CP3 Assignment 3 Benchmark and Discussion

Time taken for various numbers of threads to compute various image sizes
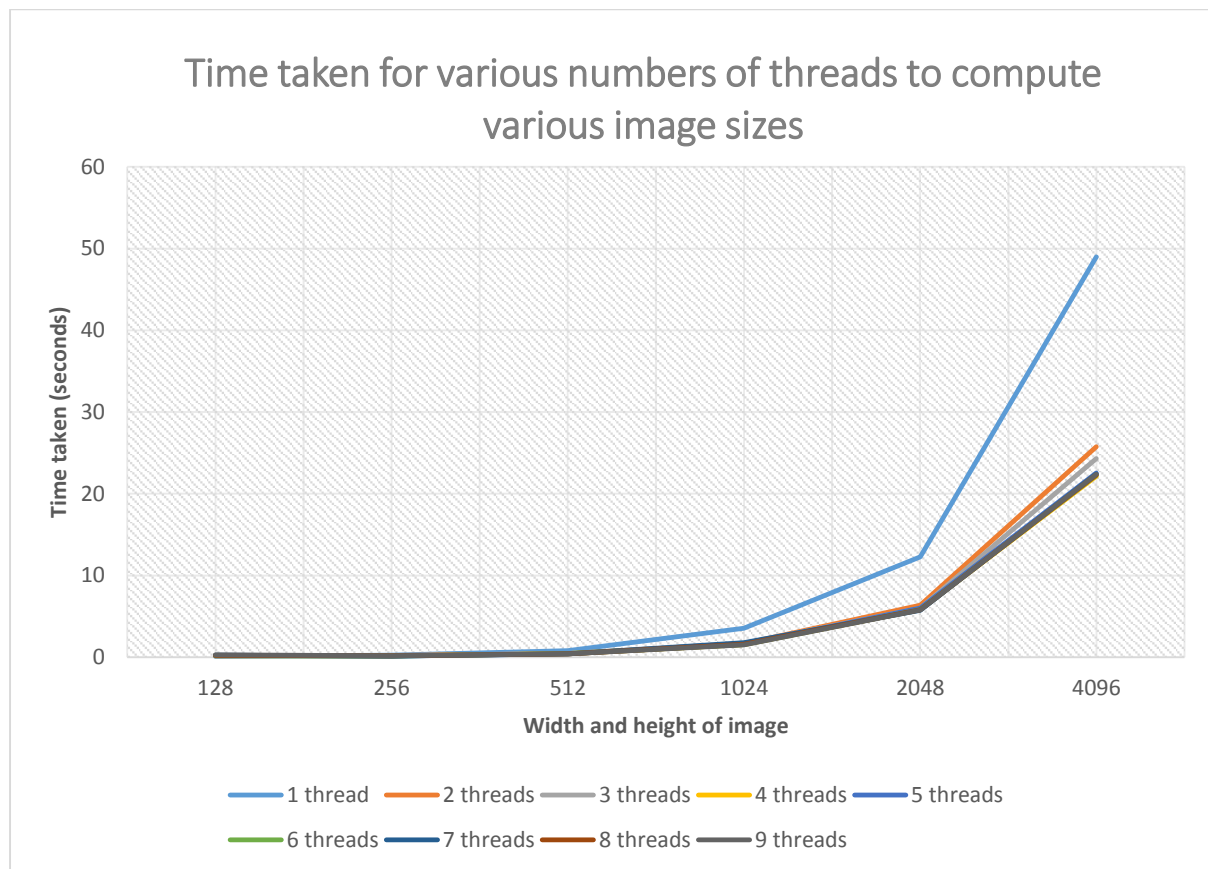
TIME TAKEN WITH DIMENSIONS	1 THREAD	2 THREADS	3 THREADS	4 THREADS	5 THREADS	6 THREADS	7 THREADS	8 THREADS	9 THREADS
128	0.082	0.187	0.166	0.196	0.202	0.192	0.243	0.233	0.279
256	0.243	0.211	0.176	0.173	0.138	0.142	0.145	0.168	0.157
512	0.788	0.436	0.431	0.423	0.399	0.458	0.414	0.428	0.415
1024	3.55	1.647	1.661	1.532	1.567	1.553	1.769	1.577	1.513
2048	12.259	6.354	6.02	5.811	6.017	5.799	5.745	5.825	5.795
4096	48.982	25.77	24.308	22.145	22.555	22.272	22.426	22.322	22.392

From the data, it can generally be seen that the more threads are used, the faster it is. An exception to this being with the smaller process as 1 thread only takes 0.082 seconds and 9 threads takes 0.279. This takes dramatically more time, and demonstrates the issue with the over-use of threads. The efficiency from the number of threads is generally similar though it can be figured that it peaks at around 4 threads. This is where some of the most efficient values are and this also correlates with the number of available cores on the computer that it was tested on. The program split the generation of the image into various tasks by dividing the number of pixels needs to be generated into multiple threads from a thread pool. The thread pool would be the same size as the number of processors available. The number of pixels that needed to be generated is divided by the number of threads (the same as the number of available processors), and then it creates tasks to do this and waits for threads from the thread pool to use.

TODD FANNING | 2121565 | FANN0022