Title
Web Server

Lecture Topics Emphasized
Thread Methods
Networking Theory
Networking Programming

Introduction
A web server is a very simple application that receives requests from a client (typically a web browser), and sends back out the contents of a file, if it exists. A web server differs from an application server in that it only sends the content of a file back but does not do any server-side processing. This just requires accepting a connection from a client, parsing the messages that is passed to it, and responding with an appropriate file.

Description
For this lab, you are going to create a web server. You will need to allow as many clients to connect to your web server as possible (requiring multi-threading). Each connection should be handled by a separate thread.

The client that will connect to your web server will be a web browser. That means that you need to communicate using HTTP. You can look up online what the header of an HTTP request looks like. Once you parse the incoming request, you will try to find the file that was requested. You can put a few test HTML files into a directory on your computer where your web server will check. If the file requested is there, open the file, read all of the lines out of it, and send the contents of the file back to the client. Note that you will need to send back a valid HTTP header followed by the content of the file.

The web server can run on any port, most likely one above 1024 so you don't need administrator access on your computer. Assuming you run your web server on port 6789, to request a page, you will load the page http://localhost:6789/test.html in a browser. Your web server will then try to find the file test.html. If it finds it, it will send the content of that file back to the browser. If that file contains HTML, CSS, and JavaScript, the browser will interpret the code and display it just like a regular web site.

If the file cannot be found, send back an HTTP 404 message in the header of the HTTP response. The browser will then display the default 404 message.

Once your web server is working, try adding images into the directory, and modify your HTML files to include img tags. The browser will automatically request the image files, and you will just need to change the content type of the HTTP header to represent an image being returned, followed by the contents of the image file.

<u>Grading Criteria</u>

Labs are not graded based on any given criteria but are instead graded on effort and attendance. If you arrived to lab within the first 10 minutes and worked on it the for the entire duration of the lab, you will receive full credit regardless of whether you completed it. TAs will not grade labs until after at least half the lab period has elapsed. Use the lab time as an opportunity to more fully understand the course material and ask your TA questions.