

## Assignment 1 Report

### Introduction:

The purpose of this project is to develop a server and client shell application to execute various Unix shell commands. This program uses TCP protocol and three way handshake to get connected to the server.

### Implementation:

The Client will create a socket that allows IPv4 communication, then it will send a request to the server to connect. Once it is connected, the client will be able to type Unix shell commands and the server will execute the request and send the response back to the client, so client can print the result out on the terminal. Every time a command is typed, it will get transmitted to the server side by using the write() function. The client will wait for the response and print it out once it gets an acknowledgement from server.

The server uses the same TCP protocol and three way handshake to establish connection. It takes uses of bind(), listen() and accept() to receive any connection from client. Once it receives the request, the server will check the string to see if it is "exit", if it is then it will stop processing the request. If it is not "exit", then it will use popen() function to execute the command until end of file. At the end, I created a string called "endOfMessage" to send it back to client to tell the client that server has finished executed the command.

### Run the Program:

Procedure to run the server and client program:

Step 1 : Type "./server 1234" in terminal to open server connection.

Step 2 : Open a new terminal and type "./client 127.0.0.1 1234" to connect to the server.

Step 3 : Type any shell commands below to test the program:

```
cat /etc/resolv.conf
cat <filename>
date
df -h
du
echo $PATH
echo <environment variable>
free
last
ps aux
pwd
set
tty
uname -a
uptime
who
```

exit

**Conclusion/Problems:**

Overall, my program runs great, it runs smoothly when you enter all commands. However, it is only 99% successful rate. Therefore, you have to run it again, then all test will pass. I think my problem has to do with my client file where it is not exiting correctly.