Assignment 4

Exercises on lecture 4/chapter 4

23 September 2025

We will work on the following exercises during the tutorial session. Make sure that you understand the solution that we work out together and to solve the remaining exercises yourself.

Exercise 4.1 — Write a program in Imp that computes in a location y the Fibonacci number corresponding to the value in location x, if that value is non-negative and otherwise diverges.

Exercise 4.2 — Prove lemma 4.10.

Exercise 4.3 — Prove that the or-rule in lemma 4.8 is admissible.

Exercise 4.4 — Let c be the command from example 4.3 for the greatest common divisor and $\sigma = [x \mapsto 2][y \mapsto 3]$. Compute $(c \lhd \sigma) \Downarrow \tau$.

Exercise 4.5 — Extend the syntax of Imp with division and devise the corresponding rule for the big-step operational semantics.