

DOKUMENTASI TUGAS 10
PEMROGRAMAN JARINGAN – B



Dipersiapkan oleh :

Tubagus Irkham Izzata Apriwibowo

05111740000012

Departemen Informatika – Institut Teknologi Sepuluh Nopember
Jl. Teknik Kimia, Keputih, Kec. Sukolilo, Kota SBY, Jawa Timur 60111

TUGAS 10

a. Soal dan Tampilan Awal

- Tugas 10:
 1. Pull update terbaru
 2. Jalankan `async_server.py` pada port 9002, 9003, 9004, 9005 (lihat pada BackendList)
 3. Jalankan file `lb.py`, jalankan di port 44444
 4. Jalankan browser, akseslah <http://localhost:44444/page.html>
 5. Lihatlah di log program, bahwa setiap request akan dilayani oleh backend yang bergantian
 6. Lakukan performance test seperti pada tugas 9, bandingkan penggunaan load balancer dengan `async_server` dengan `server_thread_http` pada folder `progjar5`
 7. Buatlah tabel hasilnya

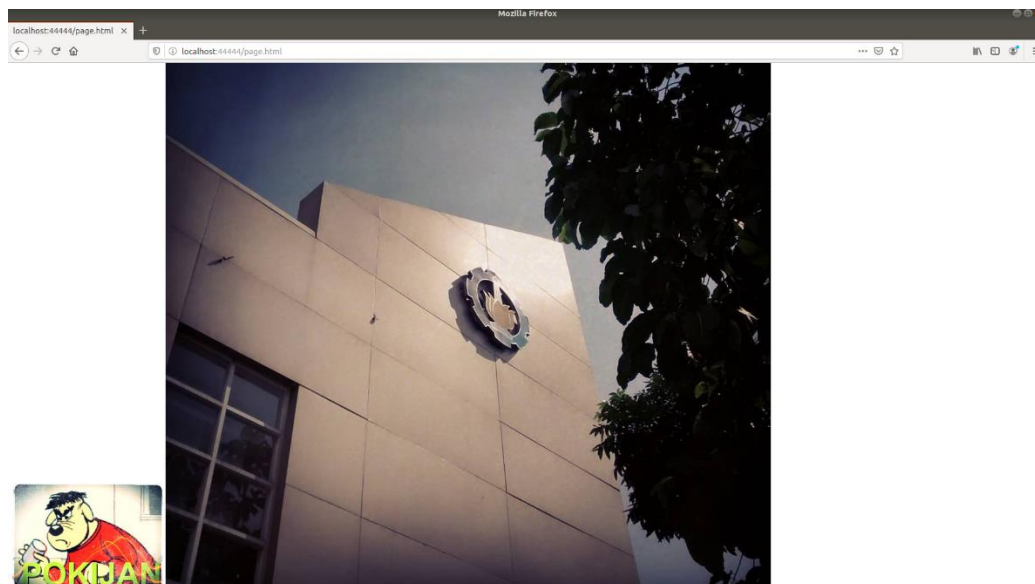
- Tampilan file `runserver.sh` di terminal setelah dijalankan :

```
tubagus@ubuntu:~/Progjar/Tugas 10$ WARNING:root:running on port 9004
WARNING:root:running on port 9005
WARNING:root:running on port 9002
WARNING:root:running on port 9003
```

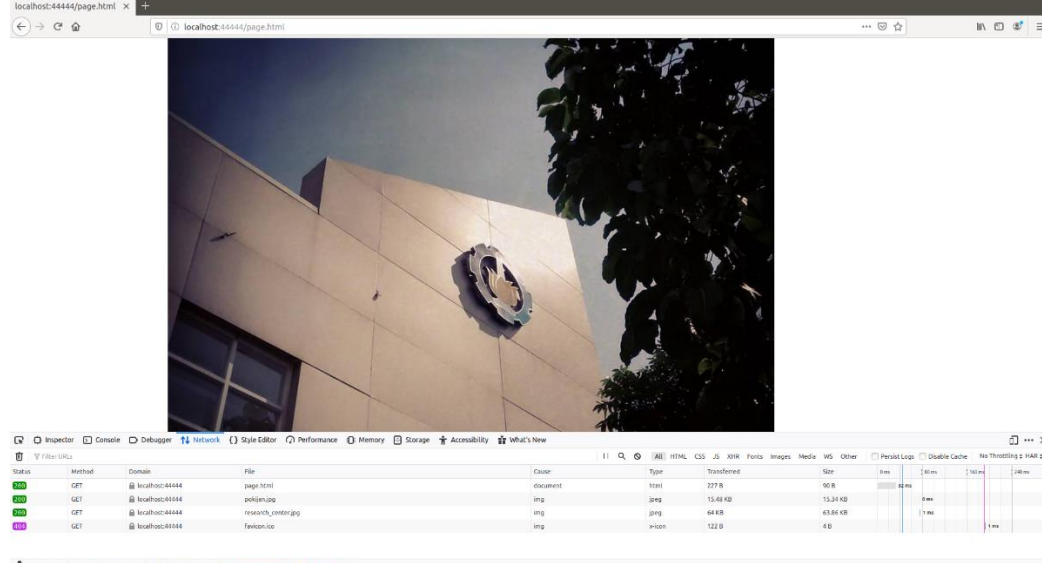
- Tampilan file `lb.py` di terminal setelah dijalankan :

```
tubagus@ubuntu:~/Progjar/Tugas 10$ python3 lb.py
WARNING:root:load balancer running on port 44444
```

