CPSC 457 - Assignment 3

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Q2:

Test file:Medium.txt output = 1347054890			
# threads	**Observed timing**	**Observed speedup compared to original**	**Expected speedup**
Original program	30.290	1.0	1.0
1	30.732	0.99	1.0
2	17.754	1.7	2.0
3	12.909	2.35	3.0
4	10.563	2.88	4.0
8	7.138	4.24	8.0
16	4.780	6.34	16.0

Test file:Hard.txt output = 9			
# threads	**Observed timing**	**Observed speedup compared to original**	**Expected speedup**
Original program	10.106	1.0	1.0
1	10.818	0.93	1.0
2	8.383	1.2	2.0
3	4.754	2.13	3.0
4	3.649	2.77	4.0
8	2.438	4.15	8.0
16	1.933	5.23	16.0

Test file:Hard2.txt output = 3037000453			
# threads	**Observed timing**	**Observed speedup compared to original**	**Expected speedup**
Original program	10.629	1.0	1.0
1	10.607	1.0	1.0
2	5.618	1.89	2.0
3	3.717	2.86	3.0
4	2.889	3.68	4.0
8	1.679	6.33	8.0
16	1.488	7.14	16.0

The timings are not what the expected speedup was supposed to be. I think it is because the code containing the multithreaded solution has code that expands upon a single threaded solution, therefore there is more code to step through and that adds time to the process. For example, there are multiple synchronization methods implemented that add time as opposed to the single threaded solution that doesn't have any. Also I did not expect n-times speed up for more than 8 threads since only 8 cores could be utilized at the time of testing. Therefore any number of threads greater than 8 could not be utilized to its full potential as there was a limit.