CS 4973 - Mersenne Prime Project
Assignment 4 - Due 2019.09.25

Overview: The purpose of this assignment is to construct a program which will split an array among multiple processes.

Details:

(1) In your home directory, you should see the .cpp file: MPI_scatterv_example.cpp. Compile this program and submit it to the job queue. You will need to modify the job file, in particular, this program takes a singe command line argument, the last line in your job file might look like:

time prun ./MPI_scatterv_example 105

This assumes you compiled the .cpp file to the executable: MPI_scatterv_example

(2) Run this program several times, with different numbers of processes (-n in the job file) and different input lengths (for example, the 105 in the line above). Before you proceed, make sure you understand what is being displayed in the output.

(3) You are to modify this program in the following way: Process 0 will create a binary array of unsigned long long integers whose length is the command line argument. You will then use the .Scatterv command to break this array up into as even as possible chunks to be sent to each process (including Process 0). The arrays on each process should be EXACTLY the size needed for the breaking up of the array.

(4) Make sure that the contents of the original array are printed out from Process 0 BEFORE the .Scatterv command. After the .Scatterv command, each process will print out the contents of its individual array, with enough information for us to know where their chunk from the original array came from.