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Timing results for five sample runs on PSC bridges with 5000x5000 matrices and using all 28 cores, results verified against sequential computation for correctness. For the extra credit chunks implementation, -n 9 and 5001x50001 are used to properly divide the input matrices into square chunks in a 3x3 grid.

sequential	openMP	mpi -n 4	mpi -n 8	openMP + mpi -n 4	openMP + mpi -n 8	chunks -n 4	chunks -n 9
1317.62 s	36.73 s	334.00 s	174.55 s	9.37 s	4.66 s	9.95 s	4.67 s
1396.76 s	33.85 s	333.49 s	174.51 s	9.27 s	4.68 s	10.01 s	4.63 s
1390.703	33.63 3	333.433	174.513	9.273	4.08 3	10.01 3	4.03 3
1389.92 s	36.33 s	333.76 s	174.15 s	9.31 s	4.70 s	9.92 s	5.10 s
1368.31 s	34.94 s	335.85 s	174.73 s	9.32 s	4.69 s	9.88 s	4.63 s
1392.37 s	35.67 s	336.48 s	174.72 s	9.31 s	4.68 s	9.97 s	4.61 s

to run:

to compile sequential: gcc -g -Wall -o seq matrix_seq.c

to run sequential: ./seq

to compile mpi: mpicc -g -Wall -o mpi matrix_mpi.c

to run mpi: mpiexec -n 4 ./mpi

to compile openMP: gcc -g -Wall -std=c99 -fopenmp -o3 -o openMP matrix MP.c

to run openMP: ./opeNMP

to compile opemMP + mpi: mpicc -g -Wall -std=c99 -fopenmp -o3 -o mpiMP matrix_mpiMP.c to run openMP + mpi: mpiexec -n 4 ./mpiMP

to compile block implementation: mpicc -g -Wall -std=c99 -fopenmp -o3 -o blocks

matrix_blocks.c -lm

to run block implementation: mpiexec -n 9 ./blocks