COSC402 Lab 2: Concurrent Sever Using Fork

Description

In this lab, you will practice to:

- get peer IP address using getpeername();
- convert IP address and port number between network byte-order and host byte-order;
- design a concurrent sever using fork().

Programming

Copy the *Lab2* folder from the pickup directory to the "402lab" directory in your local machine. Copy the *tcp_easy_ipv4_client.c* that you coded in the first lab to *Lab2*, and rename it as *tcp_client.c*. In this lab you will implement a concurrent server using the fork approach. The following functions in the *tcp_fork_server.c* need to be implemented based on the skeleton code given within the functions.

tcp_easy_listen()

- copy the body of your implementation in tcp_easy_ipv4_server.c.
- output the sever IP address and port number using inet_ntop() and ntohs();

tcp_fork_server()

-use fork() to create a duplicated process for each established connection.

Testing

Change into the *Lab2* folder, use **make** command to compile the source codes. Do the following when the executable files have been generated with no errors.

Test 1: local machine

1. Create a txt file named test.txt, add any txt you want in this txt file, and put it in the *Lab2* directory.
2. Open one terminal window, change into the *Lab2* directory, and type the following command to run the server program: **./tcp_fork_server 127.0.0.1 65530 test.txt**
3. Open another terminal window, and type the following command to run the server program: **./tcp_client 127.0.0.1 65530**
4. Open multiple terminal windows and run the *tcp_client* program at the same time. Check the output in each window.

Test 2: network

1. Open one terminal window, type **ifconfig** to get the IPv4 address of your local machine.
2. Repeat step 2 in Test 1 by replacing the IP address with the IPv4 address of your local machine.
3. Copy the source package (402lab) to another machine (your laptop with Internet connection or a machine in the lab). Recompile the source files in the *Lab2* folder. Repeat step 3 in Test 1 by replacing the IP address with the IPv4 address of the machine you run the server program (i.e. the IPv4 address you get in step 1).

4. Open multiple terminal windows and run the tcp_client program at the same time. Check the output in each window.

Test 3: big text file

Repeat the above test by replacing test.txt with bigtext.txt. Compare and explain the difference with Test 3 in Lab1.