

## Assignment 1 (TCP Client-Server Programming)

**Due: January 13, 2023, 2 pm**

1. Write a TCP iterative server to allow client programs to get the system date and time from the server. When a client connects to the server, the server gets the local time on the machine and sends it to the client. The client displays the date and time on the screen, and terminates. The server should be an iterative server.
2. Write a simple TCP iterative server and client to evaluate arithmetic expressions. The client-server system has the following functionalities:
  - a. The client asks for an arithmetic expression from the user. The user enters an arithmetic expression containing real no.s (in x.y or only x form), the binary operators +, -, \*, and /, and left and right brackets (( and )). Assume that the brackets are properly matched. There may or may not be spaces before and after the operators. For example, all of the following are valid expressions to enter: "13.0 + 42.6\*5", "10.7+2/4.6", "5.2 + 6 - 3". Assume that all operators have the same precedence and are left-associative.
  - b. The client sends the expression to the server. *The arithmetic expression can be of any length, you cannot assume any maximum length. Also, you should send only the number of bytes needed to send the expression properly. You should not send anything else other than the expression ('\\0' at end if needed is ok).*
  - c. The server computes the expression and sends the result (a real number) back to the client.
  - d. The client displays the result on the screen. It then prompts the user to enter the next expression.
  - e. The client terminates when the user enters a -1.

You can assume that the user always enters a valid expression.

For Problem 1, submit two C files: *time\_server.c* and *time\_client.c*

For Problem 2, submit two C files, the client and the iterative server. Name the files *client.c*, *server\_it.c*, and *server\_conc.c* respectively.