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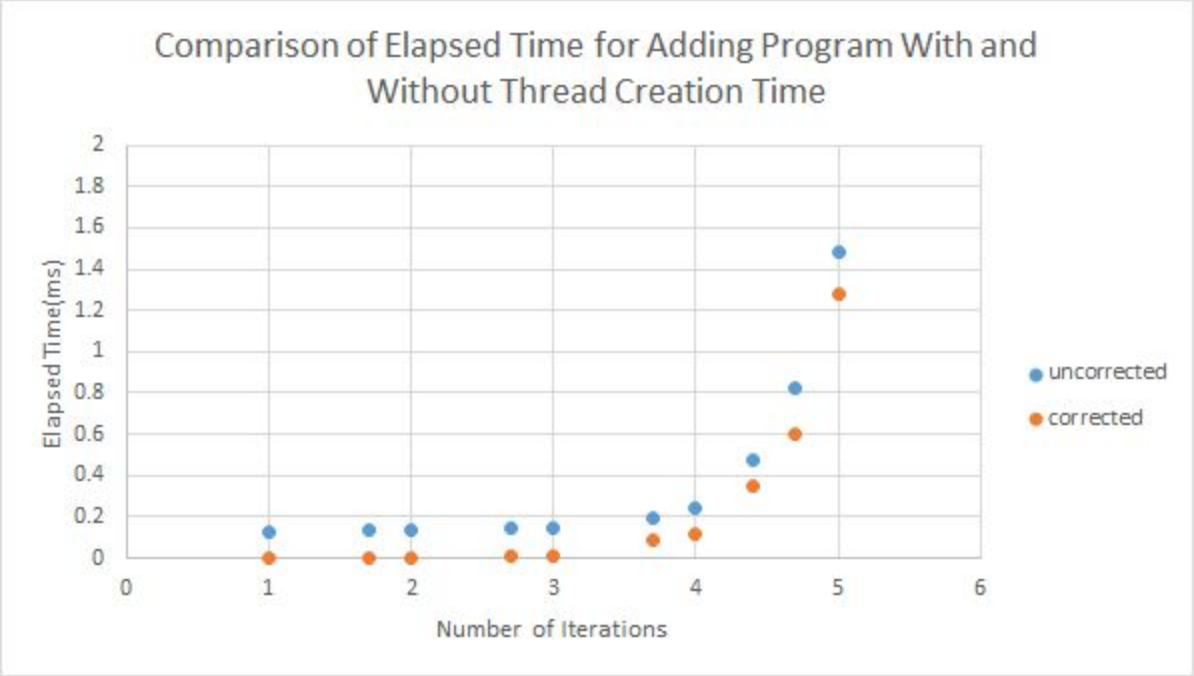
CS111

Synchronization Lab Design Data

Part 1:

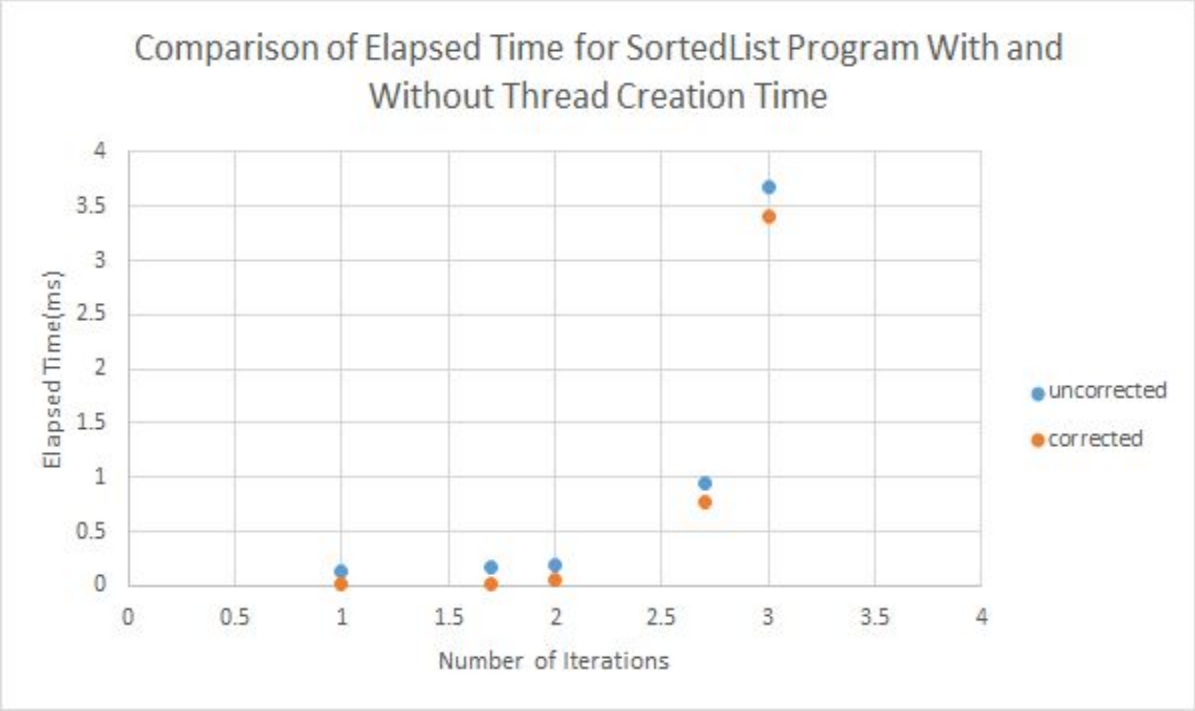


Elapsed Time for Single-Threaded Runs with Varying Iterations			
Number of Iterations	log(Number of iterations)	Elapsed Time(ms)	Corrected Elapsed Time(ms)
10	1	0.130602	0.000414
50	1.69897	0.13322	0.001104
100	2	0.134769	0.001717
500	2.69897	0.145215	0.006613
1000	3	0.148834	0.012375
5000	3.69897	0.192702	0.090996
10000	4	0.245746	0.120584

25000	4.39794	0.470695	0.346891
50000	4.69897	0.822377	0.603537
100000	5	1.485164	1.277731
1000000	6	12.355129	12.17908

Comparing the corrected to uncorrected elapsed times, one can see that the overhead associated with creating a thread and waiting for it to execute its first useful instruction is around 0.1 milliseconds, or approximately 100000 nanoseconds. The data point associated with 1000000 iterations is not graphed for clarity, but shows that as iterations become significantly large, the thread creation time becomes insignificant.

Part 2:



Elapsed Time for Single-Threaded Runs with Varying Iterations			
Number of Iterations	log(Number of iterations)	Elapsed Time(ms)	Corrected Elapsed Time(ms)
10	1	0.135154	0.009931
50	1.69897	0.163679	0.024058

100	2	0.183401	0.064521
500	2.69897	0.950312	0.772407
1000	3	3.682938	3.411756
5000	3.69897	120.789552	115.314222
10000	4	743.702654	734.89946

The corrected option for Part 2 also demonstrates the overhead for creating a thread is significant for small iterations. This situation is slightly different, though, because operations for the SortedList increase at a much quicker rate as a function of iterations. The overhead is still around 0.1 milliseconds or 100000 nanoseconds.