

Rudy, a small web server

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1 Introduction

This lab aims to understand the basic structure of a web server in Erlang.

2 Socket API

A socket API is consisting of libraries for handling Berkeley Sockets, which are abstractions that make handling connections over the Internet simpler for programmers. A socket is made up of an IP address and a port number.

The missing pieces of the socket API consisted calling handler(Listen) from init, calling request(Client) from handler and parsing the request in request. As well as defining the reply text, were I responded with the URI requested.

3 Server process

A server process is a machine process, that is listening for incoming requests on a certain port. It has defined instructions for handling the request and generating a response.

4 HTTP

The HTTP module is consisting of functions for parsing requests requesting lines, uris and defining versions. As of HTTP 1.1...

5 Evaluation

Measuring the time with different sleep times for 100 requests resulted in:

Sleep time (s)	Benchmark time (s)
0.01	1.19
0.02	2.20
0.04	4.19
0.08	8.20
0.16	16.20

We can see that we have around 0.2 s actual delay in all cases (0.002 per request). This makes the delay significant for all cases. At 0.04 s delay time as in our program, every request takes 0.0419 s. We can make at most $1 / 0.0419 = 23.8$, 23 requests per second.

6 Improvements

Possible improvements include using multi-threaded extensions. Creating a new process for every request is an alternative. An other alternative is to create a new thread for every request, which is cheaper than creating a new process. According to the course literature: Distributed systems, Concepts and design. It takes about 11 milliseconds to create a new UNIX process and about 1 millisecond to create a new thread, this was done using a CVAX processor running the Topaz kernel.

To know how long the body is you could look at the content-length parameter. Or if the client sends a message with the parameter: Transfer-Encoding: Chunked, it will have to be parsed until it finds a chunk with length 0.

7 Conclusion

This lab was a good introduction to server based Erlang programming.