CS 392: Homework Assignment 7
Due: May 4, 11:55pm

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Collaboration Policy. Homeworks will be done individually: each student must hand in their own answers. It is acceptable for students to collaborate in understanding the material but not in solving the problems. Use of the Internet is allowed, but should not include searching for previous solutions or answers to the specific questions of the assignment.

Late Policy. No late submissions will be allowed without consent from the instructor. If urgent or unusual circumstances prevent you from submitting a homework assignment in time, please e-mail me explaining the situation.

Objective

This homework aims to build a simple client-server application, where both the client and server are running on the same host.

Client-Server Addition (100 points)

Create a client-server system that performs addition. The server should listen to a port passed as an argument, e.g. 2000. When the connection with the client is established, the client sends floating point numbers typed by the user to the server. The server adds each number to the sum and sends the sum back to the client. The client displays it.

Requirements

(1) Run the server in the background and the client in the foreground on the same host. This is referred to as the "`localhost`."

(2) Both the server and client require one argument: the port number to be used.

(3) Appropriate error messages should be printed if the socket cannot be created, if the client cannot connect, and if any step on the server side fails.

(4) There is no need to check the data typed in by the user. Assume that they are valid numbers.

Hints

(1) Use the examples in the `socket_examples.zip` file on Canvas as templates for your submission.

(2) There is no need to use `getaddrinfo()` in this assignment. Both client and server will be running on `localhost`, which can be hard-coded.

(3) You should include the following header files, potentially among others:

```
#include <sys/types.h>
#include <sys/socket.h>
#include <netdb.h>
#include <string.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
```

(4) Only ports with numbers above 1023 can be used.

Deliverables

A zip file containing:

(1) source files named client.c and server.c.

(2) a script that calls gcc to compile the above files, and then starts the server in the background and the client in the foreground.