

PSA Assignment 4

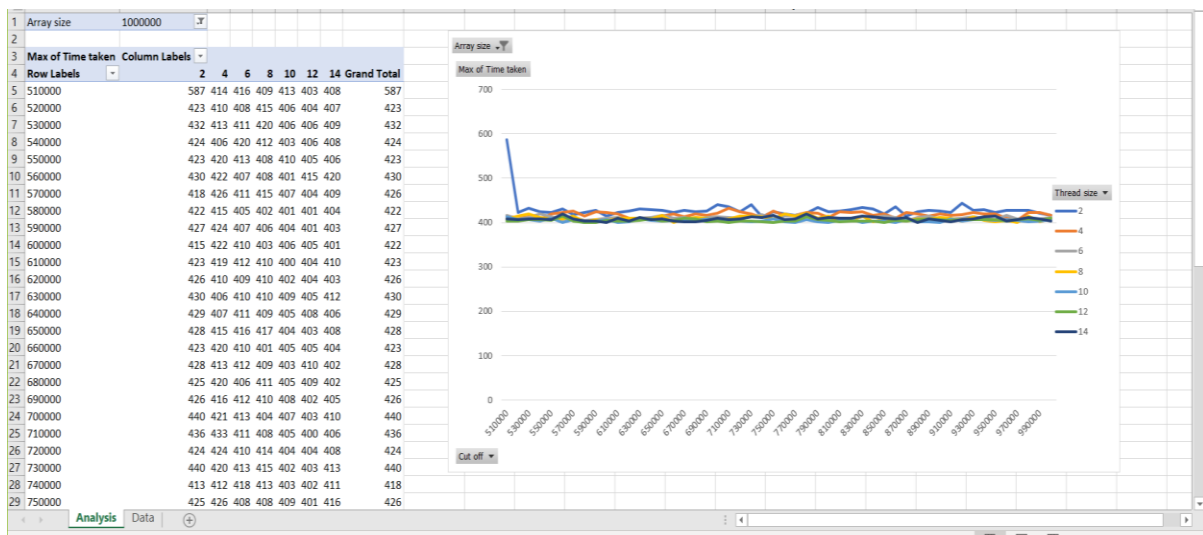
Submitted by Daisy Quadros (001568823)

For this experiment of using Parallelism for performing Merge Sort,

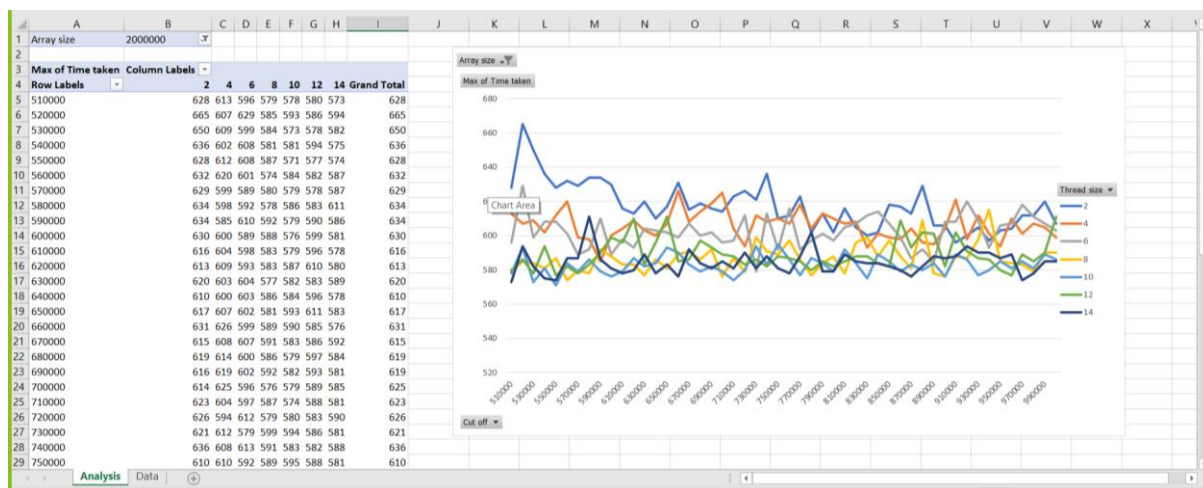
- The code changes are present at <https://github.com/daisyvquadros/INFO6205/tree/FALL2021-INFO6205-Assignment-4>
- The outputs received with this experimentation are present in result.csv
- The below considerations have been taken for executing the various experiments
 - Array size varies from 1000000 to 5000000
 - Thread size varies from 2 to 14
 - Cut-off for each of the array sizes are in range of 510000 to 1000000
- The data analysis for the experiments are part of psa5.xlsx in Documents folder

