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Hand in until 16:00 on May 20, 2020
Discussion: May 20, 2020

Tutorial for Program Verification Exercise Sheet 2

In this exercise sheet we work with *Natural Deduction* (\mathcal{N}_{PL}), a proof system for propositional logic. We then move on to *First-Order Logic*.

Submit your solution by uploading it as PDF in ILIAS.

Exercise 1: Propositional Logic: Natural Deduction Proof 2 Points

Prove the following implication in the Natural Deduction proof system \mathcal{N}_{PL} .

$$\{B\} \vDash A \rightarrow B$$

Exercise 2: First-Order Logic: Vocabularies 3 Points

- (a) State a vocabulary such that the number of *FOL* terms is finite but not zero.
- (b) State a vocabulary such that the number of *FOL* terms is infinite.
- (c) How many *FOL* formulas do we have if the vocabulary is $\mathcal{V} = (\emptyset, \emptyset, \emptyset, \emptyset)$?