

Report – Assignment 3

1: Original program **pmd.c** runs slower than the modified program **pmd_mod.c**.

Pmd.c has a blocking MPI_Send and MPI_Recv that makes the program wait until the message is received and hence the delay in wait times and the program runs slower. This can also lead to a potential deadlock if the MPI_Send and MPI_Recv calls are not in correct order in the program

2: Pmd_mod.c has a non blocking MPI_Irecv call. This is an asynchronous call and does not block the program till the message is received and and processing continues saving some execution time. Along with this we use an MPI_Wait call which waits for an MPI request to complete.

To test results, the program is run multiple times and the results of the 3 runs are as follows.

In each run, program **pmd.c** runs slower than **pmd_mod.c**

Run	pmd.c	pmd_mod.c
1	CPU & COMT = 6.399272e+00 4.273105e+00	CPU & COMT = 5.915776e+00 3.740363e+00
2	CPU & COMT = 5.595042e+00 3.351732e+00	CPU & COMT = 4.995250e+00 2.715542e+00
3	CPU & COMT = 5.614631e+00 3.341955e+00	CPU & COMT = 4.982343e+00 2.698404e+00

Output files were collected for each of the runs for each of the program and the files are included in the submission as Run_1, run_2 and run_3.