Below are the observations for different array sizes

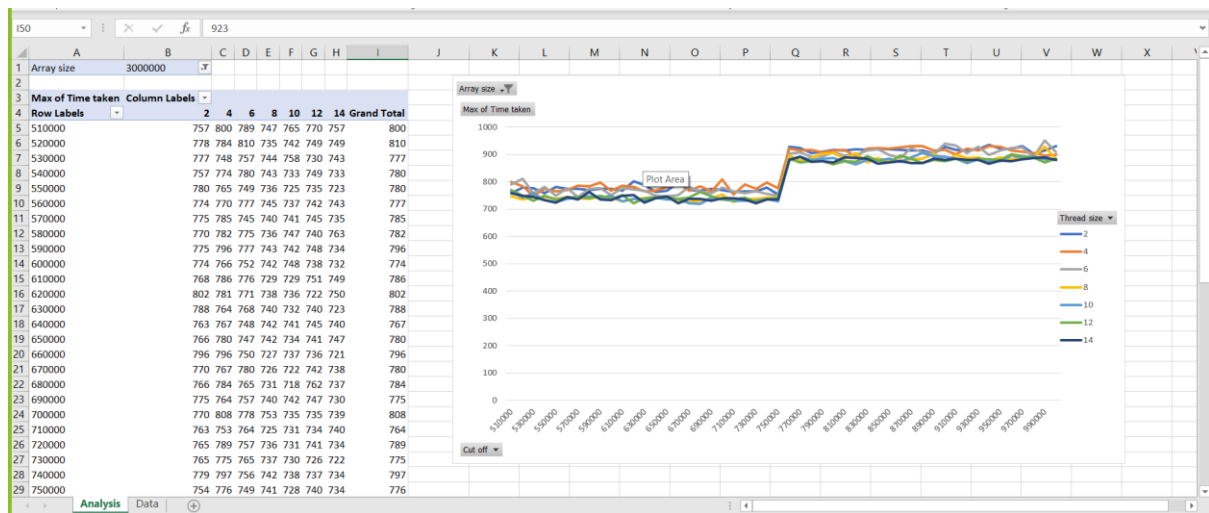
Array size: 1000000



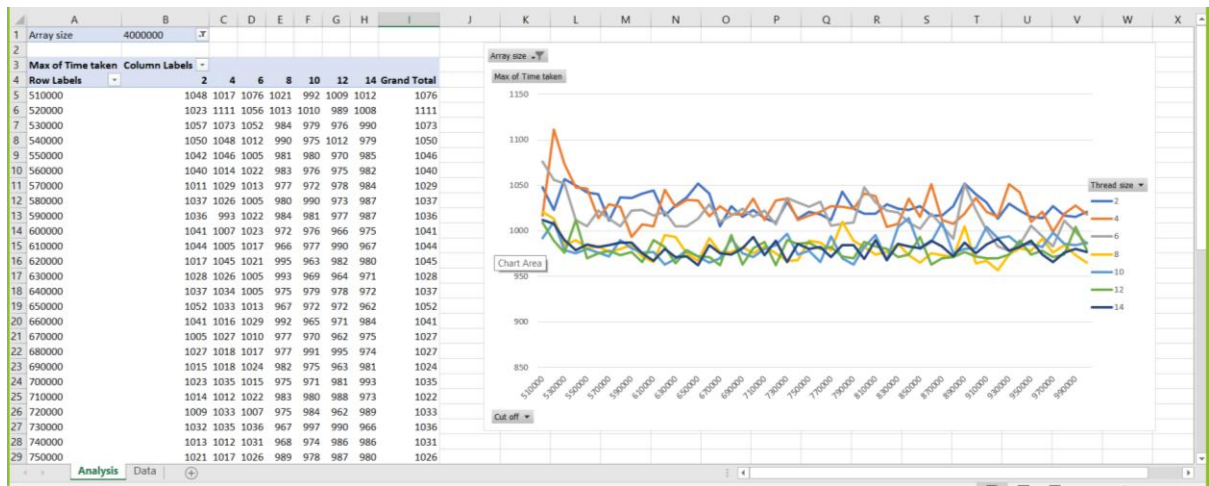
Array size: 2000000



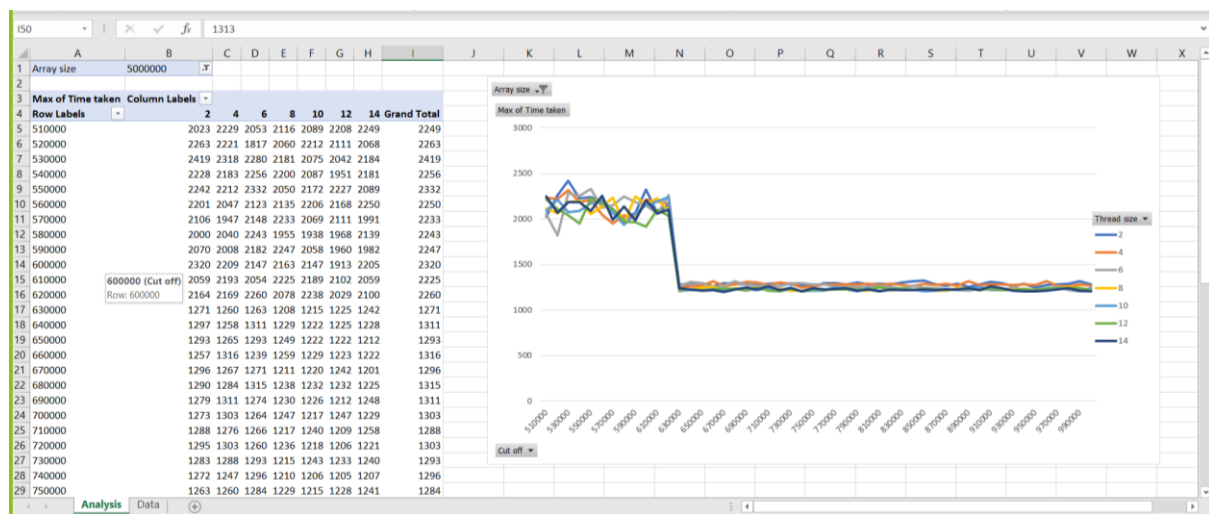
Array size: 3000000



Array size: 4000000



Array size: 5000000



Conclusion

From the above analysis, the performance improvement has been observed in an incremental manner as we increase the number of threads involved in the computations, irrespective of the growth in the array size.

Also, the cut-off taken for different array-sizes has impacted the performance received.

For larger array sizes like 5000000, the cut-off in the range of 630k-990k has proved most optimal.

Therefore, we can see that an appropriate combination of the cut-off along with higher thread size as per the configuration of the machine can help in obtaining performance improvement.