

PATC Course: Parallel Programming Workshop

Objectives

The objectives of this course are to understand the fundamental concepts supporting message-passing and shared memory programming models. The course covers the two widely used programming models: MPI for the distributed-memory environments, and OpenMP for the shared-memory architectures. It also presents the main tools developed at BSC to get information and analyze the execution of parallel applications, Paraver and Extrae. Moreover it sets the basic foundations related with task decomposition and parallelization inhibitors, using a tool to analyze potential parallelism and dependences, Tareador.

Additionally, it presents the Parallware compiler, which is able to automatically parallelize a large number of program structures, and provide hints to the programmer with respect to how to change the code to improve parallelization. It deals with debugging alternatives, including the use of GDB and Totalview. The use of OpenMP in conjunction with MPI to better exploit the shared-memory capabilities of current compute nodes in clustered architectures is also considered. Paraver will be used along the course as the tool to understand the behavior and performance of parallelized codes.

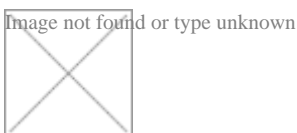
The course is taught using formal lectures and practical/programming sessions to reinforce the key concepts and set up the compilation/execution environment.

Requirements

Prerequisites: *Fortran, C or C++* programming. All examples in the course will be done in C.

Attendants can bring their own applications and work with them during the course for parallelization and analysis.

Academic Staff



Course Convener: Xavier Martorell

Materials

Image not found or type unknown



INTELLECTUAL PROPERTY RIGHTS NOTICE:

- The User may only download, make and retain a copy of the materials for his/her use for non-commercial and research purposes.
- The User may not commercially use the material, unless has been granted prior written consent by the Licensor to do so; and cannot remove, obscure or modify copyright notices, text acknowledging or other means of identification or disclaimers as they appear.
- For further details, please contact BSC?CNS patc [at] bsc [dot] es

Further information

Image not found or type unknown



**All PATC Courses at BSC do not charge fees.
PLEASE BRING YOUR OWN LAPTOP.**

Recommended Accomodation:

Please follow [the link](#) for map of some local hotels.

[CONTACT US](#) for further details about MSc, PhD, Post Doc studies, exchanges and collaboration in education and training with BSC.

For further details about Postgraduate Studies in UPC - Barcelona School of Informatics (FiB), visit the [website](#).

Sponsors:BSC and PRACE 4IP project are funding the PATC @ BSC training events.
If you want to learn more about PRACE Project, visit the [website](#).

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

Source URL (retrieved on 17 Oct 2024 - 07:44): <https://www.bsc.es/es/education/training/patc-courses/patc-course-parallel-programming-workshop-1>