Project 2: FTP Server

CIS 457 – Data Communications

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Setup

This project was written in the Go programming language. To compile and run my source code, follow these instructions to download and install Go on your machine. Once installed, run `*go build <source file>*` to produce the binary. Alternatively, you can run the source file directly with `*go run <source file>*`.

Server

Given a host, port, and connection type, the main() function listens for connections indefinitely. Once a connection is established, the clients connection is passed as a parameter to the processesClient() function, which is ran as a go-routine (new thread).

Within processesClient(), the server first receives the host and port information the client will use when it opens the data connection, and stores these values in appropriate variables to use later. Then, the server waits for commands to be sent from the client.

Upon receiving a command, the server first checks the validity of the command, then attempts to establish a connection to the data line (where the client is acting as the server). Once the data connection is established, the data transfer is handled in the handleDataTransfer() function, where appropriate action is taken based on the instruction received. After this function has returned, the server closes its end of the data line and this cycle repeats until “QUIT” is received.

Client

The client program first prompts a user to connect to a server using the command '*CONNECT <server name/IP address>:<port>*'. Upon successful connection, the client sends the host name and port number it plans to use when opening the data connection. Now, the user is able to send commands to the server.

If a command requires a data transfer, a server is started on the client to act as the data connection. Once the FTP server has been connected to the data line, the handleDataTransfer() function is called and runs the appropriate logic based on the command sent. When the transfer is complete, the data connection is closed and the user is prompted to send another command. This loop continues until the client sends the "QUIT" command.

Demonstrations

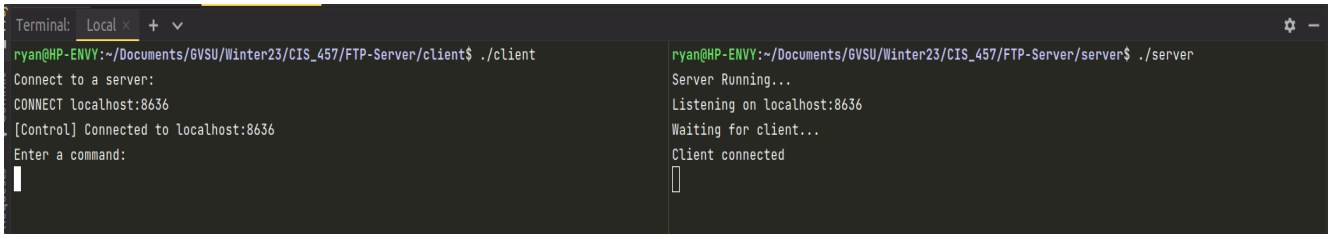

Figure 1: Connecting to the FTP Server

Figure 2: Running “LIST” command

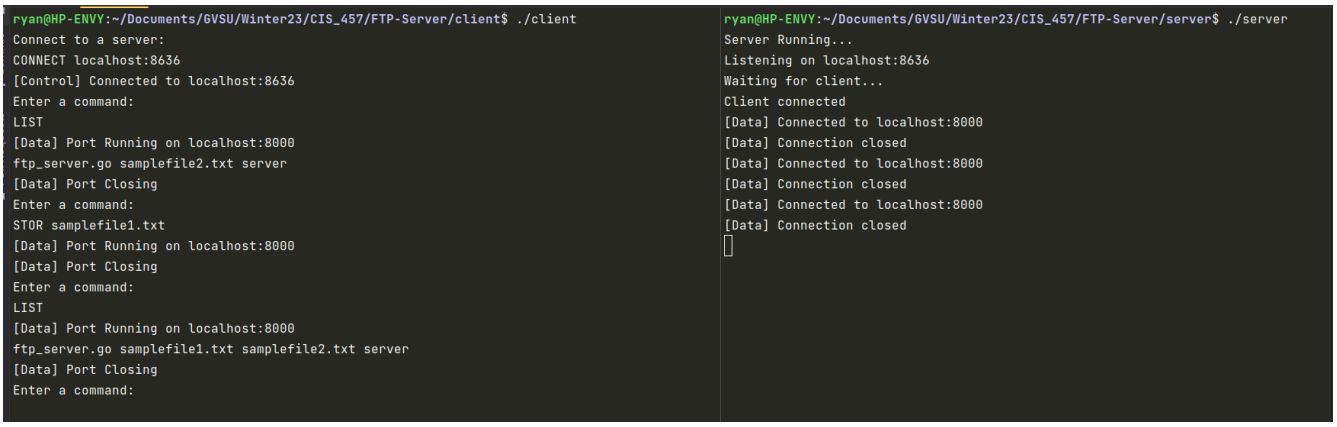

Figure 3: Running “STOR samplefile1.txt”

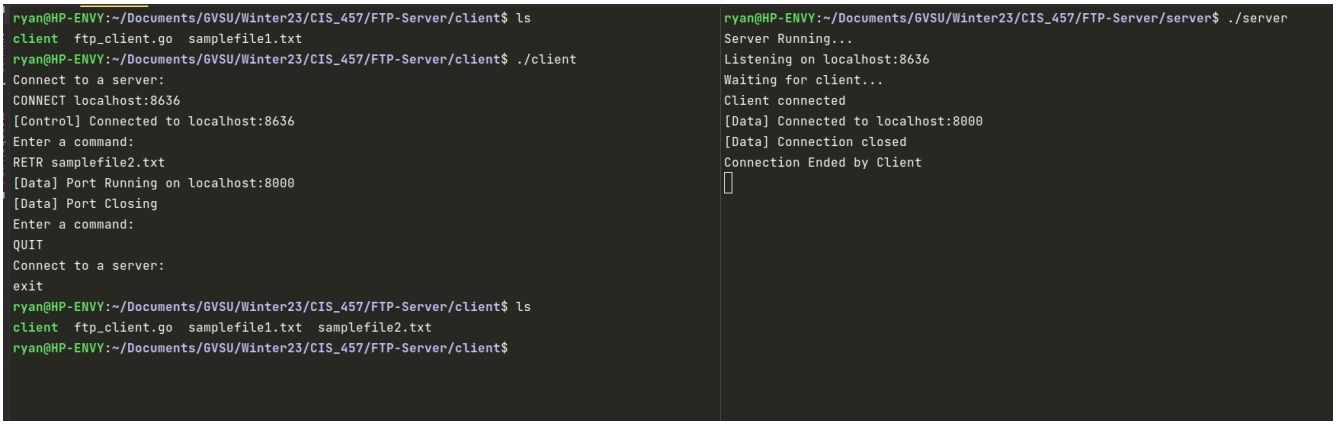

Figure 4: Running “RETR samplefile2.txt” and terminating the connection