# NETWORK LAB

## HOME ASSIGNMENT for Week # 5

## Socket Programming - UDP Sockets

The goal of this assignment is to implement a UDP client and server. Your UDP client/server will communicate over the network and exchange data.
The server will start in *passive* mode listening on a specified port for a transmission from a client. Separately, the client will be started and will contact the server on a given IP address and port number that must be entered via the command line. The client will pass the server a string consisting of a sequence of characters. If the string contains anything but numbers, the server will respond with "Sorry, cannot compute!" and exit. If the string contains all numbers, the individual digits will be added together and returned as a string (see below for an example). If the server sends a "Sorry" response to the client it will immediately exit. If the server receives a string of numbers, it will (1) add the digits together, (2) send the value back to the client, and (3) will not exit unless the response is a single digit. This process will be repeated until there is only one digit remaining. Note: the server will send a new packet each time Step (2) is executed, and the client will expect to receive a packet until there is only a single digit. See below for the exact output.

**Procedure:**

**Starting the Server -**
Assume that you started a server on machine, **172.31.132.*x*;** listening on port number, ***p***. The syntax should look like the following:
machine1> ***gcc <RegNo>_UDPServer.c -o <RegNo>_UDPServer***
machine1> ***./<RegNo>_UDPServer p***

- The server should not produce any output but should end after interacting with a client.

**Starting the Client -**
machine2> ***gcc <RegNo>_UDPClient.c -o <RegNo>_UDPClient***
machine2> ***./<RegNo>_UDPClient 172.31.132.x p***

**Client Input/Output for Non-Numeric Example -**
machine2> gcc <RegNo>_UDPClient.c -o <RegNo>_UDPClient
machine2> ***./<RegNo>_UDPClient 172.31.132.x p***
*Enter string:* **I don't like addition!!**
*From server:* Sorry, cannot compute!
machine2>

**Client Input/Output for Numeric Example -**
machine2> ***gcc <RegNo>_UDPClient.c -o <RegNo>_UDPClient***
machine2> ***./<RegNo>_UDPClient 172.31.132.x p***
*Enter string:* **12345678910123456789101234567891O**
*From server:* 138
*From server:* 12
*From server:* 3
machine2>