- Tampilan pada <http://localhost:44444/page.html> setelah file `runserver.sh` dan `lb.py` dijalankan :



- Bukti bahwa setiap request dilayani oleh backend yang bergantian :



```
WARNING:root:koneksi dari ('127.0.0.1', 35508) diteruskan ke ('127.0.0.1', 9002)
WARNING:root:connection from ('127.0.0.1', 35510)
WARNING:root:koneksi dari ('127.0.0.1', 35510) diteruskan ke ('127.0.0.1', 9003)
WARNING:root:connection from ('127.0.0.1', 35512)
WARNING:root:koneksi dari ('127.0.0.1', 35512) diteruskan ke ('127.0.0.1', 9004)
WARNING:root:connection from ('127.0.0.1', 35520)
WARNING:root:koneksi dari ('127.0.0.1', 35520) diteruskan ke ('127.0.0.1', 9005)
WARNING:root:connection from ('127.0.0.1', 35526)
WARNING:root:koneksi dari ('127.0.0.1', 35526) diteruskan ke ('127.0.0.1', 9002)
WARNING:root:connection from ('127.0.0.1', 35530)
WARNING:root:koneksi dari ('127.0.0.1', 35530) diteruskan ke ('127.0.0.1', 9003)
WARNING:root:connection from ('127.0.0.1', 35532)
WARNING:root:koneksi dari ('127.0.0.1', 35532) diteruskan ke ('127.0.0.1', 9004)
WARNING:root:connection from ('127.0.0.1', 35538)
WARNING:root:koneksi dari ('127.0.0.1', 35538) diteruskan ke ('127.0.0.1', 9005)
WARNING:root:connection from ('127.0.0.1', 35544)
WARNING:root:koneksi dari ('127.0.0.1', 35544) diteruskan ke ('127.0.0.1', 9002)
WARNING:root:connection from ('127.0.0.1', 35546)
WARNING:root:koneksi dari ('127.0.0.1', 35546) diteruskan ke ('127.0.0.1', 9003)
WARNING:root:connection from ('127.0.0.1', 35548)
WARNING:root:koneksi dari ('127.0.0.1', 35548) diteruskan ke ('127.0.0.1', 9004)
WARNING:root:connection from ('127.0.0.1', 35556)
WARNING:root:koneksi dari ('127.0.0.1', 35556) diteruskan ke ('127.0.0.1', 9005)
```

b. Tabulasi Hasil Performance Test

- Server Asynchronous + Load Balancer

No	Concurrency Level	Time Taken for Tests (seconds)	Completed Request	Failed Request	Total Transferred (bytes)	Request per second (#/s)	Time per Request (ms)	Transfer Rate (Kbytes/sec)
1	1	1.147	1000	0	122000	872.04	1.147	103.90
2	5	0.478	1000	0	122000	2091.56	0.478	249.19
3	10	1.406	1000	0	122000	711.43	1.406	84.76
4	25	1.310	1000	0	122000	763.14	1.310	90.92

5	50	0.455	1000	0	122000	2196.95	0.455	261.75
6	100	0.455	1000	0	122000	2195.82	0.455	261.61

- **Server Asynchronous**

No	Concurrency Level	Time Taken for Tests (seconds)	Completed Request	Failed Request	Total Transferred (bytes)	Request per second (#/s)	Time per Request (ms)	Transfer Rate (Kbytes/sec)
1	1	2.926	1000	0	122000	341.72	2.926	40.71
2	5	1.177	1000	0	122000	849.31	1.177	101.19
3	10	1.222	1000	0	122000	818.01	12.225	1.222
4	25	2.695	1000	0	122000	371.07	2.695	44.21
5	50	14.343	1000	0	122000	69.72	14.343	8.31
6	100	55.345	1000	0	122000	18.07	55.345	2.15

