Formal Models SS 2020: Assignment 6

Based on Video "Lecture 10. April 2014" on our webpage.
Institute for Formal Models and Verification, JKU Linz

due 07.05.2020

Guideline:

- To indicate that you solved an exercise, tick it off in our MOODLE course until the following deadline:

  10am on the day when the exercises due (10am 07.05.2020)

  Unmarking and marking exercises later is **not** possible.

- Upload your solved exercises in the Moodle course.

  Generate a single PDF file with all solved exercises, your name, and your matriculation number.

  Not following this format will lead to the deduction of points!

- We will randomly select and correct solved exercises and provide a sample solution.

Exercise 21

a) Draw the LTS for the *incorrect* version of Milner's Scheduler (slide 32) for $n = 2$.

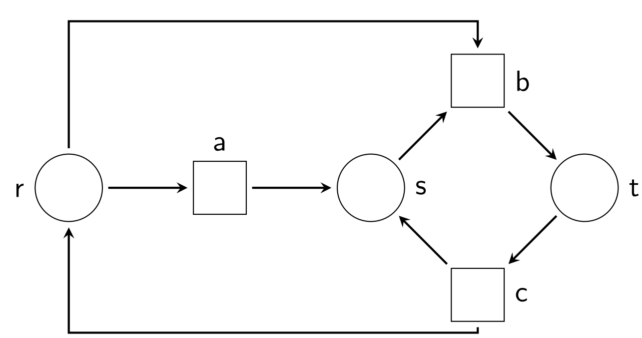
b) Give a legal (slide 31) execution order ω that is not accepted by the LTS.

Exercise 22

a) Draw the LTS for the *correct* version of Milner's Scheduler (slide 33) for $n = 2$.

b) Highlight the path through the LTS corresponding to ω from exercise 21.

Exercise 23



Given CEN N as shown above.

a) Specify N formally as 4-tupel $N = (C, I, E, G)$ including all of its components.

b) Give a (tight) upper bound on the number of possible markings without considering G.

c) For *each* possible marking m of N, determine the set of *all* events which can fire in m.

d) Given marking $\{r, s\}$, what is the marking obtained when event b fires?

e) Given marking $\{t\}$, what is the marking obtained when event c fires?

Exercise 24
Given a CEN $N = (C, I, E, G)$ with $C = \{r, s, t, u\}$, $I = \{r, s\}$, $E = \{b, c, d, e\}$,
$G = \{(r, b), (r, c), (s, c), (t, e), (u, d), (e, u), (c, t), (c, u), (b, s), (d, r)\}$

a) Draw the CEN N.

b) Starting from the initial marking I, can a deadlock be reached on N? Justify your answer!