4-Day-Course — ZDV, University of Mainz — 1st day

Content

MPI on beginners' level

1. MPI Overview
2. Process model and language bindings

3. Messages and point-to-point communication
4. Nonblocking communication 

Schedule

08:30 Local registration
(and Corona status check)
09:00 Welcome
09:15 Lectures and exercises on MPI
(including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on MPI
(including some breaks)
18:00 Final end

4-Day-Course — ZDV, University of Mainz — 2nd day

Content

MPI on beginners' level – continued 

6.(1) Collective communication

Shared memory parallelization with OpenMP 

Overview 
Execution model 
Worksharing directives 

Worksharing – continued (Tasks …) 
Data environment 
Heat example (homework) 
Summary 
Pitfalls 

Shared memory parallelization with OpenMP

Verifying an OpenMP Parallelization with the Intel Inspector XE 

Schedule

08:45 Local registration
(and Corona status check)
09:00 Lectures and exercises on MPI
(including some breaks)
10:45 Lectures and exercises on OpenMP
(including some breaks)
13:00 Lunch break
14:00 Lectures and exercises on OpenMP
(including some breaks)
17:30 Verifying an OpenMP Parallelization with the Intel Inspector XE
18:00 Optional:
Exercises with the Intel Inspector XE
18:00/18:30
Final end without/with the exercise

4-Day-Course — ZDV, University of Mainz — 3rd day

Content

MPI on intermediate level 

7. Error handling
8. Groups & Communicators, Environment Management
   (1) MPI_Comm_split, intra- & inter-communicators
9. Virtual topologies
   (1) A multi-dimensional process naming scheme
   (2) Neighborhood-communication + MPI_BOTTOM (no practical)
   (3) Optimized re-numbering (short talk)
12. Derived datatypes
   (1) transfer any combination of typed data
6.(2) Advanced topics on collective communication

MPI on beginners' level – continued (Fortran users only)

5. The New Fortran Module mpi_f08 

Schedule

08:45 Local registration (and Corona status check)
09:00 Lectures & exercises on interm. MPI (including some breaks)
13:00 Lunch break
14:00 Lectures & exercises on interm. MPI (including some breaks)
17:15 For Fortran participants only: Additional lecture + exercises on the mpi_f08 module/interface
18:00 Final end

4-Day-Course — ZDV, University of Mainz — 4th day

Content

Advanced MPI 

10. One-sided Communication
11. Shared Memory One-sided Communication
   (1) MPI_Comm_split_type & MPI_Win_allocate_shared
   (2) MPI memory models and synchronization rules (no pract.)

Short tour through
- 12.(2) Advanced topics on derived datatypes (title slide)
- 13. Parallel File I/O (title + 5 slides)
- 14. MPI and Threads (title +1 slide)
- 15. Probe, Persistent Requests, Cancel (title + 3 slides)
- 16. Process Creation and Management (title + 3 slides)
- 17. Other MPI features (regular 4 slides)

18. Best practice

MPI Summary

Shared memory parallelization with OpenMP – optional

OpenMP-4.0 / 4.5 / 5.0 Extensions

Schedule

08:45 Local registration (and Corona status check)
09:00 Lectures & exercises on advanced MPI (including some breaks)
13:00 Lunch break
14:00 Lectures & exercises on advanced MPI (including some breaks)
16:45 For OpenMP users – optional: OpenMP-4.0 / 4.5 / 5.0 Extensions
18:00 Final end