CSCI 379

Computer Networking

Programming assignment #1

Due by 11:59pm, Monday, Nov. 6th, 2017

In this project, you need to replicate the echo client and server program that we discussed in Chapter 2, and then you are required to enhance the ECHO client/server program that we discussed in the class.

(25%) A set of sample Python code for echo client/server using both TCP and UDP has been introduced in the class, please refer to the slides of Chapter 2. You need copy the code and test it on your computer. This will the foundation of next step.

(45%) Choose either TCP or UDP version of the echo server/client, modify it to to accomplish the following function:

- Server side program should listen on port **9999** for incoming request.
- User(e.g. me) runs the client program to connect to server. Client program reads a sentence typed in by user via keyboard and user can select a command, then it sends both the command and the sentence to the server.
- Upon receipt of the sentence and command, server converts all the letters in the sentence into uppercase letters or lower letters or other format based on the received command, and sends the result back to the client.
- Client program displays the replied sentence on the screen.

Your server should support at least **three** commands: all uppercase, all lowercase, and another commands that you designed(something like initial caps, reverse each word, reverse the entire sentense, etc.). Other programming languages are also allowed. **Make sure test your program before submission, you'll receive 0 if your programs contains syntax errors!**

(20%) You also need to provide a document describing your protocol, i.e., underlying transport layer service, port numbers, the order and format of message sent and received by client/server, action associated with each message, etc. The document should provide enough information for others to implement client and server program to interact with yours.

(10%) You should also need to discuss the following issues:

- How TCP or UDP would affect your application? Why you pick TCP over UDP?(Or vice versa)
- Is your protocol stateful or stateless? How does the other type of design would affect your application? (*Hint*: this has nothing to do with whether you use TCP or UDP.)
- Is your server program able to communicate with multiple clients at the same time?

Things to submit, make a **zip** file named as `csci379_hw1_yourlastname.zip`(it will be `csci379_hw1_chu.zip` for me) including the follwing parts:

- Source code in `src` folder with subfolder in it for basic version and enhanced program respectively. Write comments in source code to include your name.
- Document on the protocol saved as a **PDF** file and named as `protocol.pdf`. Write down your name in the document.
- Discussion document saved as a **PDF** file and named as `discussion.pdf`. Write down your name in the document.

Submit the zip file through blackboard.