PERFORMANCE TEST

PEMROGRAMAN JARINGAN - B

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Surabaya

2020

Pengantar

Performance test dilakukan untuk mengetahui seberapa kapasitas dari web server yang kita gunakan untuk melayani request dari client (browser, device dsb). Request dari client datang secara **simultan (berbarengan)** dan **konkuren (datang berbarengan tidak pada saat yang bersamaan)**. Untuk meningkatkan layanan, kita tidak bisa memproses request satu demi satu , yang berarti satu selesai baru dilanjutkan ke yang lain. Hal ini selain menghambat layanan, juga membuat resource computing kita menjadi IDLE/ menganggur

Untuk meningkatkan layanan, kita harus memproses layanan kita secara konkuren, artinya request tidak harus menunggu request yang lain selesai terlebih dahulu, memproses layanan secara konkuren dapat menimbulkan efek bahwa layanan dapat dilakukan secara paralel/simultan, walaupun pada kenyataannya, resource yang digunakan hanya satu.

Agar dapat meningkatkan konkurensi, maka model pemrograman penggunaan thread adalah yang kita gunakan saat ini.tapi, semakin banyak request tentu saja akan semakin banyak thread yang dibuat, konsekuensinya tentu saja semakin besar memori yang diperlukan. Tentu saja kapasitas yang dibagi, pasti akan ada batas kemampuannya. Oleh karena itu performance test dibutuhkan untuk melihat kemampuan sistem layanan yang kita berikan.

A. Parameter Test

Nomor	Jumlah request	Konkurensi
1	10	1,5,10
2	50	1,10,30,50
3	100	1,10,50,100

B. Hasil Performance Test

No test	Concurrency level	Time taken for test	Complete request	Failed request	Total transferred	Request per second	Time per request	Transfer rate
1a	1	0.277 seconds	10	0	1360 bytes	36.11 [#/sec]	27.691 [ms]	4.80 [Kbytes/sec]
1b	5	2.049 seconds	10	0	1360 bytes	4.88 [#/sec]	204.882 [ms]	0.65 [Kbytes/sec]
1c	10	2.048 seconds	10	0	1360 bytes	4.88 [#/sec]	204.782 [ms]	0.65 [Kbytes/sec]
2a	1	2.461 seconds	50	0	6800 bytes	20.31 [#/sec]	49.225 [ms]	2.70 [Kbytes/sec]
2b	10	12.293 seconds	50	0	6800 bytes	4.07 [#/sec]	245.860 [ms]	0.54 [Kbytes/sec]
2c	30	12.856 seconds	50	0	6800 bytes	3.89 [#/sec]	257.112 [ms]	0.52 [Kbytes/sec]
2d	50	12.333 seconds	50	0	6800 bytes	4.05 [#/sec]	246.660 [ms]	0.54 [Kbytes/sec]
3a	1	12.015 seconds	100	0	13600 bytes	8.32 [#/sec]	120.151 [ms]	1.11 [Kbytes/sec]
3b	10	24.881 seconds	100	0	13600 bytes	4.02 [#/sec]	248.807 [ms]	0.53 [Kbytes/sec]
3c	50	25.096 seconds	100	0	13600 bytes	3.98 [#/sec]	250.956 [ms]	0.53 [Kbytes/sec]

C. Capture Performance Test

1. Parameter 1a

```
C:\xampp\apache\bin>ab -n 10 -c 1 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      1
Time taken for tests:   0.277 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      1360 bytes
HTML transferred:       240 bytes
Requests per second:    36.11 [#/sec] (mean)
Time per request:       27.691 [ms] (mean)
Time per request:       27.691 [ms] (mean, across all concurrent requests)
Transfer rate:          4.80 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    1   3.4      0      11
Processing:     3   22  20.8     10      59
Waiting:        3   21  20.0     10      54
Total:          3   23  20.5     21      59

Percentage of the requests served within a certain time (ms)
  50%     21
  66%     31
  75%     41
  80%     49
  90%     59
  95%     59
  98%     59
  99%     59
 100%     59 (longest request)
```

