Advanced Data Structures

Lecture 00: Course Overview

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Organizational Matters

**Lectures**
- Monday 14:00–15:30 (50.34, 236)
- lecture only

**Project (mandatory)**
- topics will be handed out 03.05.2023
- coding project and small presentation
- 20 % of the final grade
- requires additional registration

**Oral Exam**
- 20 minutes
- 80 % of the final grade
- pizza marks content not relevant for exam

**Office Hours (Room 208)**
- Monday 15:45–16:30 (lecture period)
- by appointment (otherwise)
## Materials

### Slides
- published before the lecture ([https://ae.itl.kit.edu/4719.php](https://ae.itl.kit.edu/4719.php))
- or in ILISA
- before means like 10 to 15 minutes before

### Recordings
- recordings exist online ([https://youtube.com/@kurpicz](https://youtube.com/@kurpicz))
- new topics will be recorded

### Additional Material
- references to literature included
- most likely no script
- MIT course (some topics match)
## Content

### Trees/Graphs
- bit vectors and succinct trees
- dynamic bit vectors and succinct trees
- succinct graphs

### External Memory
- cache-oblivious B-trees
- buffer trees and EM lookup

### Integers
- range minimum queries (lowest common ancestor queries)
- predecessor queries
- vEB-tree and fusion trees

### Strings
- string B-trees and suffix arrays
- compressed suffix array and suffix tree
## Gap Between Theory and Practice (Lecture AE Sanders)

### Different Viewpoints

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