Cornell College

Department of Computer Science

Lab Assignment 5

CSC317: Computer Networks

The purpose of this assignment is to get you introduced with multi threaded socket programming. You will work on an application for file transfer between a client and a server. Complete the following tasks.

Task 1. Download the zip file *LA5.zip* from Moodle and unzip it. Check the folder named *server*. You should find a Python implementation of a server (*server.py*) and 283 image files in the folder. Run the server and check the code carefully. Note that you will be asked to implement a server in Lab Assignment 6. The server is multi threaded as it can handle multiple connections simultaneously. The server responds to two types of requests. When a client sends a request with the message "send filelist", the server sends the list of all the files/images available in its default directory. A client can also request for a particular file, and the server simply sends the file to the client if the file is available, as a response.

While the server is running, run the clint from the folder *client*. The given client program first establishes a TCP connection, and requests for the list of files. Once the list is received, the client sends sequential download requests for each of the individual files using a single connection. This is equivalent to persistent HTTP with a single connection, except that we are using our own simplified messages instead of standard HTTP request/response.

Once the client program downloads all the files and finishes its execution, observe that all 283 images are copied to the client's folder.

Task 2. Implement a client in a separate folder that downloads all the files using 5 parallel connections. Your client should first request for the filenames just like the client you ran in task 1. When the list is received, the client should download all the 283 files using 5 parallel connections and **copy all the files to its default folder**. Note that, this is equivalent to persistent HTTP with 5 parallel connections.

Task 3. Report and compare how much time it takes to download all the files with a single connection and with 5 parallel connections.

Submission Instructions. You need to submit only the client you implemented. You are welcome to write the program from scratch. However, it should save a lot of time if you just modify the client program already given to you. You also need to show me your code and output before submission.