

Programming Assignment 4

CSCE 313-503

3/25/2018

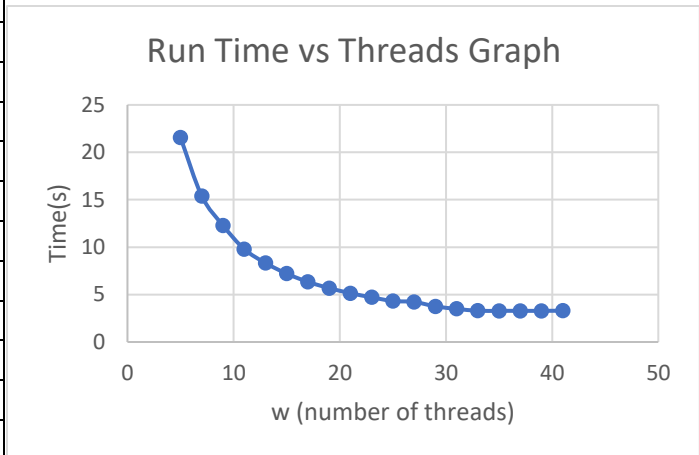
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Data from PA3:

w (number of threads)	Time(s)
5	21.54874
7	15.388716
9	12.29127
11	9.794712
13	8.325531
15	7.205072
17	6.336332
19	5.682988
21	5.144861
23	4.709214
25	4.319872
27	4.22587
29	3.757309
31	3.492765
33	3.295093
35	3.288575
37	3.28482
39	3.283577
41	3.298902
43	3.29277



Data from PA4:

test1 results with n=10k, b=50	
w	time(s)
5	22.35698
10	11.09
15	7.3737
20	5.504534
25	4.403469
30	3.790703
35	3.231393
40	2.798102
45	2.499317
50	2.278127
55	2.0927
60	1.944695
65	1.857902

70	1.699158
75	1.597411
80	1.512779
85	1.43268
90	1.394121
95	1.316433
100	1.283623
105	1.210263
110	1.165291
115	1.123334
120	1.10245
125	1.085334
130	1.067159
135	1.090014
140	1.039637
145	0.947392
150	0.939459
155	0.953246
160	0.905213
165	0.909927
170	0.88845
175	0.843838
180	0.827398
185	0.825066
190	0.797439
195	0.791124
200	0.761222
205	0.81448
210	0.780194
215	0.776044
220	0.77972
225	0.788753
230	0.686699
235	0.69843
240	0.700885
245	0.677965
250	0.677008

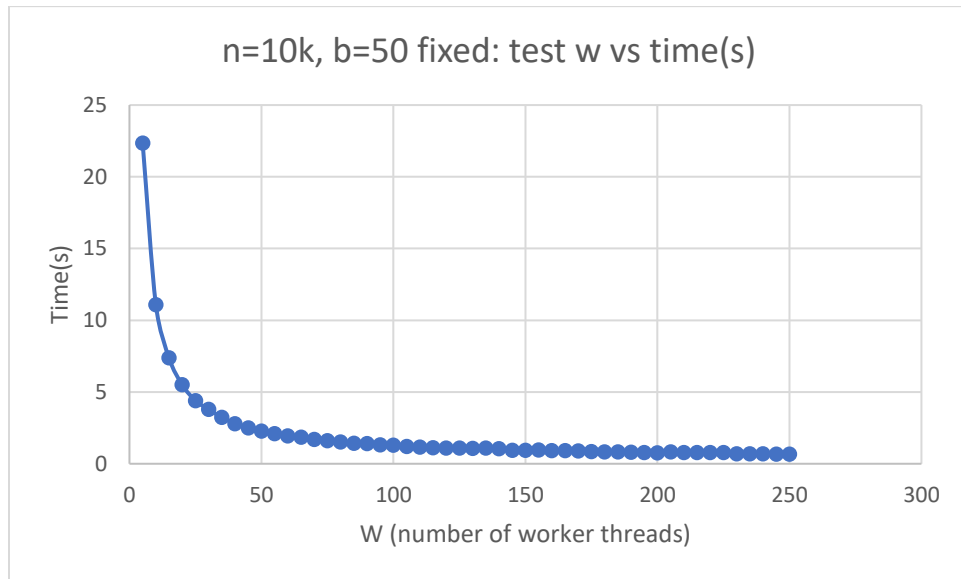
test 2 results with n=10k,w=80	
b	time(s)
1	1.455055
2	1.535218
4	1.517496
8	1.529807
16	1.534752
32	1.50822
64	1.522259
128	1.509482
256	1.510031
512	1.527324
1024	1.535929
2048	1.532826
8096	1.518911
8192	1.551727
16384	1.558902

See plots in question 2.

