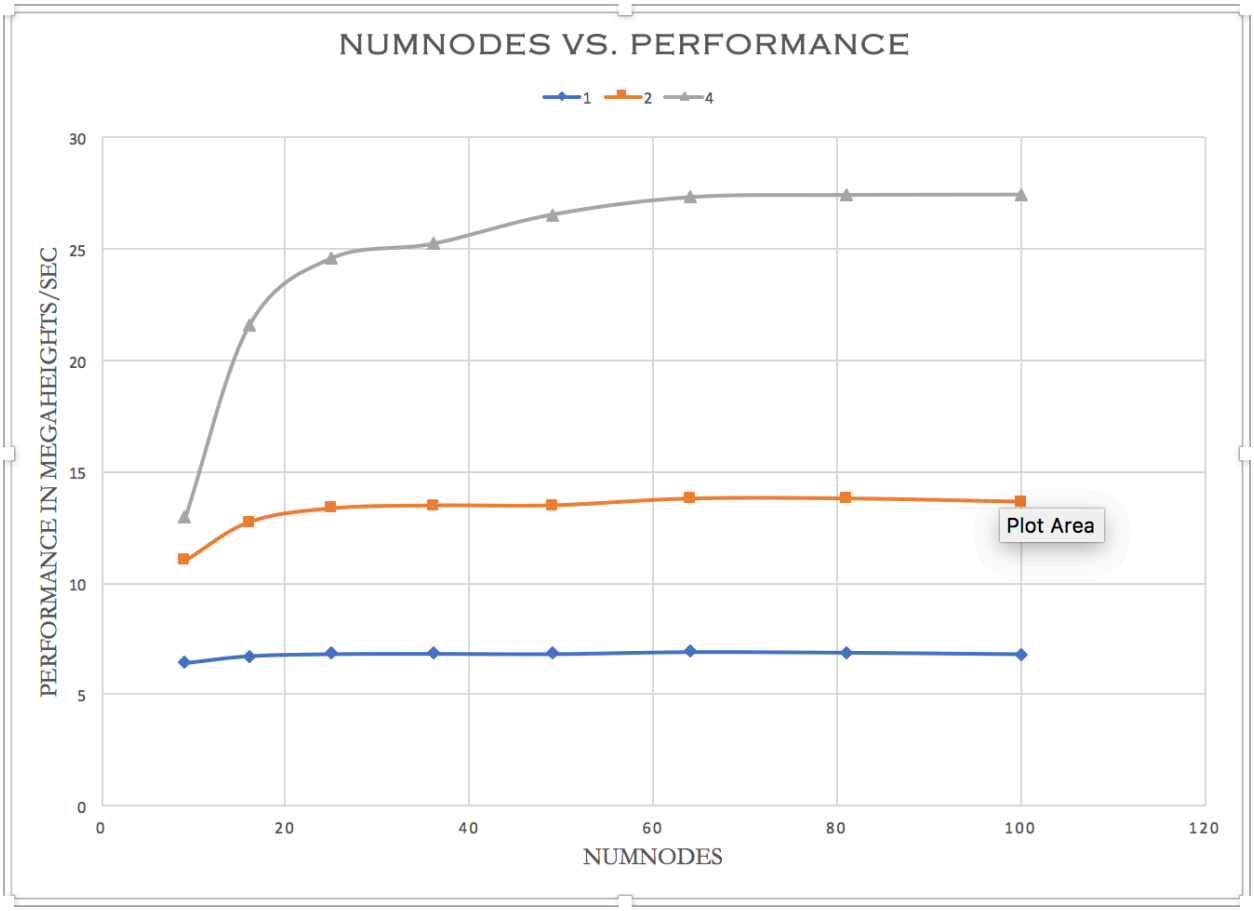
CS 475 Project #1 Report

1) I ran this on the OSU Flip3 sever
2) From the program, the volume that I get is 25 units^3.
3) Graph



Table

	9	16	25	36	49	64	81	100
1	6.417	6.735	6.831	6.845	6.833	6.926	6.899	6.829
2	11.046	12.76	13.371	13.497	13.504	13.803	13.81	13.665
4	12.973	21.603	24.611	25.257	26.559	27.339	27.437	27.457

4) The speed initially increases as the number of nodes increase. However, it flattens out after the initial jump. After that, the line graph takes a slight downward turn.
5) The reason for the pattern is the violation of temporal coherence. This violation causes the graph to take a downward turn.
6) $Speedup\ at\ 49\ nodes = \frac{P_4}{P_1} = \frac{26.559}{6.833} = 3.886$

$Parallel\ Fraction = \frac{4}{3} * \left(1 - \frac{1}{Speedup}\right) = \frac{4}{3} * \left(1 - \frac{1}{3.886}\right) = 0.9903$

$Speedup\ at\ 49\ nodes = \frac{P_2}{P_1} = \frac{13.504}{6.833} = 1.976$

$Parallel\ Fraction = \frac{4}{3} * \left(1 - \frac{1}{Speedup}\right) = 2 * \left(1 - \frac{1}{1.976}\right) = 0.9838$

7) $Maximum\ Speedup\ 4\ threads = \frac{1}{1 - F_{parallel}} = \frac{1}{1 - 0.9903} = 103.093$

$Maximum\ speedup\ 2\ threads = \frac{1}{1 - F_{parallel}} = \frac{1}{1 - 0.9838}$

$= 61.728$