NETWORK LAB

LAB ASSIGNMENT for Week # 5

Socket Programming - UDP Sockets

1. The basic assignment is to write both an Echo Client and an Echo Server in C using UDP Datagram Sockets. The client and server implement the echo service while running on different Linux machines and communicating with each other using UDP.

The Echo Client:
The basic Echo client connects to the Echo server and sends its data to the server. The data that the client sends is a string provided as the second client command-line argument. The basic Echo client prints the single string of data sent back by the Echo server.

The form of the command line and print line for the basic Echo server are:
Compilation: **Server>** ***gcc <RegNo>_EchoServer.c -o <RegNo>_EchoServer***
Output command: **Server>** ***./<RegNo>_EchoServer***
Server started ... waiting for connection ...

The form of the command line and the print line for the basic Echo client are:
Compilation: **Client>** ***gcc <RegNo>_EchoClient.c -o <RegNo>_EchoClient***
Output command: **Client>** ***./<RegNo>_EchoClient 172.31.132.x "echo this string!!"***
Received from server: echo this string!!

172.31.132.x :: the first argument in the output command line is the dotted-quad notation IP address of the Echo server.
RegNo :: should be replaced by the registration number of the student.
The Echo client accepts strings of length 1 to 32 bytes inclusive and prints out an error message for any out-of-range input string.

The Echo Server:
After connecting to the basic Echo client, the basic Echo server (which is started first) simply echoes the string it receives back to the client, disconnects and terminates.
The strings sent and received must be displayed on both client and server consoles.

2. Write a server program which sends the time of day information to the client. Also develop a client interface for interacting with the server. The client should first send a request message to the server asking for the time of day information. The server in turn responds to the client with its time of day information. The IP address and port number of the server is to be passed as command line arguments to the client code. Similar naming conventions, compilation and output commands are to be used as mentioned in the previous question. Use proper display messages on both the client and server consoles. Use UDP sockets. (*Naming Convention* – TimeOfDayClient.c, TimeOfDayServer.c)

NOTE: *The client and server codes can initially be tested locally using the loopback address 127.0.0.1, but eventually the codes are to be tested on two different machines.*