

PARALLEL PROGRAMMING

OSSCOM Project Workshop

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Lecturers

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Requirements

- C programming language.
- Basic concepts in computer networks and computer architecture.

Justification

Current computer systems are parallel inherently (shared memory platforms, distributed memory platforms, GRID computing, multicore, heterogenous computing, etc.)

However, most of current applications do not take benefits of these parallel architectures. As a consequence, a lack of performance is produced.

The main goal of this subject consists in introducing the student in the techniques and technologies that allow to develop more efficient applications in science and engineering.

This subject is introduced at a stage of the curriculum where the student already has an extensive knowledge of computer architectures as well as programming languages and algorithmic issues that will allow not only designing efficient parallel algorithms but being able to assess the efficiency with different criteria considered in the analysis of performance.

Lecture Plan

First talk: The research in ICT serving society.

The goals of this talk are:

1. To present our Faculty

2. To introduce the research carried out at the Albacete Research Institute of Informatics.
3. To present different research projects in different areas of computer science as a service to the society..

Length: 1 hour + discussion.

Lecturer: Enrique Arias Antunez

Second talk: Supercomputing and society

This talk introduces research projects carried out at the Albacete Research Institute of Informatics in the field of High Performance Computing. All the presented projects have a great impact on the society.

Also, in this talk, we introduce basic concepts of parallel computing.

Length: 1 hour + discussion.

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Third talk: MPI (Message Passing Interface)

In this third talk, MPI library is introduced. MPI represents a *the facto* standard to program distributed memory platforms based on message passing..

Through the practices sessions, basic (MPI_Send, MPI_Recv, MPI_Init, MPI_Finalize, MPI_Comm_rank, MPI_Comm_size) and advance commands (MPI_Broadcast, MPI_Reduce, MPI_Gather, MPI_Scatter) are presented obtaining at the end of sessions a parallel program that we could launch to a cluster sited in Albacete.

Length: 8 hours + discussion.

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