15213 Lecture 21: Network Programming Introduction

Getting Started

In this activity, you'll be using the echo server code from class as a reference to write an echo client. Try to be the first group to display something on the projector without cheating (i.e., using telnet instead of your own client). Before you begin, download the server code and enter its directory:

1. `$ wget http://www.cs.cmu.edu/~213/activities/lec21.tar`
2. `$ tar xf lec21.tar`
3. `$ cd lec21/`

1 Berkeley Sockets: TCP Client Workflow

1. To prepare a TCP server socket, we called the following sequence of socket functions: `socket()`, `bind()`, `listen()`, and `accept()`. What sequence of functions should we instead call to prepare a TCP client socket? *(Hint: You may wish to refer back to the tcp(7) manual page.)*

2 Berkeley Sockets: Implementing the Client

Make a copy of the `server.c` file, naming it `client.c`: `$ cp server.c client.c`. You will modify the new file for the remainder of this activity.

2. Change the program to accept *two* command-line arguments, `<ip>` and `<port>`.
3. Parse the `<ip>` argument to create a `struct in_addr`, making sure to still populate its `.sin_port` field correctly. *(Hint: We've already seen a function for converting* from *an address structure* to *a string; how does this relate to what we now want to do?)*
4. Replace the server-specific Berkeley Sockets function calls (from question 1) with whatever client-specific one(s) you decided was/were necessary.
5. Tweak the robust I/O call to read a message from the user rather than from the network.
6. Finally, write the input you just collected *to* the network. *(Hint: If you have trouble figuring out which function is useful for this, one option can be found in `csapp.c`.)*
7. Make sure your code builds successfully.
8. After making sure you're cleaning up all the resources you've allocated, try writing an (appropriate) message to the projector. Will you be the first team to make it work?

In case you don't have time to get yours working, a reference client will be posted after class.