

Project #0 Simple OpenMP Experiment

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Explanation: I did the project #0 in my own computer, the specific result is on the last of this pdf.

Why this happen? Because it supports multiple thread. And in the project, I opened the OpenMP. In theory, it can divide task into 4 pieces and combine the result at last. The 4 threads is about 4 times than the 1 thread.

Commentary: I ran this on my own computer surface pro 6, it is Intel Kaby Lake R quad core: i5-8250U. The 1 thread's peak performance is 367.83 MegaMults/Sec and the 4 threads peak Performance is 1010.78 MegaMults/Sec. My 4-thread-to-one-thread speedup is 2.747978.

If the 4-thread-to-one-thread speedup is less than 4.0, I think it is that some resources are finite and limit the performance of the system, such as CPU bound (needs lots of CPU resources), memory bound (needs lots of RAM resources), I/O bound (Network and/or hard drive resources).

My Parallel Fraction Fp is 0.848128.

Specifically

Size 600000, NUMTRIES 1000.

Using 1 threads: Peak Performance = 367.83 MegaMults/Sec

Using 4 threads: Peak Performance = 1010.78 MegaMults/Sec

Machine: surface pro 6, Intel Kaby Lake R quad core: i5-8250U.

$S = 1010.78 / 367.83 = 2.747978$

$F_p = (4./3.)*(1. - (1./S)) = 0.848128$