

CS 347 OPERATING SYSTEMS LAB 2

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Q1)

Setup and Hardware specifications:

2 four-core cpus(i7 processors and 8 gb RAM) connected through LAN network through ethernet cables.(insti)

Maximum disk read bandwidth:90 Mbps = 45 req/sec or files/sec

measured using "hdparm -tT dev/sda11" (appropriate disk name) with sudo privileges.

Maximum network bandwidth: 80 Mbps = 40 req/sec or 40 files/sec

measured using running a server on server system using "iperf -s" and running "iperf -c s*server's ip* -d" on the client system. The 80 Mbps bandwidth is justifiable for the ethernet connected setup which is generally of the order 50-100 Mbps

Q2)

(A)Optimal N: 5

(B)throughput decreases on both sides of this value of N, response time increase for greater N and decreases for lesser N(but almost stays constant for greater N)

(C)Bottleneck resource: Network

(D)server throughput at saturation: 4.47 req/s

Throughput decreases on both sides of the optimal value.

Response time increases for increasing N

1. Total number of requestes served by the server 423

Throughput 3.49587req/s

Response time according to definition 1: 19.8818

Response time according to definition 2: 278.463

(Definitions of response time can be found in the report)

Done!

2. Total number of requestes served by the server 516

Throughput 4.26446req/s

Response time according to definition 1: 33.4322

Response time according to definition 2: 450.364

(Definitions of response time can be found in the report)

Done!

3. Total number of requestes served by the server 541

Throughput 4.47107req/s

Response time according to definition 1: 70.5157

Response time according to definition 2: 1073.89
(Definitions of response time can be found in the report)
Done!

4.
Total number of requestes served by the server 543
Throughput 4.45082req/s
Response time according to definition 1: 126.847
Response time according to definition 2: 2143.35
(Definitions of response time can be found in the report)
Done!

Numbers 1,2,3,4 correspond to N value of 1,2,5,10

Q3)

(A)Optimal N: 15
(B)throuput decreases on both sides of this value of N, response time increase for greater N and decreases for lesser N(but almost stays constant for greater N)
(C)Bottleneck resource: Network
(D)server throuput at saturation: 5.82 req/s

Throughput decreases on both sides of the optimal value.
Response time increases for increasing N

5.

Total number of requestes served by the server 91
Throughput 0.752066req/s
Response time according to definition 1: 93.989
Response time according to definition 2: 326.791
(Definitions of response time can be found in the report)
Done!

6.
Total number of requestes served by the server 167
Throughput 1.36885req/s
Response time according to definition 1: 77.1557
Response time according to definition 2: 443.509
(Definitions of response time can be found in the report)
Done!

7.
Total number of requestes served by the server 461
Throughput 3.77869req/s

Response time according to definition 1: 32.7354
Response time according to definition 2: 301.612
(Definitions of response time can be found in the report)
Done!

8.
Total number of requestes served by the server 553
Throughput 4.53279req/s
Response time according to definition 1: 77.3165
Response time according to definition 2: 1148.96
(Definitions of response time can be found in the report)
Done!

9.

Total number of requestes served by the server 710
Throughput 5.81967req/s
Response time according to definition 1: 124.683
Response time according to definition 2: 1502.88
(Definitions of response time can be found in the report)
Done!

10.

Total number of requestes served by the server 713
Throughput 5.79675req/s
Response time according to definition 1: 143.021
Response time according to definition 2: 2290.62
(Definitions of response time can be found in the report)
Done!

11.

Total number of requestes served by the server 722
Throughput 5.82258req/s
Response time according to definition 1: 167.583
Response time according to definition 2: 3059.44
(Definitions of response time can be found in the report)
Done!

Numbers 5,6,7,8,9,10,11 correspond to N value of 1,2,5,10,15,20,25

Q4)

part -1

(A)Optimal N: 5

(B)throughput decreases on both sides of this value of N, response time increase for greater N and decreases for lesser N(but almost stays constant for greater N)

(C)Bottleneck resource: Network

(D)server throuput at saturation: 5.87 req/s

1

Total number of requestes served by the server 703

Throughput 5.80992req/s

Response time according to definition 1: 0.112376

Response time according to definition 2: 170.549

(Definitions of response time can be found in the report)

Done!

2.

Total number of requestes served by the server 709

Throughput 5.8595req/s

Response time according to definition 1: 1.06488

Response time according to definition 2: 339.093

(Definitions of response time can be found in the report)

Done!

3.

Total number of requestes served by the server 711

Throughput 5.87603req/s

Response time according to definition 1: 10.0802

Response time according to definition 2: 839.392

(Definitions of response time can be found in the report)

Done!

4.

Total number of requestes served by the server 710

Throughput 5.86777req/s

Response time according to definition 1: 14.9634

Response time according to definition 2: 1682.06

(Definitions of response time can be found in the report)

Done!

Numbers 1,2,3,4 correspond to N value of 1,2,5,10

part-2

(A)Optimal N: 20

(B)throughput decreases on both sides of this value of N, response time increase for greater N and decreases for lesser N(but almost stays constant for greater N)

(C)Bottleneck resource: Netowork

(D)server throuput at saturation: 5.76 req/s

Numbers 5,6,7,8,9,10 correspond to N value of 1,5,10,15,20,25

5.

Total number of requestes served by the server 103

Throughput 0.85124req/s

Response time according to definition 1: 0.262136

Response time according to definition 2: 170.505

(Definitions of response time can be found in the report)

Done!

6.

Total number of requestes served by the server 495

Throughput 4.09091req/s

Response time according to definition 1: 1.0101

Response time according to definition 2: 220.792

(Definitions of response time can be found in the report)

Done!

7.

Total number of requestes served by the server 687

Throughput 5.63115req/s

Response time according to definition 1: 16.1237

Response time according to definition 2: 754.25

(Definitions of response time can be found in the report)

Done!

8.

Total number of requestes served by the server 698

Throughput 5.72131req/s

Response time according to definition 1: 34.7593
Response time according to definition 2: 1571.17
(Definitions of response time can be found in the report)
Done!

9.

Total number of requestes served by the server 709
Throughput 5.76423req/s
Response time according to definition 1: 46.7757
Response time according to definition 2: 2345.07
(Definitions of response time can be found in the report)
Done!

10.

Total number of requestes served by the server 708
Throughput 5.7561req/s
Response time according to definition 1: 59.0028
Response time according to definition 2: 3043.82
(Definitions of response time can be found in the report)
Done!

The bottleneck is found by monitring the nework banndwidth, for every one second using the command
`$ifstat -i -t eth0 1`