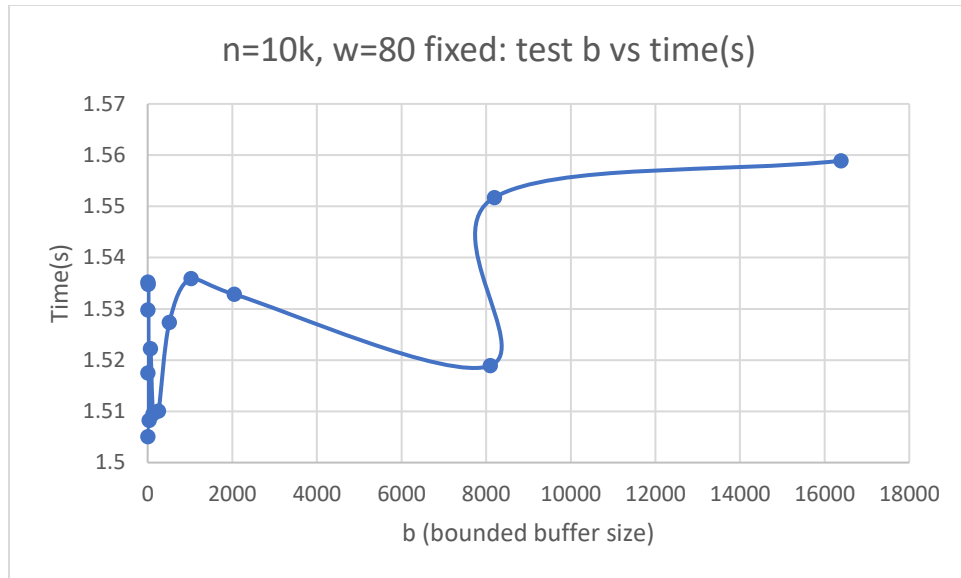
1. Present a brief performance evaluation of your code. If there is a difference in performance from PA3, attempt to explain it. If the performance appears to have decreased, can it be justified as a necessary trade-off?

There is not much difference in term of performance when I compare few data points between PA3 and PA4. The performance in PA4 however is a little bit slower, but the difference is not significant. It's a good trade off since with a very small decrease in term performance, we can avoid underflow and overflow in the program.

2. Make two graphs for the performance of your client program with varying numbers of worker threads and varying size of request buffer (i.e. different values of w and b) for $n = 10000$. Discuss how performance changes (or fails to change) with each of them, and offer explanations for both.



The trend is very similar to PA3's. As the number of threads increases, the performance increases. Notice the significant improvement in performance when w increases from 1 to about 50. After the threads have been increasing for more than 100, the change is not much significant. With that characteristic, we can determine the best number of worker threads for the program that meets our needs in both terms of performance and resource consumption.



The graph looks not very consistent due to fact that only few data points were tested. However, the results were very close to 1.5s when the number of request is 10000 and number of threads is 80, regardless the significant increase of buffer size. Therefore, it can be said that the size of buffer doesn't have noticeable impact on the performance.

3. Describe the platform that your data was gathered on and the operating system it was running. A simple description like \"a Raspberry PI model B running Raspbian OS,\" or \"the CSE Linux server,\" is sufficient. (Think of this as free points)

For this programming assignment, I decided to test the program on Ubuntu Linux system on my personal computer (recently installed) rather than the school's unix server. The tamu unix server is very limited and I wasn't able to create many threads when I was doing PA3. With the linux system on my computer, I was able to run and pass all the test cases from the test files provided. The better result gives better observation and better learning experience.