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Summer 2020

CSCE 313 Programming Assignment 3 Report

Report : Successful completion of tasks in implementing BoundedBuffer, cleaning of files, proper histogram, accurate file requests that also pass binary diff and regular diff, and no global variables were used.

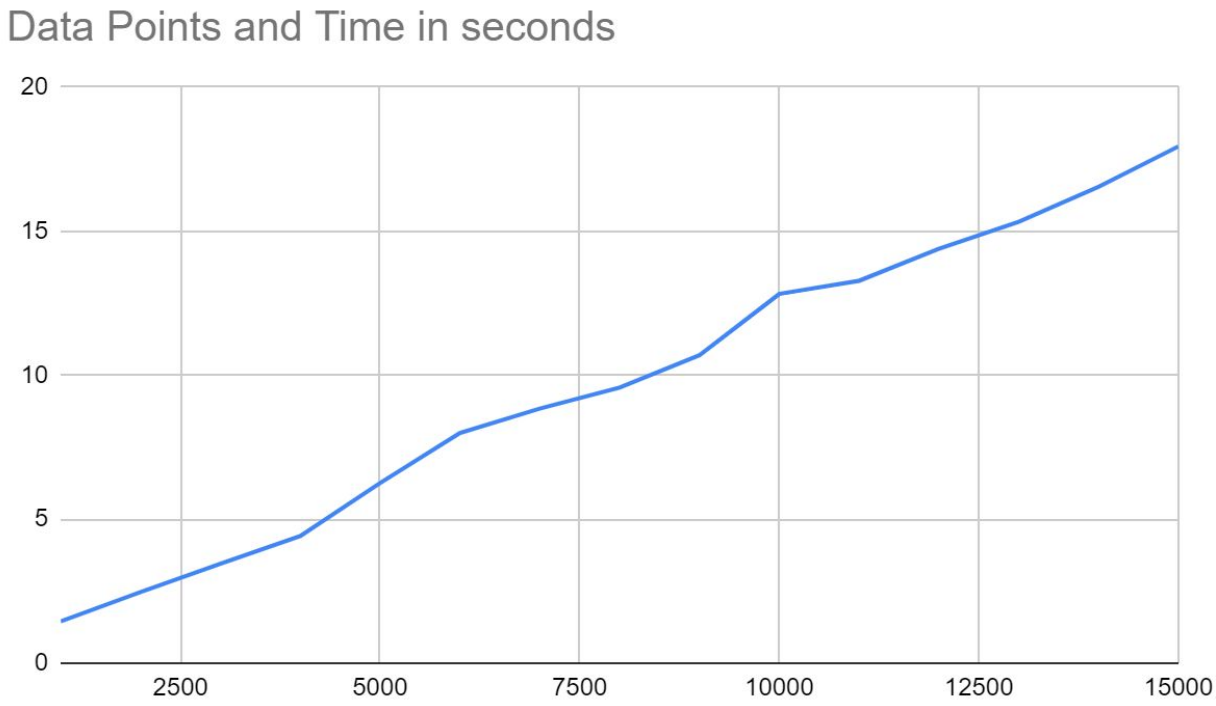
The cutoff point for workers is approximately 500-600 workers as the context switch actually made it go longer than shorter. The reason why a higher w doesn't give advantage for file transfers is because the files have to be sequentially requested based on the request capacity. If a thread is faster than another thread, it may complete and write into the file when it shouldn't be doing so. To prevent this, the program was written with the idea of workers increasing and or decreasing not significantly affecting the file transfers to prevent the above problem.

