Alston Godbolt
Project #1
CS475 Parallel programming
Ecampus
4/13/17

1. Similar to assignment 00, I am using a Lenovo laptop with windows 10 as the operating system. Below are the additional specifications of the system:

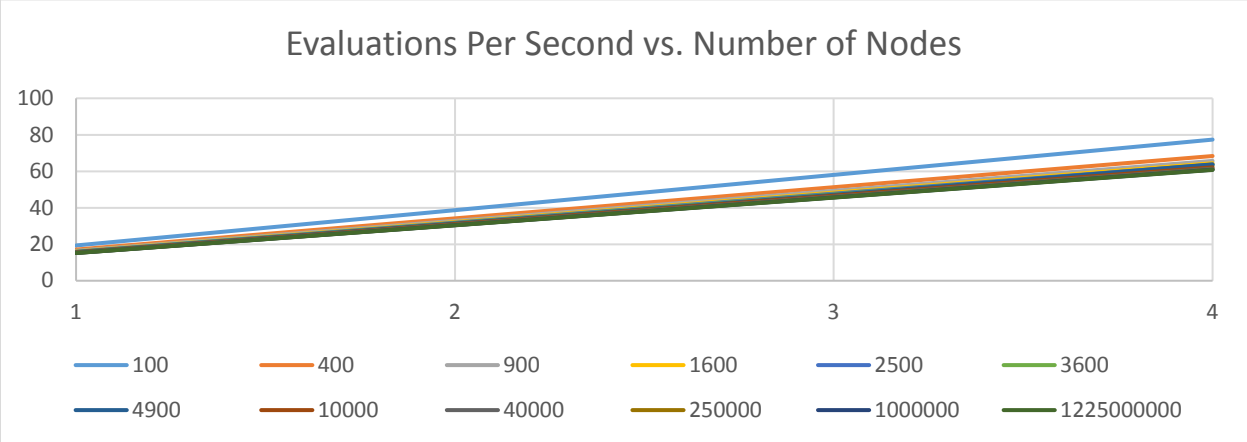
   Processor: Intel Core i3-4030 CPU @ 1.90 GHz

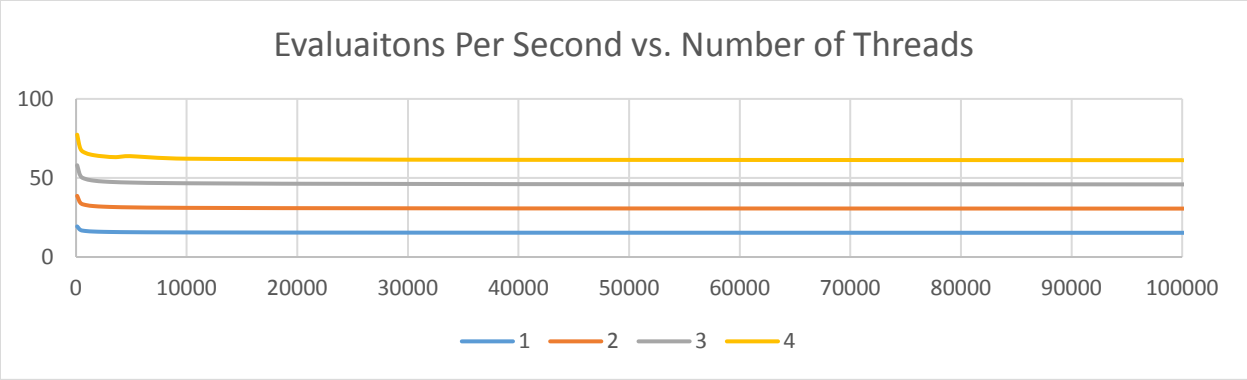
   Installed memory (RAM): 4.00 GB

   System type: 64 bit Operating System, x64 based processor

2. I think the actual volume is somewhere between 25 and 26. I believe this is to be correct because as the number of nodes increases, the more the volume stabilizes. For example, the volume with 100 nodes reported at 32.24. however, volumes of nodes 3600 – 1.22 billion remained between 25 and 26.
3.

volume	32.23594	28.48735	27.371017	26.83535	26.520863	26.314022	26.167637	25.906963	25.60735	25.429874	25.371093	25.314172
nodes	100	400	900	1600	2500	3600	4900	10000	40000	250000	1000000	1225000000
1	19.341564	17.09241	16.42261	16.10121	15.912518	15.788413	15.700582	15.544178	15.36441	15.257925	15.222656	15.188503
2	38.683128	34.184821	32.84522	32.202421	31.825036	31.576826	31.401165	31.088355	30.72882	30.515849	30.445312	30.377006
3	58.024691	51.277231	49.26783	48.303631	47.737554	47.365239	47.101747	46.632533	46.09323	45.773774	45.667968	45.565509
4	77.366255	68.36941	65.69044	64.404841	63.650072	63.153652	63.802329	62.17671	61.45764	61.031699	60.890624	60.754012





4. For all of the tests that I ran the speeds continued to increase. I suspect that the speeds plateaued at the million node mark because the next test (1.22 billion) showed a slight decrease. This held true for 3 of the 4 nodes used in testing.
5. As you mentioned in the lectures, we are seeing the efficiency of having multiple cores processing the same information. However, I also think the type of computer the information was processed on played a part in the results. I suspect that this computer has a lot of "Best Buy" and manufacturer junk continuously running in the background which is impacting the results. The only way to know for sure is to find all of the stuff running in the background and completely remove it from the computer, or a new install.
6. Parallel fraction = .4655 $\left(\frac{n}{(n-1)}\right)\left(1-\frac{1}{(speedup)}\right)=\left(\frac{4}{3}\right)\left(1-\left(\frac{1}{1.55}\right)\right)=(1.33)(1-.65)=(1.33).35)=\ .4655$
7. Max speedup = 1.87 $\frac{1}{1-f\ parallel}=\frac{1}{1-.4655}=\frac{1}{.5345}=1.87$