cServe

HTTP/1.1 200 OK

HTTP/1.1 404 NOT FOUND

HTTP Request Handler

send()

recv()

Build Response

Load Resource

Path Gateway

Picohttpparser

Cache Manager 🔒

LRU   MRU

Mime Type

Route Search

Load File & Metadata

Route Table

/	→	/index.html
/about	→	/bio.html
/contact	→	/ph.html
/images	→	/bg.jpg

Server Root Dir

Thread Pool

Pinned Threads

Queue Manager Context

```
int num_queues;
int grid_dim;
int block_dim;
queue **queue_ptrs;
```

Queue Manager 🔒

server_context

Server Initializer

```
server_start(*server_ctx)
    client_socket_fd = accept()
    listen (port = 8080)
```

Connection Wrapper

```
http_server *server_ctx;
int client_socket_fd;
```

```
queue_manager(
    "enqueue",
    void *data
);
```

```
http_server *server_ctx =
server_init(args);
```

↑↑↑↑↑↑↑ Concurrent Connections

>

```
Server Software:                              Server Software:        nginx/1.18.0
Server Hostname:        localhost             Server Hostname:        localhost
Server Port:            8082                  Server Port:            8080

Document Path:          /                     Document Path:          /
Document Length:        Variable              Document Length:        Variable

Concurrency Level:      500                   Concurrency Level:      500
Time taken for tests:   25.963 seconds        Time taken for tests:   26.163 seconds
Complete requests:      1000000               Complete requests:      1000000
Failed requests:        0                     Failed requests:        0
Total transferred:      14910000000 bytes     Total transferred:      15074000000 bytes
HTML transferred:       13322001507 bytes     HTML transferred:       14829000000 bytes
Requests per second:    38516.76 [#/sec] (mean)   Requests per second:    38222.29 [#/sec] (mean)
Time per request:       12.981 [ms] (mean)    Time per request:       13.081 [ms] (mean)
Time per request:       0.026 [ms] (mean, across all concurrent requests)   Time per request:       0.026 [ms] (mean, across all concurrent requests)
Transfer rate:          560825.13 [Kbytes/sec] received   Transfer rate:          562658.97 [Kbytes/sec] received

Connection Times (ms)                         Connection Times (ms)
              min  mean[+/-sd] median   max                 min  mean[+/-sd] median   max
Connect:        0     6   1.6      6     15   Connect:        0     4   1.4      4      8
Processing:     4     7   1.6      7     16   Processing:     3    10   1.5      9     17
Waiting:        0     2   0.7      2      5   Waiting:        0     6   2.6      5     17
Total:          8    13   0.6     13     23   Total:          6    13   1.0     13     22

Percentage of the requests served within a certain time (ms)   Percentage of the requests served within a certain time (ms)
  50%     13                                    50%     13
  66%     13                                    66%     13
  75%     13                                    75%     13
  80%     13                                    80%     13
  90%     14                                    90%     13
  95%     14                                    95%     14
  98%     14                                    98%     14
  99%     15                                    99%     20
 100%     23 (longest request)                 100%     22 (longest request)
```

cServe

Nginx was configured to match the capabilities of **cServe** to keep comparisons fair
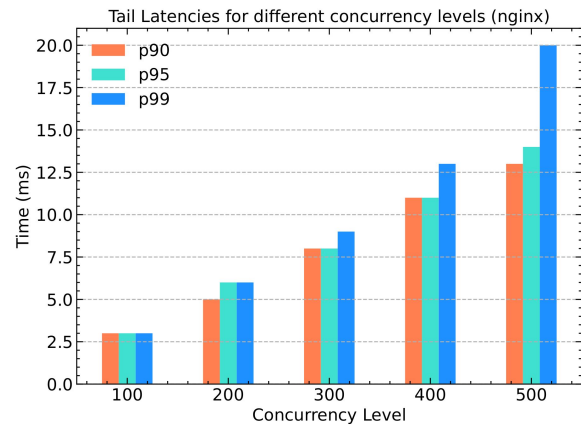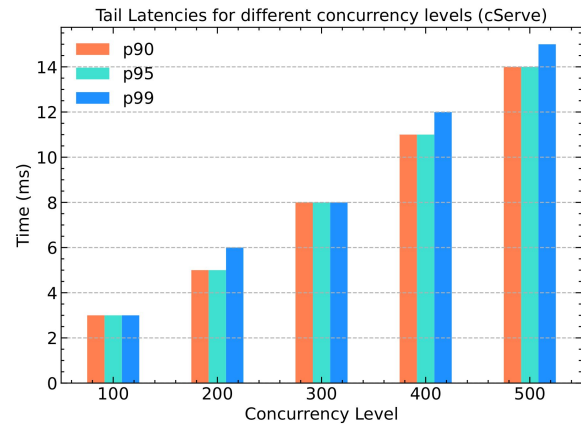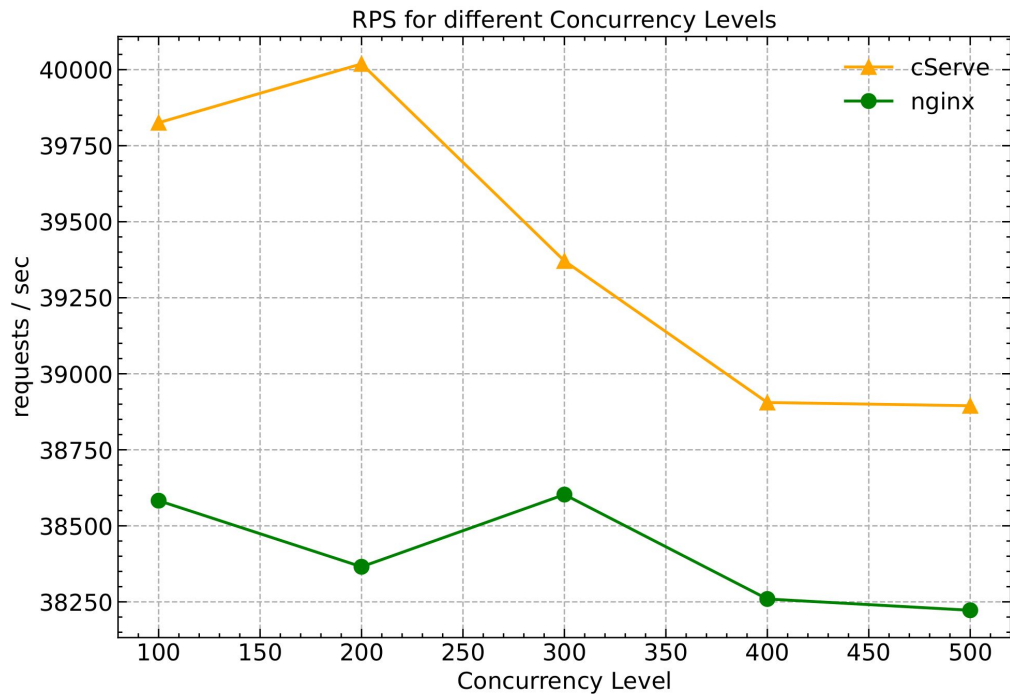
cServe is built purely out of my interest in figuring out how HTTP servers work under the hood.

This work is no competitor to **NGINX** and should **not** be used for deploying static websites in production setting.

NGINX just serves as a reference point for comparing performance of cServe and to validate cServe's capabilities of handling concurrent connections.