Machine Problem 4 Report

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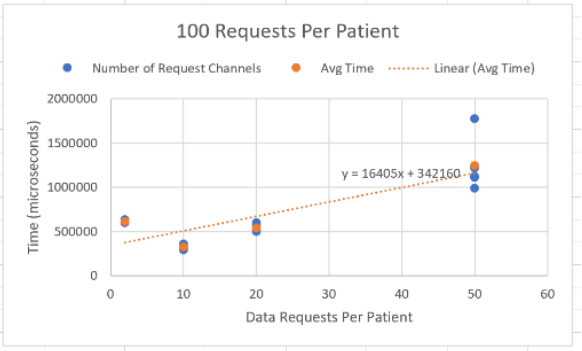
I created my Bounded Buffer before reading the documentation completely in MP3, so I named my class PCBuffer instead of BoundedBuffer. To test the time of my program under different conditions I created a time stamp at the beginning of my client (after forking), and another after all threads have been joined and channels were deleted, essentially once the program was done but before sleeping. For testing I had two trials, one with the number of requests per patient at 100, and another at 1000. For both trials I tested the time with the number of request channels at 2, 10, 20, and 50 channels. I ran tests changing each of these parameters by different factors and recording the total process time in microseconds. After looking at my results, I found that as the number of requests increased, the number of request channels became more relevant to decreasing the time. I recorded my results and graphed them.

These are the results when I had the number of requests per patient set to 100.

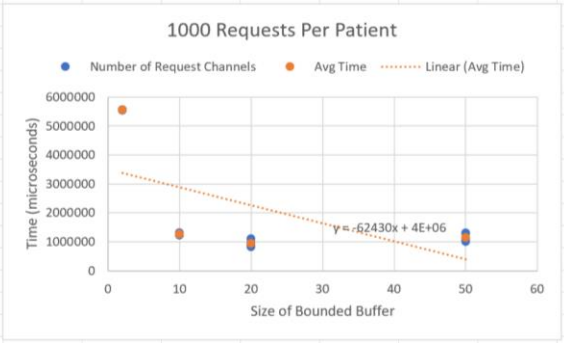
Data Requests Per Patient	Size of Bounded Buffer	Number of Request Channels	Time (microseconds)	AVG Time for Data Set
100	50	2	633741	
100	50	2	605566	
100	50	2	604721	
100	50	2	600528	
100	50	2	600618	609034.8
100	50	10	317891	
100	50	10	356243	
100	50	10	289438	
100	50	10	312892	
100	50	10	351472	325587.2
100	50	20	503192	
100	50	20	567293	
100	50	20	597009	
100	50	20	519004	
100	50	20	496433	536586.2
100	50	50	1777509	
100	50	50	1213803	
100	50	50	1122653	
100	50	50	1110448	
100	50	50	988785	1242639.6



Here we can see that time increases with the number of requests channels which is not expected. Most likely due to not needing as many channels and the increase number being used wastes time. Time does slightly decrease from 2 to 10 request channels which does follow the expected trend.

These are the results when I had the number of requests per patient set to 1000.

Data Requests Per Patient	Size of Bounded Buffer	Number of Request Channels	Time (microseconds)	AVG Time for Data Set
1000	50	2	5562828	
1000	50	2	5560529	
1000	50	2	5540683	
1000	50	2	5563218	
1000	50	2	5560987	5557649
1000	50	10	1236808	
1000	50	10	1306174	
1000	50	10	1303373	
1000	50	10	1231554	
1000	50	10	1228108	1261203.4
1000	50	20	826071	
1000	50	20	1092027	
1000	50	20	893257	
1000	50	20	942112	
1000	50	20	964219	943537.2
1000	50	50	1102198	
1000	50	50	1074775	
1000	50	50	1293420	
1000	50	50	1007294	
1000	50	50	1274073	1150352



Here we can see that time decreases as the number of request channels increases as expected. It is a big drop from 2 to 10 channels, then the decrease in time becomes less significant.