

Short Report for Lab3

Problem 1:

`mpirun -np 4 ./ring_block (ring_nonblock, comm_split)`. up to 4 cores on my laptop

The execution time for blocking, nonblocking and communicator split:

Blocking: 70ms

Nonblocking: 75ms

Communicator: 102 ms

Problem 2:

`mpirun -np 4 ./collective_mpi1`

The average execution time for each process: 6 ms

`mpirun -np 4 ./collective_mpi2`

The average execution time for each process: 8 ms

Problem 3:

I can only run 2 by 2 because of the limitation of cores

1) Yes

2) Execution time is around 80ms. Values are shown as follows:

frankma@franks-MacBook-Pro Problem 3 % `mpirun -np 4 ./mpicart`

process 0 local rank is 0

process 0 average with east is 0.500000

process 0 average with west is -0.500000

process 0 average with north is 1.000000

process 0 average with south is -1.000000

process 1 local rank is 1

process 1 average with east is 1.500000

process 1 average with west is 0.500000

process 1 average with north is 1.500000

process 1 average with south is -0.500000

process 2 local rank is 2

process 2 average with east is 2.500000

process 2 average with west is 1.500000

process 2 average with north is 2.000000

process 2 average with south is 0.000000

process 3 local rank is 3

process 3 average with east is 3.500000

process 3 average with west is 2.500000

process 3 average with north is 2.500000

process 3 average with south is 0.500000

Total time taken by CPU: 80

Total time taken by CPU: 81

Total time taken by CPU: 80

Total time taken by CPU: 81