Universität Koblenz-Landau

FB 4 Informatik

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February, 3 2017

Exercises for "Formal Specification and Verification"
Exercise sheet 7

Exercise 7.1:
Show that the following formulae are valid in propositional dynamic logic (i.e. true in all PDL Kripke models) :

(1) $[\alpha](A \wedge B) \leftrightarrow [\alpha]A \wedge [\alpha]B$
(2) $[\alpha;\beta]A \leftrightarrow [\alpha][\beta]A$
(3) $[\alpha \cup \beta]A \leftrightarrow [\alpha]A \wedge [\beta]A$
(4) $[A?]B \leftrightarrow (A \rightarrow B)$
(5) $[\alpha^*]A \leftrightarrow A \wedge [\alpha][\alpha^*]A$
(6) $[\alpha^*](A \rightarrow [\alpha]A) \rightarrow (A \rightarrow [\alpha^*]A)$

Exercise 7.2:
Use the sequent calculus presented in the lecture to prove:

$$[\alpha^*]F \vee [\alpha;\alpha]G \Rightarrow F \vee [\alpha][\alpha]G$$

Please submit your solution until Wednesday, February 8, 2017 at 12:00. Please do not forget to write your name on your solution.

Submission possibilities:

- By e-mail to `sofronie@uni-koblenz.de` with the keyword "Homework FSV" in the subject.
- Drop it in the box in front of Room B224.