

CSC 4220/6220

Spring 2017

Assignment 2

Due Date: Friday, February 17th 11:59 pm

Late Deadline: Friday, February 24th 11:59 pm

Directions: Use Java to program your solutions to this Assignment. Answer all questions. Save your Java programs in a WORD document. Provide screenshots of your programs as they execute. Include everything in a WORD document with your name and panther ID. Upload the document in iCollege dropbox to receive your grade. Your programs will be checked if they execute and produce correct results.

Q1. Write a server program using TCP that accepts requests from clients to capitalize strings sent by the clients. When a client connects, a new thread is started to handle an interactive dialog in which the client sends a string and the server sends back the capitalized version of the string. Set a maximum limit of 10 strings to accept from a client. The server capitalizes each string and sends it back to the client with a prompt for the next string. You may choose to terminate the connection before the maximum limit of 10 strings is reached. Send an appropriate message to the server in that case when it prompts for next string. After the maximum limit of 10 strings is reached, your program should close the connection automatically and display the message “Connection Closed.” and terminate execution. You should write the corresponding client program as well.

Q2. Write a web server that is capable of processing only 1 request. Your web server will:

- i) Create a connection socket when contacted by the client (browser)
- ii) Receive the HTTP request from this connection
- iii) Parse the request to determine the specific file being requested
- iv) Get the requested file from the server’s file system
- v) Create an HTTP response message consisting of the requested file
- vi) Send the response over TCP Connection to the requesting browser

If a client requests a file that is not present in your server, your server should return a “404 Not Found” error message.

Q3. (For Graduate Students only). Write a **multi-threaded** server program using TCP that accepts requests from **5** clients to capitalize strings sent by the clients. When a client connects, a new thread is started to handle an interactive dialog in which the client sends a string and the server sends back the capitalized version of the string. Set a maximum limit of 10 strings to accept from a client. The server capitalizes each string and sends it back to the client with a prompt for the next string. You may choose to terminate the connection before the maximum limit of 10 strings is reached. Send an appropriate message to the server in that case when it prompts for next string. After the maximum limit of 10 strings is reached, your program should close the connection automatically and display the message “Connection Closed to Client #n.” You should write the corresponding client program as well.

The interaction of the server with multiple clients is concurrent and has to be synchronized.