DOKUMENTASI TUGAS 9

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Kelas   : Pemrograman Jaringan - B

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A. Soal:

1. Pull update terakhir
2. Jalankan kedua model tersebut
   a. Server_async_http.py di port 45000
   b. Server_thread_http.py di port 46000
3. Ujicobalah dengan apache benchmark untuk 1000 request dan konkurensi yang bervariasi
4. Buatlah tabel untuk melaporkan hasilnya

B. Jawaban:

1. Hasil Performance Test dengan jumlah request 1000
   - Server Asynchronus

No.	Concurrency Level	Time Taken for Tests (seconds)	Completed Request	Failed Request	Total Transferred (bytes)	Request per Second (#/sec)	Time per Request (ms)	Transfer Rate (Kbytes/sec)
1.	1	1.507	1000	0	122000	663.44	1.507	79.04
2.	5	0.902	1000	0	122000	1108.14	4.512	132.02
3.	10	42.096	1000	0	122000	23.76	420.958	2.83
4.	25	43.472	1000	0	122000	23.00	1086.792	2.74
5.	50	43.661	1000	0	122000	22.90	2183.045	2.73
6.	100	43.517	1000	0	122000	22.98	4351.707	2.74

   - Server Thread

No.	Concurrency Level	Time Taken for Tests (seconds)	Completed Request	Failed Request	Total Transferred (bytes)	Request per Second (#/sec)	Time per Request (ms)	Transfer Rate (Kbytes/sec)
1.	1	450.168	1000	0	122000	2.22	450.168	0.26
2.	5	332.373	1000	0	122000	3.01	1661.867	0.36
3.	10	324.148	1000	0	122000	3.09	3241.480	0.37
4.	25	437.155	1000	0	122000	2.29	10928.884	0.27
5.	50	265.774	1000	0	122000	3.76	13288.702	0.45
6.	100	314.986	1000	0	122000	3.17	31498.561	0.38

2. Kesimpulan:
   Kesimpulan dari melakukan uji coba dengan apache benchmark untuk 1000 request dan konkurensi yang bervariasi di dapatkan bahwa performa yang dihasilkan oleh server Asynchronus lebih baik dibandingkan dengan server Thread. Dapat dilihat dari segi waktu kecepatan tes dari server Asynchronus lebih cepat.

3. Screenshot:
   - Server Asynchronus
     o Concurrency Level 1:

```
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:   1.507 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    663.44 [#/sec] (mean)
Time per request:       1.507 [ms] (mean)
Time per request:       1.507 [ms] (mean, across all concurrent requests)
Transfer rate:          79.04 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.5      0       1
Processing:     0    1   4.6      1     143
Waiting:        0    1   4.6      1     143
Total:          0    1   4.6      1     144

Percentage of the requests served within a certain time (ms)
  50%      1
  66%      1
  75%      2
  80%      2
  90%      2
  95%      2
  98%      3
  99%      3
 100%    144 (longest request)
```

     o Concurrency Level 5:

```
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:   0.902 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    1108.14 [#/sec] (mean)
Time per request:       4.512 [ms] (mean)
Time per request:       0.902 [ms] (mean, across all concurrent requests)
Transfer rate:          132.02 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.4      0        1
Processing:     1    4  10.5      3      154
Waiting:        1    4  10.5      3      154
Total:          1    4  10.5      3      154

Percentage of the requests served within a certain time (ms)
  50%      3
  66%      4
  75%      4
  80%      5
  90%      5
  95%      6
  98%      8
  99%     10
 100%    154 (longest request)
```

- Concurrency Level 10:

```
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:   42.096 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    23.76 [#/sec] (mean)
Time per request:       420.958 [ms] (mean)
Time per request:       42.096 [ms] (mean, across all concurrent requests)
Transfer rate:          2.83 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   42 138.3      0      506
Processing:     1  379 218.0    504     1008
Waiting:        0  330 237.9    502      510
Total:          2  421 192.3    504     1010

Percentage of the requests served within a certain time (ms)
  50%    504
  66%    505
  75%    505
  80%    506
  90%    507
  95%    508
  98%    510
  99%    512
 100%   1010 (longest request)
```

- Concurrency Level 25:

```
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:   43.472 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    23.00 [#/sec] (mean)
Time per request:       1086.792 [ms] (mean)
Time per request:       43.472 [ms] (mean, across all concurrent requests)
Transfer rate:          2.74 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    43 140.5      0     511
Processing:     2  1037 218.7   1011    1526
Waiting:        0   682 308.0    507    1022
Total:          2  1080 237.4   1011    1527

Percentage of the requests served within a certain time (ms)
  50%   1011
  66%   1012
  75%   1014
  80%   1021
  90%   1512
  95%   1513
  98%   1514
  99%   1518
 100%   1527 (longest request)
```

o   Concurrency Level 50:

```
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:   43.661 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    22.90 [#/sec] (mean)
Time per request:       2183.045 [ms] (mean)
Time per request:       43.661 [ms] (mean, across all concurrent requests)
Transfer rate:          2.73 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    43 140.6      0     515
Processing:     2  2094 372.2   2030    2607
Waiting:        0  1175 602.9   1016    2043
Total:          2  2137 372.0   2033    2608

Percentage of the requests served within a certain time (ms)
  50%   2033
  66%   2111
  75%   2524
  80%   2526
  90%   2531
  95%   2535
  98%   2539
  99%   2542
 100%   2608 (longest request)
```

o   Concurrency Level 100:

```
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:   43.517 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    22.98 [#/sec] (mean)
Time per request:       4351.707 [ms] (mean)
Time per request:       43.517 [ms] (mean, across all concurrent requests)
Transfer rate:          2.74 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    43 140.6      0     509
Processing:     4  4095 834.4   4057    5064
Waiting:        1  2283 1263.8   2030    4565
Total:          5  4138 836.0   4545    5065

Percentage of the requests served within a certain time (ms)
  50%    4545
  66%    4550
  75%    4552
  80%    4553
  90%    4559
  95%    4565
  98%    5049
  99%    5050
 100%    5065 (longest request)
```

