

QUIZ 9 – Network Programming

Q1. Write an Q&A application using 1 client connecting to server implemented using socket programming.

Consider you have two arrays for questions and answers as below on server side and only questions array on client side.

```
char* questions[] = {"You study in which university?", "which course are you studying?", "what is your area of interest?", "Which degree have you registered for?"};
```

```
char* answers[] = {"DAIICT", "Systems Programming", "Embedded Systems", "MSc IT"};
```

- a. Server starts on port 5000 and listen for client connections.
- b. Client connects to server running on port 5000.
- c. Client asks user question number (1 to 4) that it needs an answer from the server, collects the question string from questions array and sends the actual question string to the server.
- d. Server finds the index of the question from questions array, get the answer from answers array using that index and reply client with an answer string.
- e. Steps c. and d. continues until user enters 0 as a question number. Client closes the socket connection when user enters 0 as a question which must close server connection from that client.

Q2. Now modify the server code to allow multiple client connections by creating new thread every time a new client request is accepted. (Hint: In server code, when you come out of accept call, create a new thread using pthread_create which will execute a function that will handle a new client connection)

Optional Assignment:

Q3. Write a chat application that will support 2 clients (individual chat) or more than 2 clients (group chat) where all the clients are connected to a server.

- a. client connects to the server one by one, server assigns client ID.
- b. Once client is connected to the server, it requests server to provide client IDs from which users select which client to connect to. It sends message to server with all the client IDs it wants to connect to which server keeps track of using group ID for each such group. Server reply back to client with group ID number. It is possible that a client is connected to multiple group IDs.
- c. Any one of the client from a group can send message to all the other clients of the group by sending group ID and message to the server. Server upon receiving will send a message to all the client IDs of that group.