

252-0029-00L Parallel Programming Summary and Lecture Notes

Yael Fassbind

FS 2021

Disclaimer: These are just my notes during the semester.
No guarantee for completeness and correctness

Contents

1 Week 1	4
1.1 Goals	4
1.2 Vorlesung 1	4

Overview

Parallel Programming

- Java recap
- parallelism in Java (Threads)

Parallelism

- understanding and detecting parallelism
- intro to PC architectures
- formalizing parallelism
- programming models for parallelism

Concurrency

- shared data
- race conditions
- locks, semaphores, etc.
- lock-free programming
- communication across tasks and processes

Parallel Algorithms

- useful and common algorithms
- datastructures
- storing and searching

1 Week 1

1.1 Goals

- Learn to write parallel programs in practice
- Understand underlying fundamental concepts

1.2 Vorlesung 1

- Mutual Exclusion - Decker's Algorithms
- Producer-Consumer
- Readers-Writer