

# ELP-718 (Telecom Software Lab)

## Assignment # 13 - Socket Programming in C

*3 November 2018*

### Problem Statement 1:

You've to design a simple client and server TCP communication using sockets.

1. Server before establishing connection with the client should ask client for credentials. If valid (authenticate user\_id and password entered by the client) then allow connection otherwise prompt client again for id and password.
2. After successful authentication, the client sends a string to server and the server change the case of each alphabet and send it back to client.
3. The client take user input from console as to what string has to be sent. The returned string is displayed underneath.
4. The communication continues on as long as server or client don't close their sockets.
5. The different stages of TCP communication should be shown with corresponding messages as well. You should also display error in case of failures.

#### Client Interface example(on connection):

Please Enter Username:     "xyz"  
Please Enter Password:     "4567"  
Enter the string: HelLo (if credentials are valid)  
Reply from server : hELIO  
Enter the string :

#### Server Interface example:

\*Validate the credentials  
String received : HelLo  
Replied string : hELIO

### Problem Statement 2:

You have to create a server capable of handling multiple clients up to 5 and **rejecting more than 5 connections** using TCP communication sockets. Server should work in following phases.

1. Server before establishing connection with the client should ask client for credentials.If valid (authenticate user\_id and password entered by the client) then allow connection otherwise prompt client again for id and password.
2. After successful authentication ,conversation should start between clients and server.Store the chat history between server and clients in a file “chat.txt” along with the timestamp ( containing date and time )adjacent to the chat string.
3. One message send by a client should be broadcasted to all clients.
4. Before broadcasting the message server modify the message send by client by adding prefix to the message.

#### **Server interface example:**

```
./server.out xyz_  
# xyz_ - prefix
```

#### **Client Interface example(on connection):**

```
Please Enter Username:    "abc"  
Please Enter Password:    "1234"  
Received String:         Valid/Enter Credentials Again
```

#### **Server Interface example:**

```
String received:         Credentials  
Replied string:          Valid/Enter Credentials Again
```

### **General Instructions :**

- Name the C files as ps1.c and ps2.c, no need to send the executables.
- Any kind of plagiarism will not be tolerated in reports/proposal/code. Proper citations are necessary.
- All file names should be as indicated in the assignment, otherwise submissions will not be accepted because the submission will be evaluated automatically using evaluation/plagiarism scripts.
- The deadline for this assignment is 12 November 2018, 11:59 pm

