Parallel and Distributed System

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Abstract

Parallel and distributed systems can be defined as a collection of processing elements that cooperate and communicate in order to achieve a common goal. This short course is intended to focus on the various principles and practices of parallel and distributed systems. We will discuss programming models, inter-process communication, synchronization, parallel machine architecture and parallel program optimization.

Topics covered

- Basics of parallelization and parallel programming: Pthread, MPI
- Parallel machine architectures: shared and distributed machines
- Consistency model and coherence protocols
- Parallel program optimization techniques
- Synchronization: Locks, barriers and transactions

Prerequisite

Some experience of high level programming using c/c++ is expected.

References

- Distributed Systems, Principles and Paradigms, by Andrew S. Tanenbaum and Maarten van Steen
- Parallel Computer Architecture: A Hardware/Software Approach, by Culler and Singh