Assignment #1

Create an MPI program that calculates the Mandelbrot set (discussed in upcoming lecture) in parallel with two methods static and dynamic task assignments.

Note that the book has good explanation, and you can find a lot of implementations with google. You need to create a working implementation, understand how it works, and measure the performance.

Here you can find a good MPI tutorial that also helps you with the setup. https://mpitutorial.com/tutorials/.

Submit a report the contains the following information:

1. How did you parallelize the computation? This should include figures, drawings, block diagrams …
2. The setup you used. This includes the used MPI implementation, the node details (processors, memory, OS, …), the network configuration.
    a. For those who want to use virtual machines there is an old but good youtube tutorial. The link to the first video in the playlist is https://www.youtube.com/watch?v=2rpWEZY0aPo
3. The code (Github link)
4. Screen shots showing that the implementation is working and the resulting image.
5. The performance that includes speedup factor, efficiency, computation to communication ratio, and scalability. Here you can refer to the book for more information, especially about communication and computation times.
6. Discuss your results and draw some conclusions.

This assignment is not a group assignment.