

Computer Network Laboratory

Assignment given on: 01-08-2011

Submission deadline: 08-08-2011 (2:00 PM)

Assignment 2: More on Client-server programming (to be done individually)

1. Write a TCP client-server system to allow client programs to get the system date and time from the server. When a client connects to the server, the server gets the local time on the machine and sends it to the client. The client displays the date and time on the screen, and terminates. The server should be an iterative server.

Submit two C files: *time_server.c* and *time_client.c*

2. Write a simple UDP iterative server and client to convert a given DNS name (for example, *www.google.com*) into its IP address(es). The client will read the DNS name as a string from the user and send it to the server. The server will convert it to one or more IP addresses and return it back to the client. The client will then print **ALL** the addresses returned, and exit.

For basic UDP socket communication, see the sample program given. To get the IP address corresponding to a DNS name, use the function **gethostbyname()**. Look up the description of the function from the man page and the tutorial on the webpage.

Submit two files: *dns_server.c* and *dns_client.c*

3. Now suppose that the same server will act both as the time server in Problem 1 and the DNS server in Problem 2. Thus, some clients will request over the UDP socket for name-to-IP conversion, and some will connect over a TCP socket for the time. Thus, the server now needs to open both a TCP socket and a UDP socket, and accept request from any one (using the **accept()** + **read()/send()** call for TCP, and **recvfrom()** call for UDP), whichever comes first. Use the **select()** call to make the server wait for any one of the two connections, and handle whichever comes first. All handlings are iterative.

Submit one C file: *combined_server.c*

- **Submit all the C files in a single tar file through the online submission system.**
- **Use the following port number:**
50000 + last four digits of your roll number.