Project 2

Numeric Integration with OpenMP Reduction

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1. Tell what machine you ran this on?

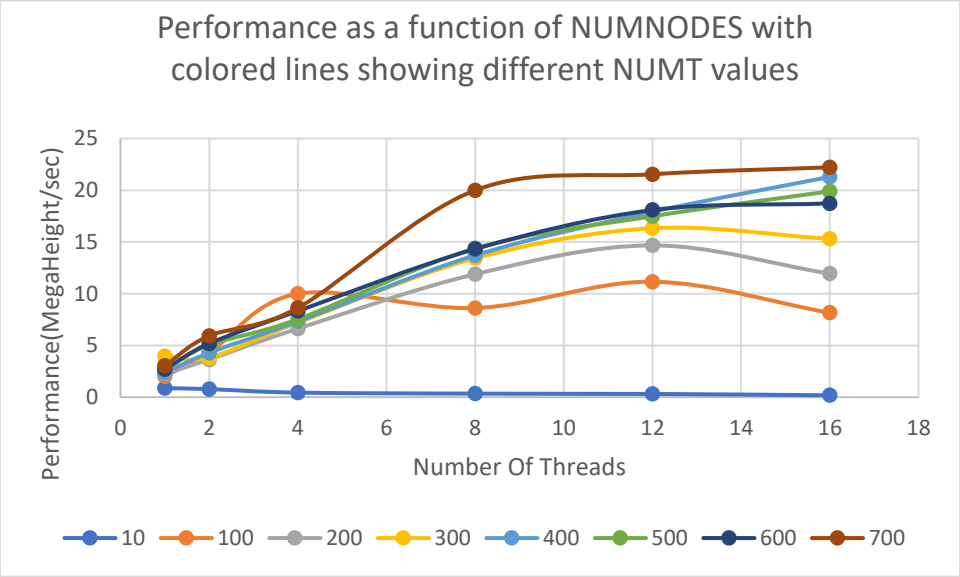
   Rabbit(rabbit.engr.oregonstate.edu)

2. What do you think the actual volume is?

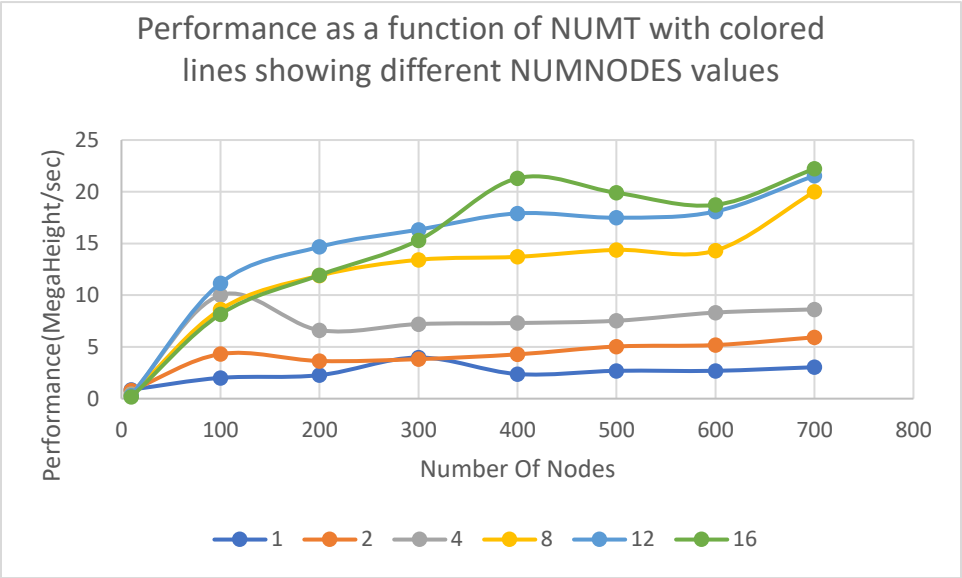
   7.75

3. Show the performances you achieved in tables and two graphs showing:

   1. Performance as a function of NUMNODES with colored lines showing different NUMT values



2. Performance as a function of NUMT with colored lines showing different NUMNODES values



4. What patterns are you seeing in the speeds?

   The performance becomes constant once the number of threads is maxing out. Moreover, the performance becomes stagnated until the value of NumNodes is increased.

5. Why do you think it is behaving this way?

   According to the graph the value increased gradually and maxed out once it reached the maximum value.

6. What is the Parallel Fraction for this application, using the Inverse Amdahl equation?

   Speedup= Performance of 16 threads/Performance of 1 thread = **7.30921053**

   Fp calculated using speedup:-

   Fp = (16/16-1) * (1-1/7.30921053) = **0.9207**

7. Given that Parallel Fraction, what is the maximum speed-up you could *ever* get?

Max speedup achievable = (1/Fseq)
= (1/1-Fp)= (1/ 1-0.9207) = (1/ 0.0793) = **12.6103405**

	10	100	200	300	400	500	600	700
1	1	1	1	1	1	1	1	1
2	0.896551724	2.144	1.604	0.96	1.798	1.874	1.926	1.951
4	0.505747126	4.975	2.916	1.812	3.071	2.799	3.093	2.839
8	0.390804598	4.289	5.238	3.372	5.761	5.346	5.323	6.579
12	0.356321839	5.552	6.463	4.103	7.525	6.502	6.725	7.089
16	0.206896552	4.06	5.26	3.847	8.95	7.398	6.963	7.309