- **Server Thread**

No	Concurrency Level	Time Taken for Tests (seconds)	Completed Request	Failed Request	Total Transferred (bytes)	Request per second (#/s)	Time per Request (ms)	Transfer Rate (Kbytes/sec)
1	1	782.795	1000	0	122000	1.28	782.795	0.15
2	5	509.644	1000	0	122000	1.96	509.644	0.23
3	10	680.538	1000	0	122000	1.47	680.538	0.18
4	25	696.912	1000	0	122000	1.43	696.912	0.17
5	50	630.537	1000	0	122000	1.59	630.537	0.19
6	100	1417.823	1000	0	122000	0.71	1417.823	0.08

c. Kesimpulan

Kesimpulan yang didapatkan dari tabulasi di atas adalah bahwa hasil performance test jika Server Asynchronous + Load Balancer dijalankan jauh lebih baik dibandingkan jika hanya Server Asynchronous saja atau Server Thread saja yang dijalankan.

d. Lampiran

- **Server Asynchronous + Load Balancer (Port 44444)**
 - **Concurrency 1**

```
Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     1
Time taken for tests:  1.147 seconds
Complete requests:     1000
Failed requests:        0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   872.04 [#/sec] (mean)
Time per request:      1.147 [ms] (mean)
Time per request:      1.147 [ms] (mean, across all concurrent requests)
Transfer rate:         103.90 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.0      0      1
Processing:      1      1   0.5      1      8
Waiting:         0      1   0.5      1      8
Total:          1      1   0.5      1      8

Percentage of the requests served within a certain time (ms)
 50%      1
 66%      1
 75%      1
 80%      1
 90%      2
 95%      2
 98%      3
 99%      3
100%      8 (longest request)
```

- **Concurrency 5**

```

Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    5
Time taken for tests:  0.478 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  2091.56 [#/sec] (mean)
Time per request:      2.391 [ms] (mean)
Time per request:      0.478 [ms] (mean, across all concurrent requests)
Transfer rate:         249.19 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.0       0      0
Processing:      1      2   1.1       2     11
Waiting:         1      2   1.1       2     10
Total:           1      2   1.1       2     11

Percentage of the requests served within a certain time (ms)
 50%      2
 66%      2
 75%      3
 80%      3
 90%      4
 95%      5
 98%      6
 99%      7
100%     11 (longest request)

```

○ Concurrency 10

```

Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    10
Time taken for tests:  1.406 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  711.43 [#/sec] (mean)
Time per request:      14.056 [ms] (mean)
Time per request:      1.406 [ms] (mean, across all concurrent requests)
Transfer rate:         84.76 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.1       0      1
Processing:      1      5  32.0       3    1016
Waiting:         1      5  32.1       3    1016
Total:           1      5  32.0       4    1016

Percentage of the requests served within a certain time (ms)
 50%      4
 66%      4
 75%      5
 80%      5
 90%      6
 95%      7
 98%     10
 99%     12
100%    1016 (longest request)

```

○ Concurrency 25

```
Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     25
Time taken for tests:  1.310 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   763.14 [#/sec] (mean)
Time per request:      32.759 [ms] (mean)
Time per request:      1.310 [ms] (mean, across all concurrent requests)
Transfer rate:         90.92 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.4      0      4
Processing:      1      5  32.3      3    1022
Waiting:         1      4  32.3      3    1022
Total:           1      5  32.3      3    1022

Percentage of the requests served within a certain time (ms)
 50%      3
 66%      4
 75%      4
 80%      5
 90%      7
 95%      9
 98%     11
 99%     12
100%    1022 (longest request)
```

○ Concurrency 50

```
Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     50
Time taken for tests:  0.455 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   2196.95 [#/sec] (mean)
Time per request:      22.759 [ms] (mean)
Time per request:      0.455 [ms] (mean, across all concurrent requests)
Transfer rate:         261.75 [Kbytes/sec] received

Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.5      0      4
Processing:      1      3   1.6      3     15
Waiting:         1      3   1.5      2     15
Total:           1      3   1.6      3     15

Percentage of the requests served within a certain time (ms)
 50%      3
 66%      3
 75%      4
 80%      4
 90%      5
 95%      6
 98%      8
 99%     10
100%     15 (longest request)
```

