Project #7B
Autocorrelation using MPI

Ping Yang (yangping@oregonstate.edu)

June 7, 2022

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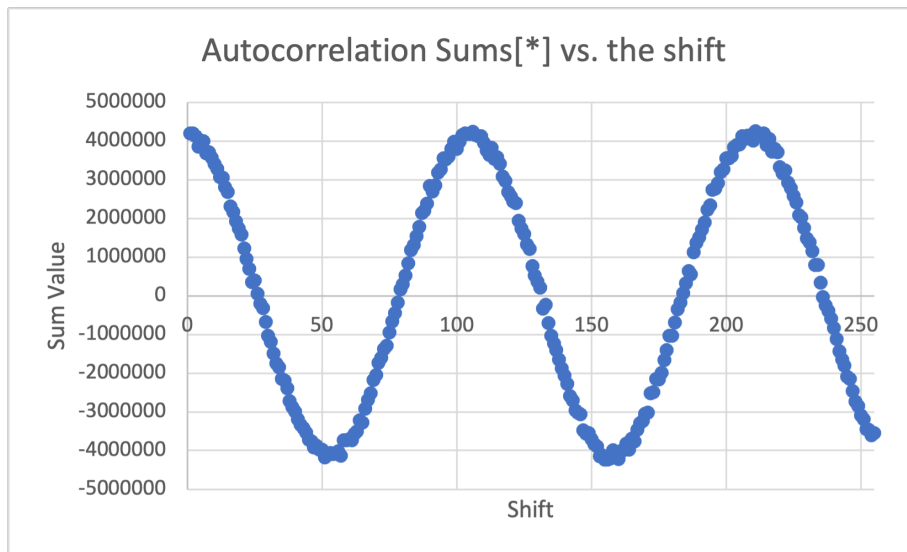

Figure 1: Sums[*] vs. Shift

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

The secret sine-wave period is about 105.

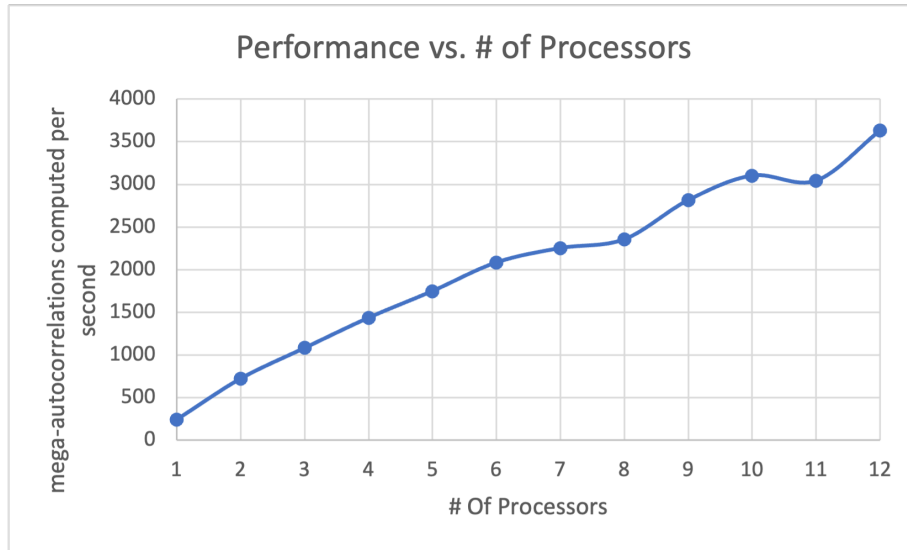# 3. Show your graph of Performance vs. Number of Processors used.

Figure 2: Performance vs. Number of Processors

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

The performance has a trend of increasing with the growing of number of processors. And the line is nearly a linear trend.

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

Because except for data I/O (sending, receiving), the computing part is partitioned equally to different processes, and they have no inter-communications. So their running time should be roughly the same. Therefore, the program can be scaled up nearly linearly.