Distributed Systems

Course plan

Semester Autumn 2020

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Course Outline

This course proposes an introduction to distributed and parallel. Concepts and models, systems, tools and their usage are presented and discussed. Assignments/projects put the acquired knowledge in practice.

Objectives

The principal objective of the course is to provide the student the essential knowledge for understanding the principles of distributed systems. The course presents the fundamental concepts of distributed architectures, systems as well as algorithmic and programming challenges. The course combines lectures with three practical projects that are integral part of course. These projects focus on the aspect of understanding distributed algorithms and execution, programming in a distributed environment, and scalability resp. performance analysis.

Learning outcomes

- Understanding the fundamentals of distributed systems
- Understanding and reason about different architectural paradigms
- Use of the parallel programming language POPC++ or POPJava
- Reason about scalability and analyzing achieved and achievable execution performance
- Understanding inter-process communication, time concepts, event ordering, synchronization, coordination and agreement, local and global states

Evaluation

To evaluate comprehension of the course material, we will use a written exam and the programming assignments. Grading is as follows:

Exam : written 60%
Projects : 40%

All evaluations elements are mandatory.

Inscription

This course is part of the BeNeFri program. All students should subscribe to the course.

Documentation

The principle textbook for this course is:

Distributed Systems Concepts and Design*, 5th ed.*
George Coulouris,
Jean Dollimore,
Tim Kindberg and
Gordon Blair
Addison-Wesley, 2012
ISBN: 978-0132143011

Other bibliographic references will be available on the course web site.
Two copies of this textbook are available in the University of Neuchatel's library.