**Plots that show runtime under varying n, b, w, m.**

**N amount of data points :**
**W = 200**
**P = 15**
**B = 500**
**M = 256**

| Data Points | Time in seconds |
|---|---|
| 1000 | 1.448 |
| 2000 | 2.465 |
| 3000 | 3.448 |
| 4000 | 4.412 |
| 5000 | 6.253 |
| 6000 | 7.995 |
| 7000 | 8.839 |
| 8000 | 9.564 |
| 9000 | 10.69 |
| 10000 | 12.821 |

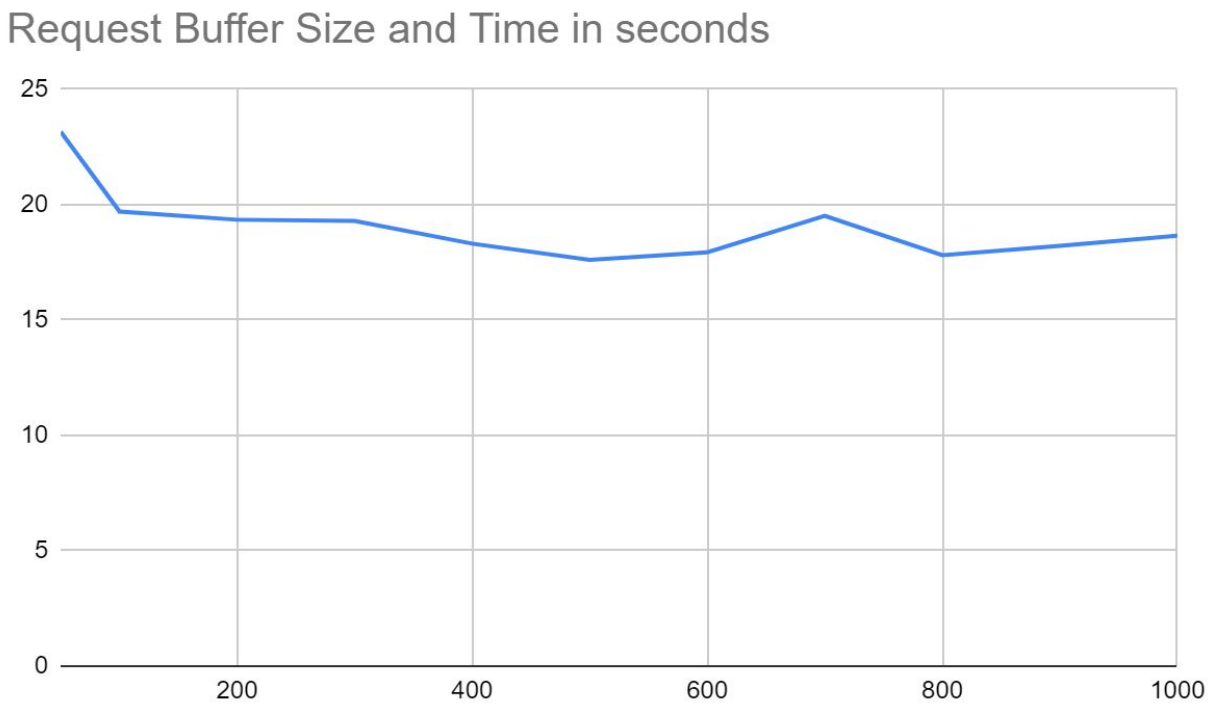
| | |
|---|---|
| 11000 | 13.275 |
| 12000 | 14.389 |
| 13000 | 15.324 |
| 14000 | 16.541 |
| 15000 | 17.939 |




**Request Buffer Capacity :**
**Successfully shows request buffer capacity not forced to be 3*n.**
**N = 15,000**
**W = 200**
**P = 15**
**M = 256**

| Request Buffer Size | Time in seconds |
|---|---|
| 50 | 23.151 |
| 100 | 19.692 |
| 200 | 19.338 |
| 300 | 19.291 |
| 400 | 18.301 |
| 500 | 17.598 |

