

Exercises - Lecture 7

March 16, 2011

1. Exchanging boundaries

Use as starting point the suggested solution of last week's exercise No. 4 (L6e4.c), see answer-week7.tar. Rewrite L6e4.c to avoid testing whether the process rank is an odd or even number. `MPI_Sendrecv` should still be used for communication..

2. Nonblocking communication

Rewrite L6e4.c by using `MPI_Isend` and `MPI_Irecv` for communication (instead of `MPI_Sendrecv`). The purpose is to have the possibility of hiding the communication overhead.

3. Parallel dumping on 1D

Rewrite L6e4.c such that each MPI process dumps its portion of the entire 1D solution directly to file. Then, write a serial post-processing program in C to "sew" the small data files together.

4. Parallel dumping on 2D

Write a simple MPI program that lets the involved MPI processes divide a 2D data grid, such that each process owns only a rectangular small portion. Let each MPI process dump its portion directly to file (similarly to the above exercise). Then, write a serial postprocessor program in C to "sew" the small data files together.