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Class: CS575

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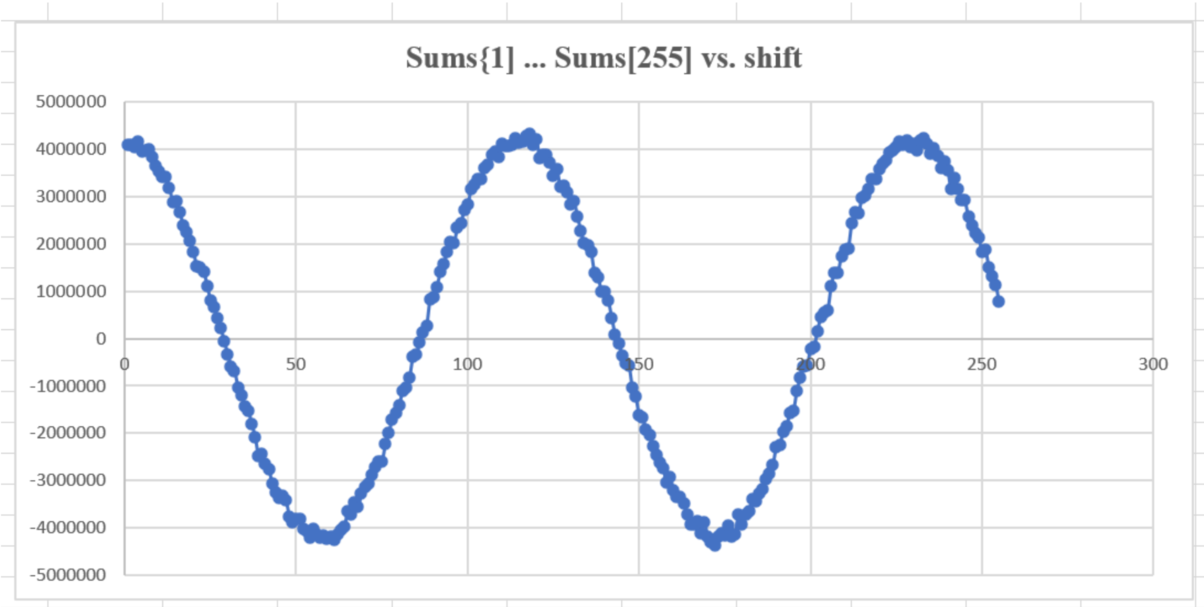
Project 8

What machine I ran this on: DGX

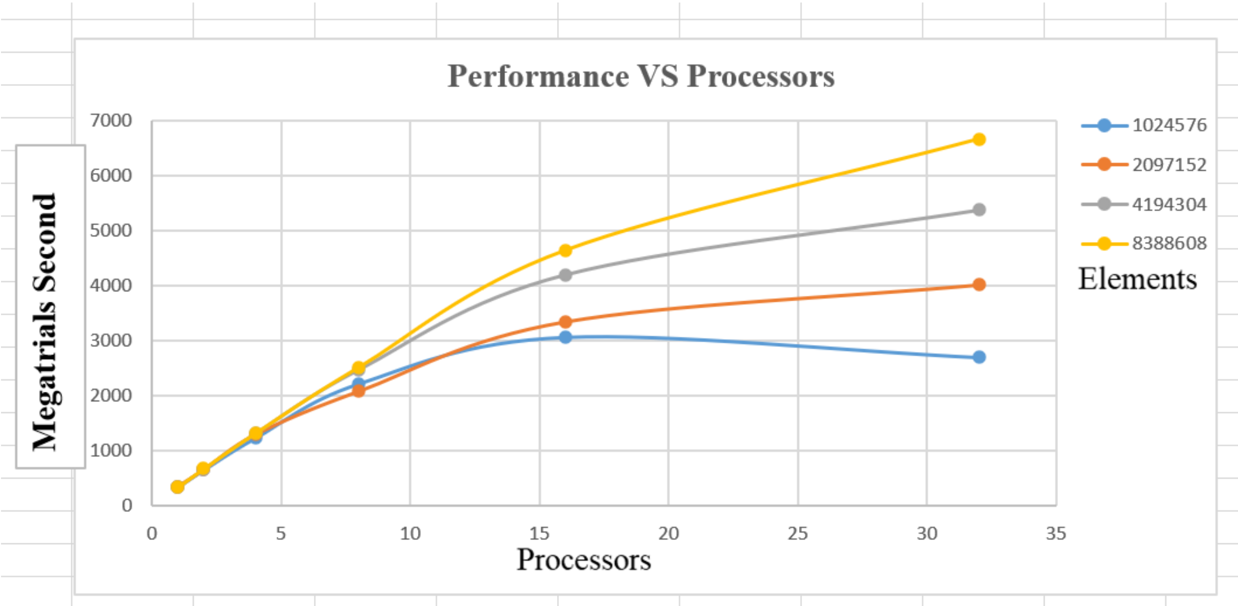
1. Show the Sums{1] ... Sums[255] vs. shift scatterplot.

