SS 2014 02.07.2014

Exercises to the lecture
Concurrency Theory
Sheet 11

Roland Meyer, Viktor Vafeiadis Delivery until 08.07.2014 at 12h

Exercise 11.1
Consider the program from exercise 10.4. Check whether the following attacks are feasible:

- $A_1 := (t_1, l_4, l_5)$
- $A_2 := (t_2, l_{11}, l_6)$

Exercise 11.2
Consider a computation $\tau = \tau_1.act_1.\tau_2 \in C_{SC}(P)$ where for all act_2 in τ_2 we have $act_1 \rightarrow_{hb}^* act_2$. Show that the computation $\tau.act$ satisfies $act_1 \rightarrow_{hb}^* act$ if and only if

1. there is an action act_2 in $act_1.\tau_2$ with $thread(act_2) = thread(act)$ or
2. act is a load whose address is stored in $act_1.\tau_2$ or
3. act is a store (with issue) whose address is loaded or stored in $act_1.\tau_2$.

Exercise 11.3
Prove the following *onion lemma*:

Let $\tau = \tau_1.a.\tau_2.b.\tau_3 \in C_{TSO}$ be a TSO-computation with $a \rightarrow_{hb} b$ through τ_2. There is a computation $\tau' = \tau_1'.a.\tau_2'.b.\tau_3' \in C_{TSO}$ with

1. $\mathrm{Tr}(\tau') = \mathrm{Tr}(\tau)$,
2. $\tau \downarrow t = \tau' \downarrow t$ for each thread t, and
3. for all act in τ_2' there is a hb-through path from a to b that contains act.

Explain the name of the lemma.

Delivery until 08.07.2014 at 12h into the box next to 34-401.4