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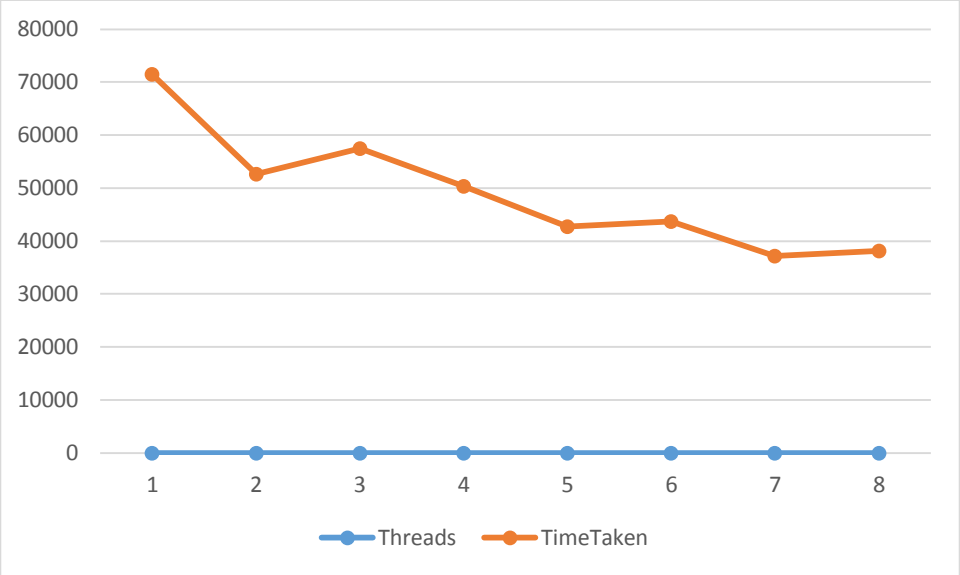
For: CSC305 Assignment 3

Multi-Thread Running Time



Above is a chart plotting the rendering time(ms) vs the number of threads.

Results:

Threads	Time Taken (ms)
1	71441
2	52608
3	57458
4	50402
5	42767
6	43707
7	37139
8	38094

As can be seen multi-threading provides significant improvements to rendering times. From 1 thread to 8 threads we see around 1.8 times increase in speed. We note that the increases in speed are not linear. The gains from 1 thread to 2 threads were significant (~1.35), but the gains between from 6 to 7 threads were less so. We also note several cases in which the additional thread actually decreases performance. This may be accounted for by several factors:

- Bad testing. These data points were only sampled once.
- My implementation of the threads splits the work unevenly among the threads.

For example, one thread may have very little work and finish early, while the other threads are given a heavier workload. This causes cases in which even though n threads are created, some of the threads may terminate early and not contribute to the processing.

The image produced and the configuration settings used can be seen in the following figure.