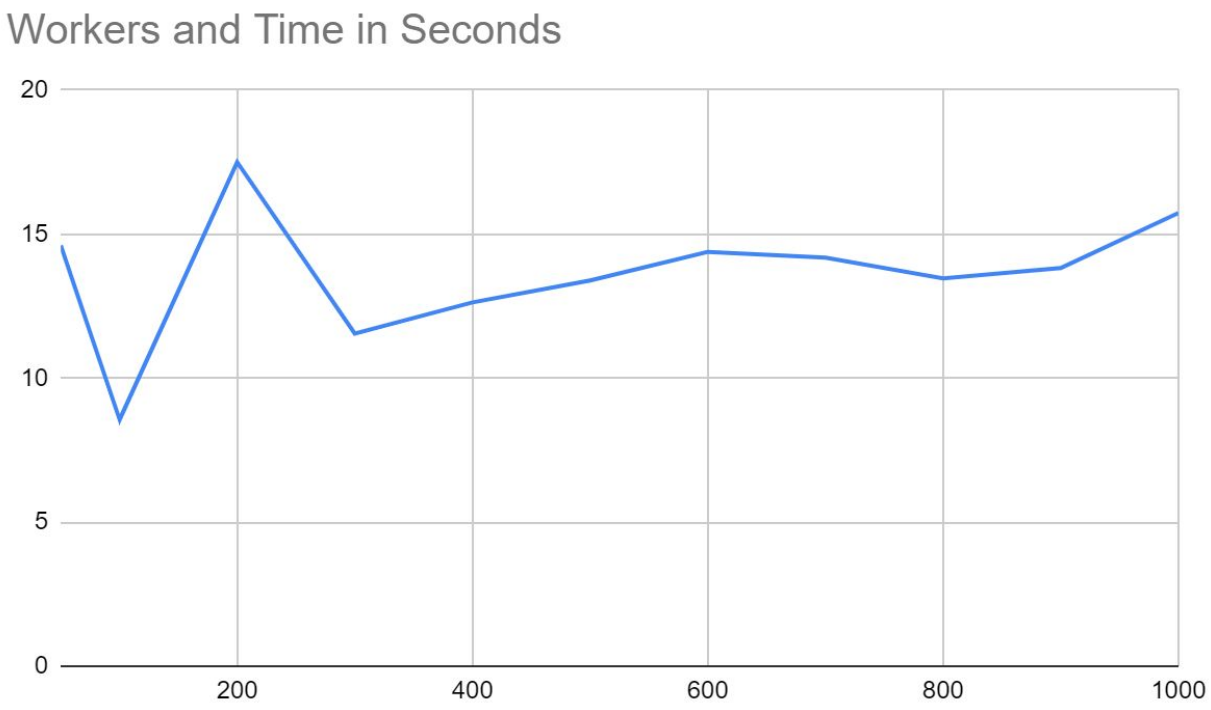
| | |
|---|---|
| 600 | 17.927 |
| 700 | 19.506 |
| 800 | 17.8 |
| 900 | 18.208 |
| 1000 | 18.641 |




**Workers :**
**Successfully shows workers over 500 threads**
**Used ulimit**
**N = 15,000**
**P = 10**
**B = 500**
**M = 256**

| Workers | Time in Seconds |
|---|---|
| 50 | 14.61 |
| 100 | 8.562 |
| 200 | 9.021 |
| 300 | 11.55 |
| 400 | 12.63 |