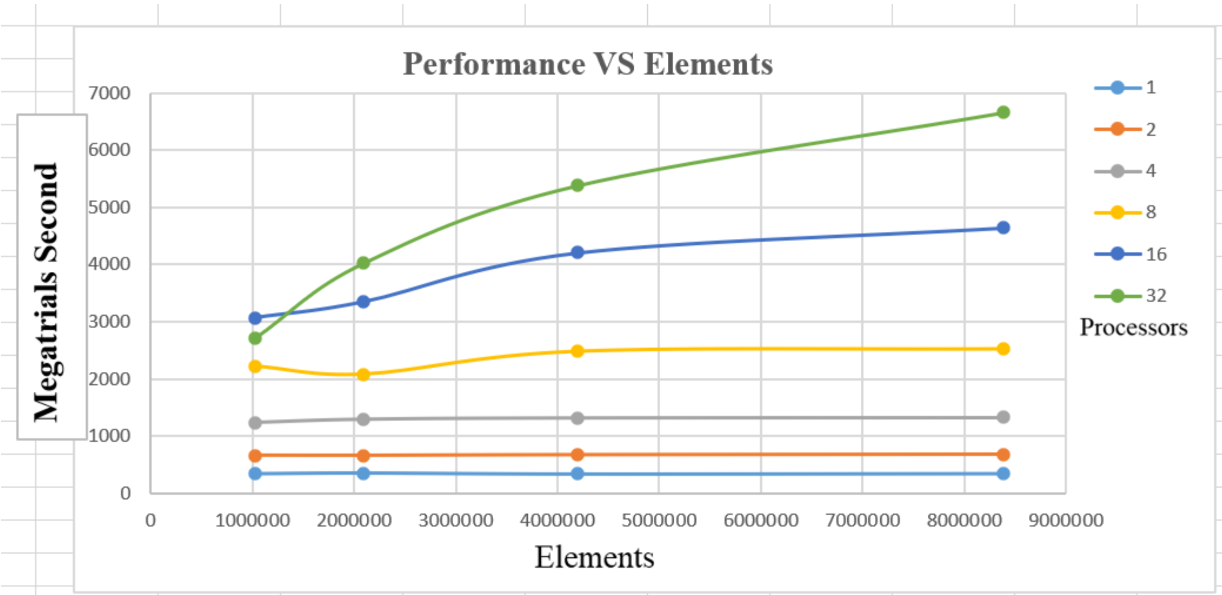


2. State what the secret sine-wave period is, i.e., what change in shift gets you one complete sine wave?

From the data in the CSV file and the graph drawn, we can see that the secret sine-wave period is about 118.

3. Show your graph of Performance vs. Number of Processors used.





4. What patterns are you seeing in the performance graph?

As can be seen from the graph, performance increases as the number of processors increases. When the processor is greater than 16, the greater the number of elements, the better the GPU performance. When the processor is less than 16, the number of elements has little effect on performance.

5. Why do you think the performances work this way?

When the number of processors is not enough, the GPU is not fully used, so the performance is poor. As the number of processors increases, the GPU is loaded enough to run, so performance improves. When there are fewer than 16 processors, the number of elements has little effect on the GPU, so there is no big change in performance. When the processor is greater than 16, the number of elements increases, and the utilization rate of GPU will be higher, thus improving the performance. In addition, it is clear that the performance of the GPU running this time is higher than past project's performance, which also demonstrates the superiority of MPI parallelism.