2. Parameter 1b

```
C:\xampp\apache\bin>ab -n 10 -c 5 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      5
Time taken for tests:   2.049 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      1360 bytes
HTML transferred:       240 bytes
Requests per second:    4.88 [#/sec] (mean)
Time per request:       1024.411 [ms] (mean)
Time per request:       204.882 [ms] (mean, across all concurrent requests)
Transfer rate:          0.65 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0  201  259.3      1     503
Processing:    15  757  349.9   1004    1005
Waiting:       10  706  417.8   1004    1005
Total:        503  958  365.6   1004    1507

Percentage of the requests served within a certain time (ms)
  50%   1004
  66%   1005
  75%   1005
  80%   1506
  90%   1507
  95%   1507
  98%   1507
  99%   1507
 100%   1507 (longest request)
```

3. Parameter 1c

```
C:\xampp\apache\bin>ab -n 10 -c 10 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      10
Time taken for tests:   2.048 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      1360 bytes
HTML transferred:       240 bytes
Requests per second:    4.88 [#/sec] (mean)
Time per request:       2047.822 [ms] (mean)
Time per request:       204.782 [ms] (mean, across all concurrent requests)
Transfer rate:          0.65 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   201 259.0      1     502
Processing:    10  1208 718.9   1505    2033
Waiting:        7  1007 743.2   1003    2007
Total:        502  1409 618.2   1505    2034

Percentage of the requests served within a certain time (ms)
  50%   1505
  66%   2007
  75%   2007
  80%   2008
  90%   2034
  95%   2034
  98%   2034
  99%   2034
 100%   2034 (longest request)
```

4. Parameter 2a

```
C:\xampp\apache\bin>ab -n 50 -c 1 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      1
Time taken for tests:   2.461 seconds
Complete requests:      50
Failed requests:        0
Total transferred:      6800 bytes
HTML transferred:       1200 bytes
Requests per second:    20.31 [#/sec] (mean)
Time per request:       49.225 [ms] (mean)
Time per request:       49.225 [ms] (mean, across all concurrent requests)
Transfer rate:          2.70 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.5      0        1
Processing:     9   49  52.2     34      353
Waiting:        8   42  49.4     34      327
Total:          9   49  52.2     35      353

Percentage of the requests served within a certain time (ms)
  50%     35
  66%     52
  75%     57
  80%     61
  90%     67
  95%     86
  98%    353
  99%    353
 100%    353 (longest request)
```

5. Parameter 2b

```
C:\xampp\apache\bin>ab -n 50 -c 10 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      10
Time taken for tests:   12.293 seconds
Complete requests:      50
Failed requests:        0
Total transferred:      6800 bytes
HTML transferred:       1200 bytes
Requests per second:    4.07 [#/sec] (mean)
Time per request:       2458.601 [ms] (mean)
Time per request:       245.860 [ms] (mean, across all concurrent requests)
Transfer rate:          0.54 [Kbytes/sec] received

Connection Times (ms)
            min  mean[+/-sd] median   max
Connect:      0   241 253.1      1     503
Processing: 151  2051 561.2   2008    2511
Waiting:     99  1209 598.4   1005    2010
Total:      501  2292 507.2   2507    2511

Percentage of the requests served within a certain time (ms)
  50%   2507
  66%   2508
  75%   2508
  80%   2508
  90%   2511
  95%   2511
  98%   2511
  99%   2511
 100%   2511 (longest request)
```

6. Parameter 2c

```
C:\xampp\apache\bin>ab -n 50 -c 30 http://127.0.0.1:10001/
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      30
Time taken for tests:   12.856 seconds
Complete requests:      50
Failed requests:        0
Total transferred:      6800 bytes
HTML transferred:       1200 bytes
Requests per second:    3.89 [#/sec] (mean)
Time per request:       7713.366 [ms] (mean)
Time per request:       257.112 [ms] (mean, across all concurrent requests)
Transfer rate:          0.52 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   251 273.0      1    1003
Processing:   185  5217 2475.5   6527    8029
Waiting:      120  3257 2034.9   3013    7527
Total:        502  5468 2462.6   6527    8029

Percentage of the requests served within a certain time (ms)
  50%   6527
  66%   7528
  75%   7530
  80%   7530
  90%   7648
  95%   8029
  98%   8029
  99%   8029
 100%   8029 (longest request)
```

