

Seminar: Lean

Meeting 3

Leangame

- one propositional logic world as intro
- one advanced propositional logic world to show type theory and Curry-Howard
- one world with a more complex mathematical proof

Structure Blogpost

1. What is Lean?
2. History
3. Applications
 1. Mathematics
 2. Teaching
 3. Computer Science
4. Outro

20 mins presentations (provisional)

type theory: Nikita

history: Sebastian

lean4game: Frederick

till next week

write provisional blogpost:

- history (+mby what is lean) (Sebastian)
- applications in mathematics (Nikita)
- lean4game first world (Frederick)

find decent proof for mathematics section

Meeting 2

progress

- finished the Natural Number Game
- started to look into the lean4game (needs a docker container on the server to run lean)
- started/ finished with the second tutorial game
- started with "lean theorem prover" tutorial

more possible ideas

- use a nontrivial proof to show how lean works in the mathematics section
- game possibly about propositional logic, see euredeka.com -> launch application(login) -> logic

topics for next few weeks

- do more tutorials

we decided to split up and work on different topics

name	topic
Sebastian	lean history
Nikita	lean in type theory
Frederick	setting up lean4game

Meeting 1

possible topics

- applications in mathematics
- applications in computer science
- history

possible structure

1. Introduction
2. History of Theorem Provers
3. Current State of Lean
4. Applications:
 1. Mathematics
 2. Computer Science
 3. Teaching
5. Outro

other ideas

- short interactive example of using lean for program correctness with the js library

possible todos for next week

- finish/ continue with the Natural Number Game
- look into the js library
- look at use cases of lean
- setup lean on own pc (lean 3 prob)
- brainstorm more ideas
- whatever else comes to mind