Homework 8

Write an MPI program that emulates a work queue. Process 0 maintains the queue. Processes 1 - 15 will request a piece of work from the queue and perform the work. The work will be a number of seconds to sleep and should be in the range of 0 to 1, assigned randomly.

Process 0 will have 256 items of work.

To get work, a process will send a message to process 0 requesting work, and will get a message from process 0 giving it W pieces of work.

If process 0 is out of work it will send -1 work items.

When all processes have received a -1 “no more work” message process 0 can assume the job is finished. It should notify all processes of this by sending a -2. All processes but process 0 can finish.

Process zero should print the time between receiving the first work request and sending out the -2 “all done” message.

Run your program with 16 processes (on one node with 16 cores) W = 1, 4 and 16 and for each run print the time described above for process 0 and the time for each process between when it starts up and when it receives a -1 “no more work” message.

What to turn in: You should turn in a zip file called <your last name>.zip. When unzipped it should create a directory called <your last name> containing your code and the run times for W = 1, 4 and 16. Your output can either be a screen shot, what you capture from using the Unix/ Linux *script* command or the program output directed into another file.