Cuteserver: A web server written in C

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Introduction

"Web servers are everywhere", Shakespeare once said. This is especially true today. But "Hark! Dost the common folk comprehend what these web servers be? And doth they grasp the manner of their workings?".

In this project we aspire to understand the inner workings of web servers. It is of interest for us, as we both recently set up our own home servers and came in contact with different tools such as nginx. Building our own web server helped us be more competent in using those tools. It also helped us deepen our knowledge of OS topics such as socket programming, thread/process creation & management and inter-process communication.

This project resulted in Cuteserver, a simple web server written in C. It can handle various HTTP/1.1 requests from multiple clients concurrently. It is configurable and supports hosting content for multiple domains and is thus similar to a reverse proxy. It can be hosted easily with a prepared docker image. In the following chapters, we will discuss the steps taken and the challenges we faced in this project.

Background

In this section we explain some concepts we had to understand implementing our project.

HTTP Protocol

CGI

Implementation

Development Environment

Project Structure

Static File Requests

CGI

Server Configuration

Containerization

Example Application

Results

Conclusion

We were successful in our project and comparing to our original plan we implemented everything but websockets. What we miscalculated a bit was the POST-Request handling (as we didn't know about CGI before). This took more time than we anticipated.

Project Planning in General: we never looked at the JIRA Board during the project. so maybe next time find a different way to plan.

Lessons learned

Future Outlook

References

Libraries

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