ADSII3ILV

Algorithms and Data Structures II

Class Organization

Dr. Alessio Gambi

imc

Lecturer

- Who I am: Dr. Alessio Gambi

- How can you contact me: <u>alessio.gambi@fh-krems.ac.at</u>

- Where you can find me: G.2.18 or LV_WS23/24 ADSII3ILV INF_BA_VZ

- When you can find me: "Office" hours in Krems, anytime on MS Teams

- How can you meet me: I have an **open-door*** policy, but the best way to meet me is scheduling an appointment

*You can always pass by the office or message me on Teams, but I might be busy or away

Schedule and Organization Info

- CourseWare

- MS Teams

- GitHub Classroom

- Please bring **always** your laptop!

Session	LE	Room
27.09.2023 15:15 - 17:00	2	G.2.03
04.10.2023 11:15 - 13:00	2	G.2.02
11.10.2023 15:15 - 17:00	2	G1.2.24
18.10.2023 11:15 - 13:00	2	G.3.03
25.10.2023 15:15 - 17:00	2	G.3.02
08.11.2023 11:15 - 13:00	2	EL*
15.11.2023 11:15 - 13:00	2	G.3.03
21.11.2023 14:45 - 16:30	2	G.3.03
28.11.2023 11:15 - 13:00	2	VC
06.12.2023 14:15 - 16:00	2	G1.2.20
13.12.2023 14:45 - 16:30	2	G.3.11
19.12.2023 16:15 - 18:00	2	G.3.13
09.01.2024 11:15 - 13:00	2	VC
22.01.2024 09:00 - 11:00	2	G1.1.20

Exam and Assignments

- Final Exam

  1

  At the end of the semester, a **written exam** will take place. The exam consists of **quizzes** and **short questions** on the topics discussed in class.

- Assignments

  2

  During the semester, students will work on **two** assignments. All the assignments are handled via **GitHub Classroom** and consists in **solving programming tasks** and **testing the submitted code** (more on this later).

Grading Scheme (Updated 04/10/2022)

- **Attend** the lectures **regularly**

- **Exercise** on your own **regularly**

- **Contribute** to the class and assignments

  - *Participate actively*

  - *Sharing is caring*

  - *See something, do something*

Assignment 1	20 %
Assignment 2	20 %
Homework	10 %
Exam	50 %
Bonus	10 %

Learning Goals

- Present you advanced data structures and algorithms

- Discuss complexity and decidability

- Learn about heuristics and meta-heuristics

- Apply some of the theoretical concepts on "real" problems

- Practice, practice, and test

Content Organization

Session	Topic	Assignment
27.09.2023 15:15 - 17:00	Intro, Organization, Assignments, Recap	
04.10.2023 11:15 - 13:00	Basics of Trees, Binary Search Trees, Tree Operations	
11.10.2023 15:15 - 17:00	Self-Balancing Trees	Start of Assignment 1
18.10.2023 11:15 - 13:00	Intro on Graphs, Representation, Traversal	
25.10.2023 15:15 - 17:00	Weighted Graphs, Minimum Spanning Tree	
08.11.2023 11:15 - 13:00	Exercises on Trees and Graph	
15.11.2023 11:15 - 13:00	Kruskal, Dijkstra, and Bellman–Ford	
21.11.2023 14:45 - 16:30	Complexity and Decidability	End of Assignment 1 (ca. 40 days)
28.11.2023 11:15 - 13:00	Intro on Metaheuristics and Local Search	Start of Assignment 2
06.12.2023 14:15 - 16:00	Evaluating Metaheuristics	
13.12.2023 14:45 - 16:30	Guest Lecture: Genetic Algorithms	
19.12.2023 16:15 - 18:00	Guest Lecture: Python Datastructures	
09.01.2024 11:15 - 13:00	Exam Prep	End of Assignment 2 (ca. 40 days)

Material

- There is no required material

- Additional material will be provided if needed (suggest some to earn bonus points!)

- Suggested readings: