COMP4621 Course Project
HTTP Server

COMP4621 TAs

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1 Background

The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, and hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web and is built on top of TCP layer.

HTTP functions as a request–response protocol in the client–server computing model. Two entities including HTTP client and HTTP server are involved. A web browser, for example, may be the client and an application running on a computer hosting a website may be the server.

For communication, first, the client submits an HTTP request message to the server. The server then prepares resources such as HTML files and other content after parsing the receiving request and returns a response message to the client.

In this project, you are going to understand how HTTP works and implement an HTTP server. Your web browser is required to test your HTTP server as HTTP client. Also, you are required to implement two new features or optimization for transmission based on your survey and understanding of HTTP protocol.

You can consult the **RFC** [1] and Wikipedia [2] for more detailed information.

2 Requirements

You should:

1. Implement the HTTP server using C/C++ (recommended), Java or Python.
2. Support parse for different files. Such as HTML, CSS, JPG, PDF and PPTX.
3. Support multiple threads.
4. Implement two new features or optimization for transmission.

5. Prepare several HTML files for testing. The content of the HTML files should include at least your name, your student ID, one image and one link to PDF file. The HTML files should use at least one CSS file.

You should **NOT**:

1. Directly use third-party libraries that provide HTTP support.
2. Use multiplexing facilities, such as `EPOLL` or `SELECT`.
3. Copy from others.
4. Copy from Github.

3 Grading

You need to send TAs an email along with a .zip file attachment, including your report and source code, to reserve a time slot for interview. The report should highlight how you implement each requirement in your code (no need to be too complex) and also illustrate the motivation for new features or optimization.

During the interview,

1. You need to run your code and show results to TAs.
2. You need to explain your implementations and new features' motivation to TAs.
3. TAs will ask several questions related to your implementations.

The grading scheme (and demo criteria) is as follows,

1. Parse different types of files (30 points).
2. Support multi-thread (30 points).
3. Display user-friendly information when the requested file was not found (10 points).
4. Implement two new features or optimization for transmission with appropriate motivations (20 points,10 points each)
5. Q&A (10 points).

References

[1] RFC for HTTP: `https://www.ietf.org/rfc/rfc2616.txt`

[2] Wikipedia page for HTTP: `https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol`