CS 475/575 -- Spring Quarter 2021

Project #0

Simple OpenMP Experiment

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1. **Tell what machine you ran this on:**

   OSU Engineering server (Linux system) : flip2

2. **What performance results did you get?**

   1. **Condition:**

      Numt = 1, size = 160000, numtries = 400

      Result:

      Using 1 threads

      Peak Performance = 174.55 MegaMults/Sec

      Average performance = 172.60 MegaMults/Sec

   2. **Condition:**

      Numt = 4, size = 160000, numtries = 400

      Result:

      Using 4 thread

      Peak Performance = 679.49 MegaMults/Sec

      Average performance = 667.14 MegaMults/Sec

3. **What was your 4-thread-to-one-thread speedup?**

   S = 667.14 / 172.60 ≈ **3.86**

4. **If the 4-thread-to-one-thread speedup is less than 4.0, why do you think it is this way?**

   There are several factors that probably influence the performance of a system like clock speed, number of cores, cache, architecture, and so on. In addition, CPU bound, Memory bound, and I/O bound do exist. All of them are potential factors that can affect the speedup. I think the most significant issue is Amdahl's Law. There exists certain sequential portion.

5. **What was your Parallel Fraction, Fp?**

   Fp = (4./3.)*(1. - (1./S)) = **0.98**