CS 575 Project #0: Simple OpenMP Experiment

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1. This project was run on a personal Linux machine with a Intel i7-7700K CPU with 4 cores, each with 2 threads running at 4.20 GHz.
2. Running 100000 trials of the pairwise-multiplication program generated the following results:

Number of Threads	Average Performance	Peak Performance
1	568.66 (MegaMults/Sec)	587.18 (MegaMults/Sec)
4	2020.01 (MegaMults/Sec)	2132.22(MegaMults/Sec)

3. The 4-to-1 thread speedup is then:
   $S = 2020.01 / 568.66 \approx 3.5522$
4. The 4-to-1 thread speedup is less than 4.0 because multi-processing does not come for free; there is always some overhead to using parallel threads. This overhead does take up some time before the actual computation can start, and thus the speedup will be 4.0. Increasing the array size should make the speedup closer to 4.0, as more computation means the overhead time has less of an effect on the speedup.
5. The parallel fraction is:
   $Fp = (4 / 3) * (1 - 1 / 3.5522) \approx 0.95798$