

COMP 7005
Computer Systems Technology
September 2022
Network Security

Assignment #1

Due: October 11th, 2022, 5:29 PM.

This is an individual assignment.

Objective

Create a client and server to transfer files.

Tasks

The server will wait for clients to connect to it.

A client will connect to the server and send files to the server.

Once the client sends all the files, it will disconnect from the server.

The server must handle multiple clients, but only one client needs to be handled at a time - this means that the server **must** not be restarted between clients.

Constraints

- The client and server **must** be run on separate hosts.
- The server must store files in a separate directory for each client, for example,

```
~/server/downloads/192.168.0.7/  
~/server/downloads/192.168.0.8/  
~/server/downloads/142.232.68.1/
```

- The client must send the file name to the server for each file.
- The server can overwrite the file if it exists or, for bonus marks, give the new file a unique (and clear!) version number, for example,

```
~/server/downloads/192.168.0.7/foo.txt  
~/server/downloads/192.168.0.7/foo-v1.txt  
~/server/downloads/192.168.0.7/foo-v2.txt
```

- The server must be able to configure the root directory and port by command line arguments with defaults if no arguments are provided:
 - `./server`
 - `./server -d ~/server/downloads`
 - `./server -p 5000`
 - `./server -d ~/server/downloads -p 5000`
- The client must be able to configure the IP address and port for the server and send multiple files at once:
 - `./client -s 192.168.0.7 foo.txt`
 - `./client -s 192.168.0.7 foo.txt bar.txt`
 - `./client -s 192.168.0.7 *.txt`
 - `./client -s 192.168.0.7 -p 5000 *.txt`
- Both the client and server can be written in any programming language you choose.

Submission Requirements

Use the following directory structure:

Directory	Purpose
source	Any source code files
report	Report files in .pdf format
video	Video(s) demonstration of your working project
pcap	Any relevant packet captures

Notes

- Follow the appropriate report format ([samples](#)).
- The demo video should cover each one of your test cases. In other words, it will be similar to an actual lab demo, except you will prepare a video of each test instead of me standing beside you observing each test.
- You can have a separate video for each test (**preferred**) or a combined video of all test cases.
- During the test, you will capture network traffic on any relevant machines and then submit the pcap files as specified above.
- Please set the appropriate packet capture filter to limit the size and scope of the data collected to be what is necessary.

Format

You must hand in a pax.Z file to the assignment submission folder on Learning Hub (<https://learn.bcit.ca>).

You can hand in as many versions as you like. The last submission, based on the timestamp, will be the one to be marked.

```
pax -w source/ report/ video/ pcap/ -f assign-1-v#.pax  
compress -f assign-1-v#.pax
```

Hand in the resulting assign-1-v#.pax.Z file.

Note: failure to follow the submission requirements may result in a loss of marks, up to 100%.

Evaluation

Item	Value
Server features	30%
Client features	20%
Report	30%
Testing	20%
Total	100%