HPCSE EX9

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Q1:

1.

(1) N int number may not be buffered in MPI\_Send so that dead lock happens at master process, considering do\_work has a large execution time.

(2) When MPI\_Send buffer all int, still, MPI\_Recv should receive two int for each process, but MPI\_Send actually overwrite the first one (when M = 1) with the send one (when M = 2). So MPI\_Recv in some process may get stuck and wait forever for the second one.

2.

In the first for loop:

Index i from 0 to size - 1

MPI\_Send -> MPI\_Isend(…, &reqs[0]). Non-blocking so that can send all int immediately.

Then add:

MPI\_Wait(&reqs[0], &status[0])

Repeat the same for loop containing MPI\_Isend again.

In the send for loop:

Index from 0 to N – 1

MPI\_Recv -> MPI\_Irecv(rank == 0 ? MPI\_IN\_PLACE : &input, …, &reqs[0])

Q2:

See code