

Formal Models SS 2015: Assignment 6

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Due 07.05.2015

Exercise 21

Let $P = b.c.P$ and $Q = a.b.Q$. Show that action

$$((b.Q + b.a.Q) \parallel (b.P + b.c.P)) + (a.Q \parallel b.P) \xrightarrow{b} a.Q \parallel P$$

can be executed by subsequently applying the semantical rules of PA.

Exercise 22

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

Draw the CEN N . How many markings are possible on N *theoretically*?

- Draw the CEN N .
- Given marking $\{u\}$, what is the marking obtained when event d fires?
- Given marking $\{s, t, u\}$, what is the marking obtained when event d fires?
- Given marking $\{r, u\}$, what is the marking obtained when event e fires?

Exercise 23

Let L be the LTS corresponding to the CEN N from the previous exercise. Draw L .

Exercise 24

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

- Draw the CEN N . How many markings are possible on N *theoretically*?
- Starting from the initial marking I , can a deadlock be reached on N ? Justify your answer!