National University of Computer and Emerging Sciences



**Laboratory Manuals**

*for*

**Computer Networks - Lab**

(CL -3001)

|  |  |
| --- | --- |
| Course Instructor | Mr. Danyal Farhat |
| Lab Instructor(s) | Mr. Usama Khan  Ms. Sana Bari |
| Section | BCS-5B |
| Semester | Fall 2023 |

*Department of Computer Science*

*FAST-NU, Lahore, Pakistan*

Lab Manual 05

# Objective:

Students should know:

•What a computer network is and what its advantages are.

•What is OSI Model?

•What is a socket?

•Client-Server Model

•TCP Socket Programming.

# In-lab Statement 1: [5]

* Write **TCP** client and server that can communicate to each other saying

“Hello I am client and My id is 1” and “Hello I am server. Your received id is 1”

* The ID of the client should be only a **single digit** i.e from 0 to 9
* Run one client and server on same machine
* Your server should be in running state **infinitely** and should not terminate after serving one client only. The clients will keep on coming one by one and server will keep on serving them unless terminated intentionally.
* **Sample Test Bench**
* Client1 sends : “Hello I am client and My id is 1”
* Client2 sends: “Hello I am client and My id is 2”
* Server response on client1: “Hello I am server. Your received id is 1”
* Server response on client2: “Hello I am server. Your received id is 2”

# In-lab Statement 2: [15]

* Write TCP client and server program such that client will send one string to a server and server will display the string with all the words containing one or more vowels in an inverted fashion e.g., computer must be inverted as ‘retupmoc’.
* The server will then send the resulting string to client and client as a result will invert all the words containing no vowels and display it on the terminal e.g., dry must be inverted as ‘ryd’.
* Your server should be in running state **infinitely** and should not terminate after serving one client only. The clients will keep on coming one by one and server will keep on serving them unless terminated intentionally.
* Sample Test Bench
* Client sends to server: “the birds fly in dry sky at night”
* Server displays the string and returns to client: “eht sdirb fly ni dry sky ta thgin”
* Client displays the string: “eht sdirb ylf ni yrd yks ta thgin”