## National University of Computer and Emerging Sciences



## Laboratory Exercise 02

*for*

# Computer Networks

|  |
| --- |
| Objectives:  * Client Server connectivity * TCP-model * Practice Problems |

**Note: Carefully read the following instructions (***Each instruction contains a weightage***)**

1. Make a Microsoft Word file and paste all of your code with all possible screenshots of every **task output and submit on Google classroom within given time.**
2. Please submit your file in this format rollno\_Name.
3. Do not submit your assignment after deadline.
4. Do not copy code from any source otherwise you will be penalized with negative marks.

**FAST School of Computer Science**

### **Lab Task 1: (10)**

Go to the following link. <https://www.geeksforgeeks.org/socket-programming-cc/>

Considering the concept of the TCP Client-Server model, Implement the TCP Client-Server model using the concept of Socket Programming in C/C++ language. Follow the instruction given in the Lab and implement them step by step:

1. Implement **server.c file** (**Add Your Code, Compilation, Output**)
2. Implement **client.c file** (**Add Your Code, Compilation, Output**)
3. **Comment Each Construct** in your Code (You are allowed to use internet)

Describe the purpose of each line using single line comment i.e.

**// This preprocessor directives used to add header file “stdio.h” to program to use different operations.**

**Note: Comments font Color should be green.**

### **Lab Task 2:** Simple Client-Server Model – C/C++ **(15)**

Develop a TCP-based client-server application in C/C++ where the server handles one client at a time, processes requests, and sends responses.

Server: (5)

* Listens on a specified port, accepts one client at a time, processes requests, and sends responses.
* Supports commands: "HELLO" (greet client), "TIME" (send current time), "EXIT" (close connection).

Client: (5)

* Connects to the server, sends requests, receives, and displays responses.

Error Handling: (3)

* Validates inputs and handles connection errors.

Code Readability (2): Well-structured with comments.

**Lab Task 3: (10)**

Develop a client-server application using TCP where the client sends the name of a text file and size of the block of data to the server, the server checks availability of the text file and if the text file is available, sends the text file content to the client as per the input block size after reading the file contents. After sending the whole file, display appropriate message