Exercises - MPI

Day 11

Exercises: MPI #1

Before parallelizing any code – the serial version should run efficiently. Use the program developed for the diffusion problem during the first week of the course as an example.

- Benchmark your code using:
  - (2^12 + 1) x (2+12+1) grid points (4097 x 4097).
  - 100 time steps.
  - (always) skip I/O for the timing.
  - Report the average CPU time per time step.
- To improve the performance, test (and report timings for) the influence of:
  - compiler optimization:
  - O<0-5>
  - -fast, -xvector=simd
  - POINTER vs. ALLOCATABLE arrays.
  - Single vs. double precision.
  - Replace divisions of constants with multiplication of constants (of the reciprocal number).