Networks HTTP Server Assignment 1560995
Diary

Preparatory Exercises

Before starting the main exercise, I completed the three preparatory exercises. As I did not take the C/C++ module last year and have been trying to learn C on my own, I saw this as a good chance to use the language for an actual application. The three exercises were not too difficult to complete once I had researched the socket API and using the lecture notes, although I encountered some issues when testing the pthread code with Valgrind to remove memory leaks in my code - I had never used pthreads before and had to read up on the correct way to detach threads before exiting them.

Main Exercise

Creating the makefile was an interesting addition, as I had not encountered this while learning C on my own. Most of the difficulty in the main exercise resulted from handling strings with C, which led to many errors and fixes in my code over time. Once I properly understood how to handle strings, parsing the HTTP requests became a lot simpler, due to the ample HTTP documentation and explanations online. Utilizing Valgrind for testing made debugging my code a lot simpler as I could pinpoint where I had used memory incorrectly.

Implementing the SSL encryption extension was fairly straightforward, as it just involved initialization and key/cert creation at the start and then replacing my socket and read/write calls with the appropriate SSL_read and SSL_write calls once the SSL was set on the socket. The use of SSL does lead to some Valgrind memory errors, but apart from this there is no reported directly or indirectly lost memory.

In Retrospect

If I were to repeat the exercise, I would probably use a language I was more comfortable with, such as Java, to allow easier manipulation of strings. This would alleviate most of the issues and challenges I encountered throughout the assignment. Additionally, I could have attempted the other extensions such as compression if I had had more time to focus on them, rather than debugging as I had to using C.