Concordia University
Department of Electrical & Computer Engineering

Telecommunication Networks
ELEC 366
Lab 3: Multi-Client / Server Applications

1. Objectives:

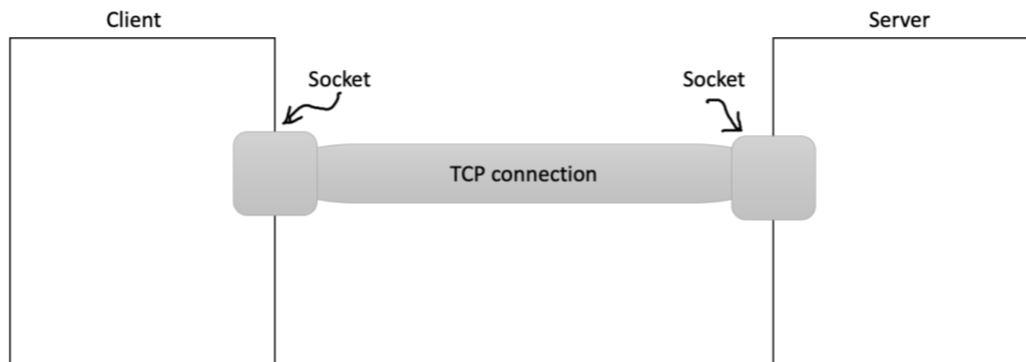1- Multi-Client / Server Applications.

2. Lab Experiment:

In this lab, we are going to learn the programming of Multi-Client / Server Application using Socket Programming. The Multi-Client / Server Application is the application where multiple clients are connected to one server. The server will use a thread for every client connected to it to serve that client.

Multithreading is needed when the Server has to do different tasks at the same time. Extra effort should be considered to synchronize all the running threads to do the write tasks of the server.
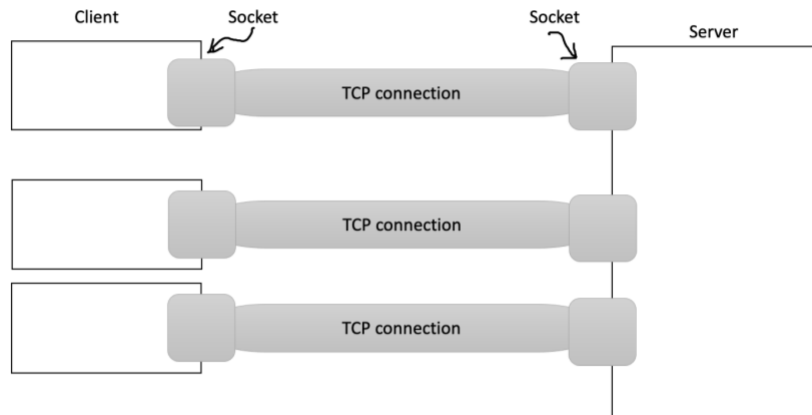
Clients' Sockets at the Server can be kept in an array in order to access them by the running threads of every client serving thread.

Please see the posted examples of codes that will also be explained in the class.
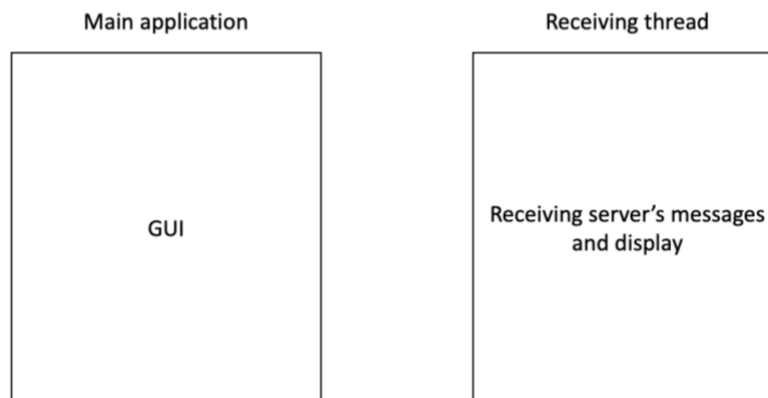
Connection with one client

Connections with multiple clients

Client   Socket   Socket   Server

TCP connection

TCP connection

TCP connection

Lab Example:

Client Architecture

Main application

GUI

Receiving thread

Receiving server's messages and display

Server Architecture

Accepting connections thread

Sending date thread

Sending count thread

Receiving thread – Client1:
Receiving client1's messages and process

Receiving thread – Client2:
Receiving client2's messages and process

Receiving thread – Client n:
Receiving client n messages and process