Concurrency Theory (SS 2015) Out: Wed, Apr 29 Due: Tue, May 5

Exercise Sheet 2

Prof. Roland Meyer, Florian Furbach Technische Universität Kaiserslautern

Problem 1: Boundedness

Argue whether Rackoff's result can be used to derive an upper bound for deciding boundedness.
Hint: The results about boundedness from our lectures last week are useful.

Problem 2: Coverability

Give an upper bound for the complexity of deciding coverability in a safe Petri net.
Hint: Savitch's Theorem also applies to lower space complexity classes.

Problem 3: Petri Net Program Semantics

Define a translation from a Petri net program to an equivalent Petri net. Give an upper bound for the size of the resulting Petri net.

Problem 4: Rackoff

Given the Petri net below and a marking $M_2 = (1, 0, 10, 100)^T$, calculate the values of $n(3, (1, 0, 0, 0)^T)$ as well as $f(3)$ and argue why the are correct.