- **Concurrency 100**

```
Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          44444

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     100
Time taken for tests:  0.455 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  2195.82 [#/sec] (mean)
Time per request:     45.541 [ms] (mean)
Time per request:     0.455 [ms] (mean, across all concurrent requests)
Transfer rate:        261.61 [Kbytes/sec] received

Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    0      0   1.1      0      9
Processing:  1      3   1.4      3     13
Waiting:    1      3   1.4      2     13
Total:      1      4   1.9      3     14

Percentage of the requests served within a certain time (ms)
 50%      3
 66%      3
 75%      4
 80%      4
 90%      5
 95%      7
 98%     11
 99%     13
100%     14 (longest request)
```

- **Server Asynchronous (Port 45000)**
 - **Concurrency 1**


```
tubagus@ubuntu:~$ ab -n 1000 -c 1 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:     1
Time taken for tests:  2.926 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:     4000 bytes
Requests per second:   341.72 [#/sec] (mean)
Time per request:      2.926 [ms] (mean)
Time per request:      2.926 [ms] (mean, across all concurrent requests)
Transfer rate:         40.71 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median   max
Connect:        0      0   0.1      0      2
Processing:      1      3   2.9      2     92
Waiting:        1      2   2.9      2     92
Total:          1      3   3.0      3     92
```

○ Concurrency 5

```

tubagus@ubuntu:~$ ab -n 1000 -c 5 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    5
Time taken for tests:  1.177 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  849.31 [#/sec] (mean)
Time per request:      5.887 [ms] (mean)
Time per request:      1.177 [ms] (mean, across all concurrent requests)
Transfer rate:         101.19 [Kbytes/sec] received


Connection Times (ms)
              min      mean[+/-sd] median   max
Connect:        0        0    0.0      0      0
Processing:      1        6    1.7      5     14
Waiting:         1        6    1.6      5     14
Total:          2        6    1.7      5     14

```

- **Concurrency 10**

```
tubagus@ubuntu:~$ ab -n 1000 -c 10 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    10
Time taken for tests:  1.222 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  818.01 [#/sec] (mean)
Time per request:     12.225 [ms] (mean)
Time per request:     1.222 [ms] (mean, across all concurrent requests)
Transfer rate:        97.46 [Kbytes/sec] received


Connection Times (ms)
              min      mean[+/-sd]  median    max
Connect:        0       3   55.8         0   1020
Processing:     1       8    6.3         8    202
Waiting:        1       8    6.3         8    202
Total:          2      11   59.6         8   1222
```

○ **Concurrency 25**

```
tubagus@ubuntu:~$ ab -n 1000 -c 25 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    25
Time taken for tests:  2.695 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  371.07 [#/sec] (mean)
Time per request:     67.373 [ms] (mean)
Time per request:     2.695 [ms] (mean, across all concurrent requests)
Transfer rate:        44.21 [Kbytes/sec] received


Connection Times (ms)
              min      mean[+/-sd] median   max
Connect:        0      19 138.3      0   1030
Processing:      1      21 115.6      7   1668
Waiting:         1      21 115.6      7   1668
Total:           1      40 239.1      7   2673
```

- **Concurrency 50**

```
tubagus@ubuntu:~$ ab -n 1000 -c 50 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    50
Time taken for tests:  14.343 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  69.72 [#/sec] (mean)
Time per request:     717.137 [ms] (mean)
Time per request:     14.343 [ms] (mean, across all concurrent requests)
Transfer rate:        8.31 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median   max
Connect:        0    44 207.8      0   1027
Processing:      2   126 934.2      7  13317
Waiting:         1   126 934.2      7  13317
Total:           2   170 1071.7      7  14341
```

- **Concurrency 100**

```
tubagus@ubuntu:~$ ab -n 1000 -c 100 http://127.0.0.1:45000/
This is ApacheBench, Version 2.3 <$Revision: 1807734 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          45000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    100
Time taken for tests:  55.345 seconds
Complete requests:    1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  18.07 [#/sec] (mean)
Time per request:     5534.471 [ms] (mean)
Time per request:     55.345 [ms] (mean, across all concurrent requests)
Transfer rate:        2.15 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0     58 234.8      0    1032
Processing:     1    546 4148.5      8   54308
Waiting:        1    546 4148.5      8   54308
Total:          2    604 4278.0      8   55331
```

