/nslookup/host
    - whois
    - route
    - tcpdump
    - netstat/ss
    - dstat
    - ifstat
    - wget

    Deadline   : 20, Jan. (1.00 pm)
    Evaluation mode   : Quiz (Online or Manual)

2. Use Wireshark to capture the packets for 5 seconds and answer the following:
    a. For an IP and ARP packet, compare the MAC header of these two packets and find the protocol ID for ARP and IP, if exists.
    b. Is the destination address of the ARP packet a broadcast address or a unicast address?
    c. Is the ARP packet a request or reply packet? Justify.
    d. Examine the payload of the packet.
    e. What transport layer protocols are used in Skype and Zoom.

    Deadline   : 27, Jan. (1.00 pm)
    Evaluation mode   : Quiz (Online or Manual)

3. Implementation of basic Client Server program using UDP Socket.
    Deadline   : 03, Feb. (1.00 pm)
    Evaluation mode   : Program will be given based on the experiment

4. Write a client/server program with the socket interface. The client program may send out the words to the server once the user presses "Enter" and the server will respond to these words with any meaningless terms. However, the server will close the connection once it receives the word "Bye". Also, once someone keys in "GivemeyourVideo", the server will immediately send out a 50 MB data file with message size of 500 bytes.

a. Calculate and record the data transmission rate every 0.1 second for a 50 MB data transmission with message size of 500 bytes. USe xgraph and gnuplot to display the results.

b. Create a socket based on SCTP to demonstrate that the voice talk continue without blocking due to the transmission of a large file.

Deadline   : 10, Feb. (1.00 pm)

Evaluation mode   : Program will be given based on the experiment

5. Implementing fully concurrent application with a TCP server acting as a directory server and client programs allowing concurrent connection and message transfer (Eg. Chat system).

Deadline   : 09, March (1.00 pm)

Evaluation mode   : Program will be given based on the experiment

6. Implement the following routing algorithms in C language:

    a. Distance vector routing algorithm using Bellman-Ford

    b. Link state algorithm using Dijkstra's

Deadline   : 16, March (1.00 pm)

Evaluation mode   : Program will be given based on the experiment

7. Build a web server using apache. Modify the configuration file to set up two virtual hosts. Write some html pages and put them in the document root category. Telnet to to your web server port 80. Observe the HTTP response headers.

Deadline   : 23, March (1.00 pm)

Evaluation mode   : Program will be given based on the experiment

8. Experiments with Emulator (Mininet) and Simulator (ns3).

Deadline   : 30, March (1.00 pm)

Evaluation mode   : Program will be given based on the experiment

Weekly Eval.   **: 40 marks**

Mid Term   **: 20 marks (Exam on 02, March)**

End Semester   **: 40 marks (Exam on 13, April)**

Total   **: 100 marks**

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