WS 2008/2009 2008-10-30

Exercises to the Lecture FSVT

Prof. Dr. Klaus Madlener sheet 3

Exercise 6:

1. Model the state of the Euclidean algorithm as abstract state.
2. Prove, that the Euclidean algorithm can be viewed as sequential algorithm.
3. Model the state of Turing machines as abstratct state.
4. Prove, that Turing machines can be viewed as sequential algorithms.

Exercise 7:
Prove Lemma 3.7 from slide 58.

Exercise 8:
Let A be a sequential algorithm with set of critical terms T. Let R^X be the update rule of A in the state X as considered in consequence 3.10 on slide 59 of the lecture. Let the equivalence relation E_X on a state X be defined by

$$E_X(t_1, t_2) \Longleftrightarrow Val(t_1, X) = Val(t_2, X)$$

on the set of critical terms T. Let states X, Y be called T-similar, if $E_X = E_Y$.
Prove:

1. If the states X, Y coincide on T, then $\Delta(R^X, Y) = \Delta(A, Y)$.
2. Let X, Y be states and $\Delta(R^X, Z) = \Delta(A, Z)$ for a state Z isomorphic to Y, then $\Delta(R^X, Y) = \Delta(A, Y)$ as well.
3. If X and Y are T-similar states, then $\Delta(R^X, Y) = \Delta(A, Y)$.

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