7. Parameter 2d

```
C:\xampp\apache\bin>ab -n 50 -c 50 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      50
Time taken for tests:   12.333 seconds
Complete requests:      50
Failed requests:        0
Total transferred:      6800 bytes
HTML transferred:       1200 bytes
Requests per second:    4.05 [#/sec] (mean)
Time per request:       12332.982 [ms] (mean)
Time per request:       246.660 [ms] (mean, across all concurrent requests)
Transfer rate:          0.54 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0   241 253.0      1     502
Processing:    88  6264 3647.3   6519   12242
Waiting:       72  6022 3643.0   6016   12032
Total:        504  6505 3622.7   6519   12242

Percentage of the requests served within a certain time (ms)
  50%   6519
  66%   8524
  75%   9527
  80%  10530
  90%  11532
  95%  12032
  98%  12242
  99%  12242
 100%  12242 (longest request)
```

8. Parameter 3a

```
C:\xampp\apache\bin>ab -n 100 -c 1 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      1
Time taken for tests:   12.015 seconds
Complete requests:      100
Failed requests:        0
Total transferred:      13600 bytes
HTML transferred:       2400 bytes
Requests per second:    8.32 [#/sec] (mean)
Time per request:       120.151 [ms] (mean)
Time per request:       120.151 [ms] (mean, across all concurrent requests)
Transfer rate:          1.11 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0     0   0.4      0       1
Processing:    21   120  60.9    106     372
Waiting:       21   108  59.4     95     365
Total:         21   120  61.0    107     373

Percentage of the requests served within a certain time (ms)
  50%    107
  66%    131
  75%    145
  80%    152
  90%    191
  95%    224
  98%    369
  99%    373
 100%    373 (longest request)
```

9. Parameter 3b

```
C:\xampp\apache\bin>ab -n 100 -c 10 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      10
Time taken for tests:   24.881 seconds
Complete requests:      100
Failed requests:        0
Total transferred:      13600 bytes
HTML transferred:       2400 bytes
Requests per second:    4.02 [#/sec] (mean)
Time per request:       2488.072 [ms] (mean)
Time per request:       248.807 [ms] (mean, across all concurrent requests)
Transfer rate:          0.53 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0  246 251.9      1     503
Processing:   142 2154 445.4   2007    2510
Waiting:      138 1217 582.5   1004    2008
Total:        502 2400 372.6   2507    2510

Percentage of the requests served within a certain time (ms)
  50%   2507
  66%   2508
  75%   2508
  80%   2508
  90%   2509
  95%   2510
  98%   2510
  99%   2510
 100%   2510 (longest request)
```

10. Parameter 3c

```
C:\xampp\apache\bin>ab -n 100 -c 50 http://127.0.0.1:10001/
This is ApacheBench, Version 2.3 <$Revision: 1843412 $>
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Benchmarking 127.0.0.1 (be patient).....done


Server Software:        myserver/1.0
Server Hostname:        127.0.0.1
Server Port:            10001

Document Path:          /
Document Length:        24 bytes

Concurrency Level:      50
Time taken for tests:   25.096 seconds
Complete requests:      100
Failed requests:        0
Total transferred:      13600 bytes
HTML transferred:       2400 bytes
Requests per second:    3.98 [#/sec] (mean)
Time per request:       12547.786 [ms] (mean)
Time per request:       250.956 [ms] (mean, across all concurrent requests)
Transfer rate:          0.53 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0  246 251.9      1     502
Processing:   452 9277 3960.2  12031   12537
Waiting:       65 6031 3609.9   6018   12034
Total:        506 9522 3949.2  12532   12537

Percentage of the requests served within a certain time (ms)
  50%  12532
  66%  12533
  75%  12534
  80%  12534
  90%  12535
  95%  12535
  98%  12536
  99%  12537
 100%  12537 (longest request)
```