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Project #0

Project Questions:

Tell what machine you ran this on.

1. I ran my program on my Windows machine utilizing Visual Studio Code.

What performance results did you get?

2. The following screenshots below contain my performance results for both 1 thread as well as 4 threads. The performance results I received for 1 thread are 64.00 MegaMults/Sec, 136.06 MegaMults/Sec, and 148.94 MegaMults/Sec, with a peak performance of 148.94 MegaMults/Sec. The average performance for the 1 thread trials is 116.33 MegaMults/Sec. The performance results I received for 4 threads are 78.64 MegaMults/Sec, 486.13 MegaMults/Sec, and 505.74 MegaMults/Sec, with a peak performance of 505.74 MegaMults/Sec. The average performance for the 4 thread trials is 356.84 MegaMults/Sec.

What was your 4-thread-to-one-thread speedup?

3. As shown in below, the 1-thread to 4-thread speed-up was calculated to be 3.40.

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

4. There will always be portions of the program that are not classified as paralizabe because the program must run in sequence. This is why the 4-thread to 1-thread speedup is calculated to be less than 4.0 regardless.

What was your Parallel Fraction, F_p ?

5. As shown in the screenshot below, the parallel fraction was calculated to be 0.940673.

```
Using 1 threads
Performance =    64.00 MegaMults/Sec
Performance =   136.06 MegaMults/Sec
Performance =   148.94 MegaMults/Sec
Peak Performance = 148.94 MegaMults/Sec
Average Performance = 116.33 MegaMults/Sec
Using 4 threads
Performance =    78.64 MegaMults/Sec
Performance =   486.13 MegaMults/Sec
Performance =   505.74 MegaMults/Sec
Peak Performance = 505.74 MegaMults/Sec
Average Performance = 356.84 MegaMults/Sec
4-Thread to 1-Thread Speed-Up =    3.40
Parallel Fraction = 0.940673
```

Conclusion:

The overall project turned out well upon completion, but I encountered a few minor obstacles at first. At first I was calculating infinite values for my performance results, but after re-reading the assignment instructions, I realized that it was mandatory to be connected to the engineering server. After connecting to the class host server, I was able to generate numerical values for my performance, as opposed to the infinite values that I was originally generating. The next obstacle that I encountered was a negative parallel fraction output. After switching my numerator and denominator, I was able to finally generate positive outputs.