

Software Lab Computational Engineering Science

Introduction

Uwe Naumann



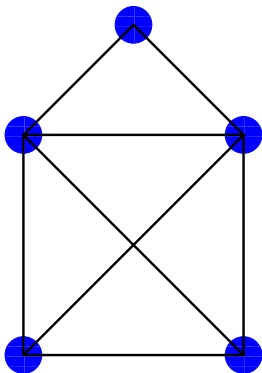
Informatik 12: Software and Tools for Computational Engineering (STCE)
RWTH Aachen University

Motivation

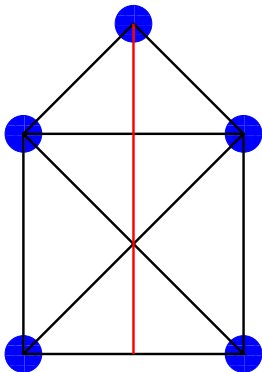
Prerequisites

Software

Admin



- ▶ alone
- ▶ from scratch
- ▶ independent



- ▶ teams
- ▶ dependencies among subprojects
- ▶ building on existing software

requiring

- ▶ documentation
- ▶ communication
- ▶ interfaces

to support effectivity, comprehension
and sustainability.

- ▶ Computer Science
 - ▶ C++ Programming
 - ▶ Data Structures and Algorithms
 - ▶ Software Engineering
- ▶ Mathematics
 - ▶ Foundations (Calculus, Linear Algebra)
 - ▶ Mathematical Modeling
 - ▶ Numerical Analysis
- ▶ Engineering
 - ▶ Exposure to variety of engineering problems
 - ▶ Ability to design solutions

- ▶ object-oriented software analysis and design
- ▶ implementation with C++
- ▶ target architecture is RWTH Compute Cluster¹
- ▶ use of git² for version management
- ▶ use of doxygen³ for documentation of the source code
- ▶ use of make⁴ for build infrastructure

¹<https://doc.itc.rwth-aachen.de/display/CC/Home>

²<https://git.rwth-aachen.de>

³<https://github.com/doxygen/doxygen>

⁴<https://www.gnu.org/software/make/>

- ▶ **Lectures** to set the stage for tutorial (exercises) and lab (projects)
- ▶ **Tutorials** for oral presentation (by you) of
 - ▶ solutions to tutorial exercises
 - ▶ results of requirements analysis for lab projects
- ▶ **Lab projects** to be completed by start of next winter semester
- ▶ **Oral presentation** (by you) of results of lab projects
- ▶ **Written report** (by you) on results of lab projects
- ▶ **Schedule etc.** on

www.stce.rwth-aachen.de/teaching/summer-semester-2021/software-lab-computational-engineering-science

- ▶ supervision (**on your request!**) of lab projects at various chairs
- ▶ project management is your responsibility, including
 - ▶ work within the group
 - ▶ interaction with supervisors
- ▶ overall supervision by me

Grade covering

- ▶ oral presentation of solutions to tutorial exercises (20%)
- ▶ oral presentation of results of requirements analysis for lab projects (20%)
- ▶ oral presentation of final results of lab project work (20%)
- ▶ written final report on lab project work (40%)

Grades based on evaluation of supervisors.

Single grade per group by default.