Software-Engineering Seminar, Winter 2020

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AG Programmierprachen
FB Informatik
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Overview

- 5 different proof assistants/model checkers
- 5 teams, each working with one proof assistant
- 2-3 students per team
- Work on similar problems to highlight differences between the tools
- Each team has to give a talk and submit a seminar report (more later)

Participants/Supervisors

Name	Topic/Team	Supervisor
Catherinemary Ugoji	Agda	Markus Heinrich
Luca Schneider	Agda	Markus Heinrich
Nithin Vadukkumchery Rajendrakumar	Agda	Markus Heinrich
Manuela Sagesse Kuaguim Kawoung	Coq	Ralf Hinze
Mohammad Talal Arif	Coq	Ralf Hinze
Taimoor Bin Khalid	Coq	Ralf Hinze
Marvin Häuser	Isabelle/HOL	Albert Schimpf
Theogene Urimubenshi	Isabelle/HOL	Albert Schimpf
Vikram Jan	Isabelle/HOL	Albert Schimpf
Ayush Pandey	TLA+	Annette Bieniusa
Muhammad Hammad Bhatti	TLA+	Annette Bieniusa
Shabi Haider Turabi	TLA+	Annette Bieniusa
Joshua Koch	Z3	Sebastian Schloßer
Oliver Schauer	Z3	Sebastian Schloßer

Goals

- Learn about a specific topic in SE
- Read and understand scientific papers/books explaining the topic
- Learn how to present the topic

Seminar topic: Verification and Model Checking

Your topics:

- Expressing a specification in your proof assistant or model checker and finding proofs
- Proof techniques
- Mathematical proofs about order and lattice theory used in the basics of programming (GdP) lecture
- Verification of algorithms

Difficulties:

- Finding the (right) specification
- Finding the proofs
- The underlying theory

Your tasks

1. Read material
2. Write a paper
3. Give a Presentation

Your tasks: 1. Read material

- Read and understand the material we provide
- Search for additional material on the topic

Your tasks: 2. Write a paper

- Each team should write **one coherent paper** with **clearly recognizable partial contributions**.
- Language: English (Bachelor: may be in German)
- Use our LaTeX template
- 10-15 pages per participant (Bachelor: 7-15 pages)
- Easy to read for other students
- Present the problem and motivation of the work
- Present the solution
- You may add critique

Your tasks: 3. Give a presentation

- One topic per meeting (i.e. 5 meetings)
- 2-3 coherent individual presentations per meeting
- 20 minutes presentation
- about 10 minutes discussion and questions (know your topic!)
- participate in discussion

Schedule

- Draft of verification task: 08 December 2020
- First draft of paper: 05 January 2021
- Presentations: Tuesdays, 14:00–15:30 on BigBlueButton
    - 12 January: Agda
    - 19 January: Coq
    - 26 January: Isabelle/HOL
    - 02 February: TLA+
    - 09 February: Z3
- Final paper: 19 February 2021

All deadlines: End of the day 23:59.
Submissions: Push PDFs, LaTeX files and code to our Gitlab.

LaTeX files can be edited collaboratively on ShareLaTeX.

First submission: Draft of your verification task

- Practice working with the proof assistant
- Prepare a draft of proofs for your task
- Identify difficulties and challenges in time

First draft and final paper

- Your paper should target other students in the seminar
- Be understandable
- Add context
- Explain in your own words

First draft:
- Full paper including everything you want to have in the final paper

Final paper:
- Incorporate feedback from first draft
- Polish paper

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How to fail a seminar?

- Plagiarism
- Late submissions
- Not attending final presentations
- Poorly written paper
    - Fail to convey the concepts
    - Incomprehensible English
- Bad presentation
    - Fail to convey the concepts
    - Unable to answer any questions
- Never talk to your supervisor
- Do not use a spell checker
- Disregard the style guide

Next steps

- Talk to your supervisor
- Write introduction
- Work on proofs for your task

Now

- Teams gather in break out rooms (10min)
- Get to know each other
- Discuss the topics