Protocol Document-P2

Protocols Used

Transport Protocol:

The data transfer between the client and the server is achieved using TCP on port 60001.

Application Protocol:

The communication between the client and the server is structured with HTTP/1.1.

Message Exchange

Flow

1. Server is created and listens on port 60001.
2. Client is opened in browser using localhost:60001 to connect to the server, or a command-line client can be used to send GET and POST requests.
3. Client sends GET/HTTP/1.1 request
4. Server receives it, parses the HTTP request, extracts method and path, processes the lack of a filename by default, reads the file index.html and sends an HTTP 200 OK response with the file content (Content-Type: text/html, Content-Length: <file-size>, <file-content>) to the client.
5. Server then closes the client socket and continues listening for new connections.
6. Client sends GET/<testPresence.html>HTTP/1.1 request
7. Server receives it, parses the HTTP request, extracts method and path, reads the file testPresence.html and sends an HTTP 200 OK response with the file content to the client.
8. Server then closes the client socket and continues listening for new connections.
9. Client sends GET/<fake.html>HTTP/1.1 request
10. Server receives it, parses the HTTP request, extracts method and path, fails to read the non-existent fake.html file and sends an HTTP 404 Not Found response to the client.
11. The client can send a custom message to the server using: msg: <custom-message>. It goes out as a POST request from the client to the server.
12. The server parses and logs the message.
13. The server responds with: HTTP/1.1 204 No Content
14. Server then closes the client socket and continues listening for new connections.
15. If the client sends an incorrect IP that has a valid format, then the client will detect the connection failure and retry or return an error message to avoid an indefinite hang.
16. The client uses setsocketopt() to set send/receive timeouts of 2 seconds in order to distinguish between the server being unreachable and a no response from a reachable server.
17. The client can be gracefully closed by entering "exit" in the command line.
18. Server is closes when the program is terminated.