Computer Networks, Spring 2026

Instructor: Shashi Prabh

Lab 6: Introduction to Socket API – TCP Basics

In this lab, you will learn the fundamental steps of creating a client-server application using TCP sockets in C. *This lab is to be done individually or in a team of two.*

1 Compiling and Running Sample Code

Save the given `client.c` and `server.c` files.

1. Compile both files: `gcc server.c -o server` and `gcc client.c -o client`.
2. Run the server: `./server`. Note the port it is listening on.
3. In a separate terminal, run the client: `./client <IP_ADDR>`.
4. Verify that the client connects and the server receives the message.

2 Modifying the Server: Echo Behavior

1. Modify the server so that it sends back (echoes) the exact string it received from the client.
2. Modify the client so that it waits to receive the echo from the server and prints it to the screen.
3. Discuss: What happens if the server is killed while the client is waiting for an echo?

3 Handling Multiple Connections

1. Observe the current server code. Does it handle more than one client simultaneously?
2. Notice the `listen()` and `accept()` calls. How is a new connection actually "accepted"?

4 Evaluation

☐ Successfully compiled and established a connection. TA: _____

☐ Implemented the echo behavior. TA: _____

☐ Can explain the difference between the listening socket and the connection socket. TA: _____