- **Server Thread (Port 46000)**
 - **Concurrency 1**

```

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          46000


Document Path:        /
Document Length:      4 bytes


Concurrency Level:     1
Time taken for tests:  782.795 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:     1000
Total transferred:     122000 bytes
HTML transferred:      4000 bytes
Requests per second:   1.28 [#/sec] (mean)
Time per request:      782.795 [ms] (mean)
Time per request:      782.795 [ms] (mean, across all concurrent requests)
Transfer rate:         0.15 [Kbytes/sec] received


Connection Times (ms)
      min    mean[+/-sd] median    max
Connect:    0      0   0.1      0      2
Processing:  2    782  738.9    573    6005
Waiting:    2    732  708.1    531    5837
Total:       3    783  738.9    574    6005


Percentage of the requests served within a certain time (ms)
 50%    574
 66%    762
 75%    928
 80%   1061
 90%   1605
 95%   2283
 98%   3339
 99%   3866
100%   6005 (longest request)

```

○ Concurrency 5

```

Benchmarking 127.0.0.1 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests


Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          46000


Document Path:        /
Document Length:      4 bytes


Concurrency Level:     5
Time taken for tests:  509.644 seconds
Complete requests:     1000
Failed requests:       0
Non-2xx responses:    1000
Total transferred:     122000 bytes
HTML transferred:     4000 bytes
Requests per second:   1.96 [#/sec] (mean)
Time per request:      2548.218 [ms] (mean)
Time per request:      509.644 [ms] (mean, across all concurrent requests)
Transfer rate:         0.23 [Kbytes/sec] received


Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   256 1205.0      0  31518
Processing:      9  2276 2048.0    1790  14822
Waiting:        7  2213 2005.7    1707  14197
Total:          9  2532 2483.7    1930  34148


Percentage of the requests served within a certain time (ms)
 50%    1930
 66%    2974
 75%    3633
 80%    4157
 90%    5492
 95%    6693
 98%    8405
 99%   10673
100%   34148 (longest request)

```

- **Concurrency 10**


```

Server Software:      myserver/1.0
Server Hostname:      localhost
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    10
Time taken for tests:  680.538 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Keep-Alive requests:  0
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  1.47 [#/sec] (mean)
Time per request:     6805.381 [ms] (mean)
Time per request:     680.538 [ms] (mean, across all concurrent requests)
Transfer rate:        0.18 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:      0    1   0.3      1      4
Processing:   15  6714  9564.0   3252   56158
Waiting:      15  6628  9485.2   3214   56152
Total:        19  6714  9564.0   3253   56159

Percentage of the requests served within a certain time (ms)
 50%    3253

```

○ **Concurrency 25**

```

Server Software:      myserver/1.0
Server Hostname:      localhost
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    25
Time taken for tests:  696.912 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Keep-Alive requests:  0
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  1.43 [#/sec] (mean)
Time per request:     17422.798 [ms] (mean)
Time per request:     696.912 [ms] (mean, across all concurrent requests)
Transfer rate:        0.17 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:      0    1   1.2      0     12
Processing:   88 16635 19356.7   9635  99319
Waiting:      88 16544 19273.1   9544  98993
Total:        99 16635 19356.5   9635  99319

Percentage of the requests served within a certain time (ms)
 50%    9635

```

○ **Concurrency 50**

```

Server Software:      myserver/1.0
Server Hostname:      localhost
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    50
Time taken for tests:  630.537 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Keep-Alive requests:  0
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  1.59 [#/sec] (mean)
Time per request:     31526.849 [ms] (mean)
Time per request:     630.537 [ms] (mean, across all concurrent requests)
Transfer rate:        0.19 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    1   3.2      1    22
Processing:    48 28744 33436.0 14977 141149
Waiting:       48 28660 33338.3 14908 141139
Total:         64 28746 33435.4 14977 141149

Percentage of the requests served within a certain time (ms)
 50% 14977

```

○ **Concurrency 100**

```

Server Software:      myserver/1.0
Server Hostname:      127.0.0.1
Server Port:          46000

Document Path:        /
Document Length:      4 bytes

Concurrency Level:    100
Time taken for tests:  1417.823 seconds
Complete requests:    1000
Failed requests:      0
Non-2xx responses:    1000
Total transferred:    122000 bytes
HTML transferred:     4000 bytes
Requests per second:  0.71 [#/sec] (mean)
Time per request:     141782.287 [ms] (mean)
Time per request:     1417.823 [ms] (mean, across all concurrent requests)
Transfer rate:        0.08 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    3  10.6      0    62
Processing:   260 101305 153320.2 34463 730360
Waiting:      259 101093 152976.2 34445 725951
Total:        316 101309 153318.2 34464 730361

```