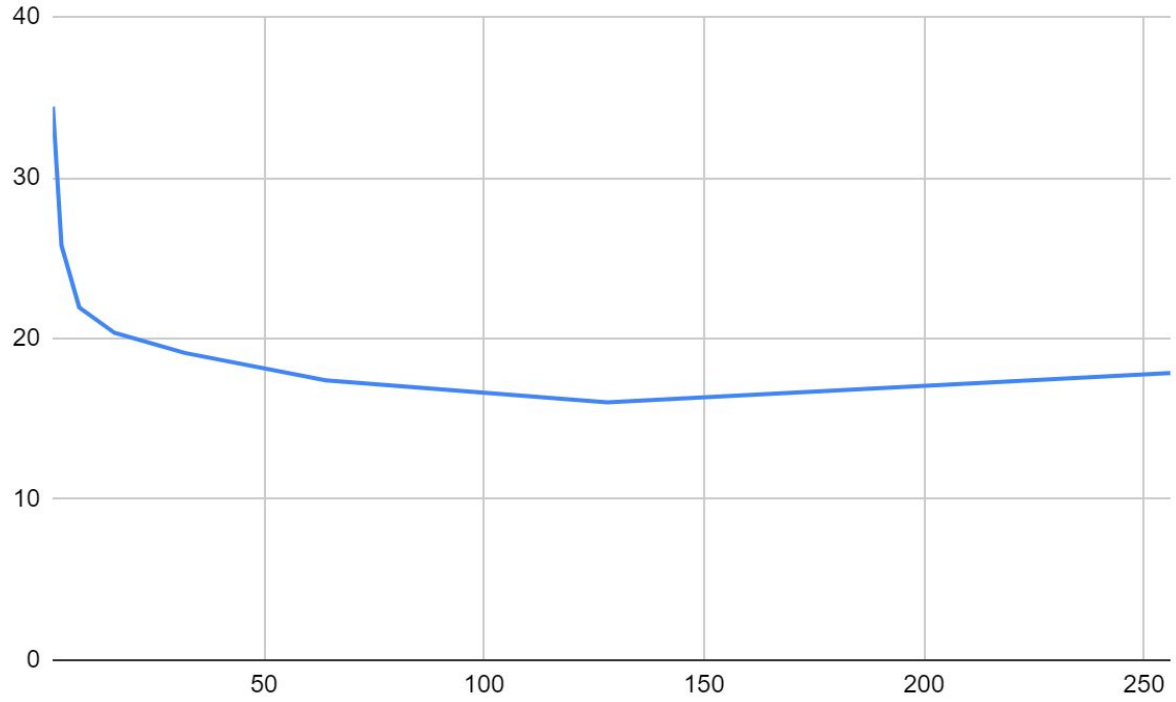
| | |
|---|---|
| 500 | 13.391 |
| 600 | 14.386 |
| 700 | 14.18 |
| 800 | 13.464 |
| 900 | 13.825 |
| 1000 | 15.7321 |




**Message Buffer Capacity :**
**Successfully shows request buffer capacity not forced to be 3*n.**
**N = 15,000**
**W = 200**
**P = 15**
**B = 500**

| Request Message Size | Time in Seconds |
|---|---|
| 2 | 34.413 |
| 4 | 25.789 |
| 8 | 21.93122 |
| 16 | 20.355 |

| | |
|---|---|
| 32 | 19.102 |
| 64 | 17.404 |
| 128 | 16.025 |
| 256 | 17.854 |



```
osboxes@osboxes:~/Github/Y2S2CSCE313-199-Summer/PA3/starter$ ./client -n 1500 -b 37
Number of Patient Requests : 1500
Number of Patients :  1
Number of workers Threads : 200
Capacity of Request Buffer : 37
Capacity of Message Buffer : 256
File requested : 1.csv
Making Workers channels

Beginning thread creation
Patient start...
Patient complete!
FileThreads start...
FileThreads complete!
Workers start...
Workers complete!

Joining threads
Patient start...
Patient complete!
Patient threads/file thread finished
Sending Quit messages : Start
Sending Quit messages : End
Workers start...
Workers complete!


--------------------
[-2.00,-1.60):     0
[-1.60,-1.20):     0
[-1.20,-0.80):     0
[-0.80,-0.40):   289
[-0.40,-0.00):  1029
[-0.00, 0.40):    59
[ 0.40, 0.80):    85
[ 0.80, 1.20):    38
[ 1.20, 1.60):     0
[ 1.60, 2.00):     0
--------------------
[-2.00, 2.00):  1500
Took 0 seconds and 209138 micro seconds


Deleting main channel
Server terminated
Client side complete!
osboxes@osboxes:~/Github/Y2S2CSCE313-199-Summer/PA3/starter$
```

Report (15 pts)

- Should show plots of runtime under varying $n, b, w, m$.
- Having $w < 500$ will result in 5 lost points. You must find a platform that supports 500 threads or more.
- Requiring $b = 3 * n$ will result in 15 lost points, because that indicates that you did not need any overflow or underflow checks.