- Server Thread
  - Concurrency Level 1:

```
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:   450.168 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    2.22 [#/sec] (mean)
Time per request:       450.168 [ms] (mean)
Time per request:       450.168 [ms] (mean, across all concurrent requests)
Transfer rate:          0.26 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0     0  0.5      0       1
Processing:     2   450 306.9    412    2041
Waiting:        2   428 296.7    389    1950
Total:          2   450 306.9    412    2041

Percentage of the requests served within a certain time (ms)
  50%     412
  66%     519
  75%     591
  80%     639
  90%     824
  95%    1022
  98%    1337
  99%    1500
 100%    2041 (longest request)
```

- o Concurrency Level 5:

```
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:   332.373 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    3.01 [#/sec] (mean)
Time per request:       1661.867 [ms] (mean)
Time per request:       332.373 [ms] (mean, across all concurrent requests)
Transfer rate:          0.36 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   264 272.9      3    1115
Processing:   333  1391 379.9   1341    3209
Waiting:      333  1319 384.3   1260    2805
Total:        333  1655 404.7   1605    3209

Percentage of the requests served within a certain time (ms)
  50%   1605
  66%   1781
  75%   1930
  80%   2007
  90%   2196
  95%   2344
  98%   2511
  99%   2717
 100%   3209 (longest request)
```

- o Concurrency Level 10:

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

Document Path:          /
Document Length:        4 bytes

Concurrency Level:      10
Time taken for tests:   324.148 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    3.09 [#/sec] (mean)
Time per request:       3241.480 [ms] (mean)
Time per request:       324.148 [ms] (mean, across all concurrent requests)
Transfer rate:          0.37 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   323 285.3    500    2004
Processing:   836  2904 629.3   3008    5027
Waiting:        3  2183 813.9   2010    5027
Total:        836  3227 663.4   3016    5529

Percentage of the requests served within a certain time (ms)
  50%   3016
  66%   3513
  75%   3518
  80%   4009
  90%   4024
  95%   4517
  98%   4545
  99%   5036
 100%   5529 (longest request)
```

- Concurrency Level 25:

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

Document Path:          /
Document Length:        4 bytes

Concurrency Level:      25
Time taken for tests:   437.155 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    2.29 [#/sec] (mean)
Time per request:       10928.884 [ms] (mean)
Time per request:       437.155 [ms] (mean, across all concurrent requests)
Transfer rate:          0.27 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0  434 339.6    502    1699
Processing:  1607 10357 1560.4 10285   14132
Waiting:      815 6282 2752.3   6204   13478
Total:       2617 10791 1592.2 10698   14899

Percentage of the requests served within a certain time (ms)
  50%  10698
  66%  11518
  75%  11898
  80%  12154
  90%  12814
  95%  13399
  98%  13842
  99%  14133
 100%  14899 (longest request)
```

- Concurrency Level 50:

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

Document Path:          /
Document Length:        4 bytes

Concurrency Level:      50
Time taken for tests:   265.774 seconds
Complete requests:      1000
Failed requests:        1
   (Connect: 1, Receive: 0, Length: 0, Exceptions: 0)
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    3.76 [#/sec] (mean)
Time per request:       13288.702 [ms] (mean)
Time per request:       265.774 [ms] (mean, across all concurrent requests)
Transfer rate:          0.45 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0  263 258.5    501    1006
Processing:   506 12708 2078.4 12544   18562
Waiting:        1 7440 3785.3   7526   17557
Total:        806 12971 2083.5 12556   18570

Percentage of the requests served within a certain time (ms)
  50%  12556
  66%  13047
  75%  13546
  80%  13560
  90%  14551
  95%  16064
  98%  18061
  99%  18561
 100%  18570 (longest request)
```

- Concurrency Level 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:   314.986 seconds
Complete requests:      1000
Failed requests:        0
Non-2xx responses:      1000
Total transferred:      122000 bytes
HTML transferred:       4000 bytes
Requests per second:    3.17 [#/sec] (mean)
Time per request:       31498.561 [ms] (mean)
Time per request:       314.986 [ms] (mean, across all concurrent requests)
Transfer rate:          0.38 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   313  267.7    501    1011
Processing:  1011 29720 5679.7  31106   36154
Waiting:      353 15707 8801.1  15542   35658
Total:       1259 30034 5678.9  31138   36653

Percentage of the requests served within a certain time (ms)
  50%  31138
  66%  32154
  75%  32655
  80%  33158
  90%  35640
  95%  36142
  98%  36154
  99%  36161
 100%  36653 (longest request)
```