

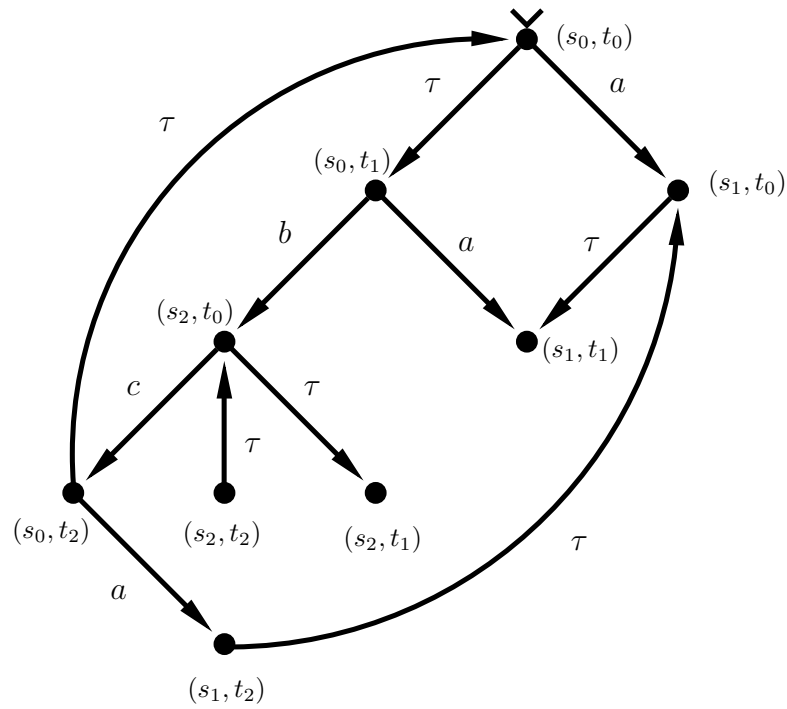
T-79.4301
 Parallel and Distributed Systems
 Tutorial 5 – Solutions

Spring 2006

1. a) $L_1 \parallel L_2 = (\Sigma_{12}, S_{12}, S_{12}^0, \Delta_{12})$, where

$$\begin{aligned} \Sigma_{12} &= \Sigma_1 \cup \Sigma_2 = \{a, b, c\}, \\ S_{12} &= S_1 \times S_2 = \{(s_0, t_0), (s_0, t_1), \dots, (s_2, t_2)\}, \\ S_{12}^0 &= S_1^0 \times S_2^0 = \{(s_0, t_0)\}, \end{aligned}$$

and the transition relation Δ_{12} is defined as shown in the figure below.



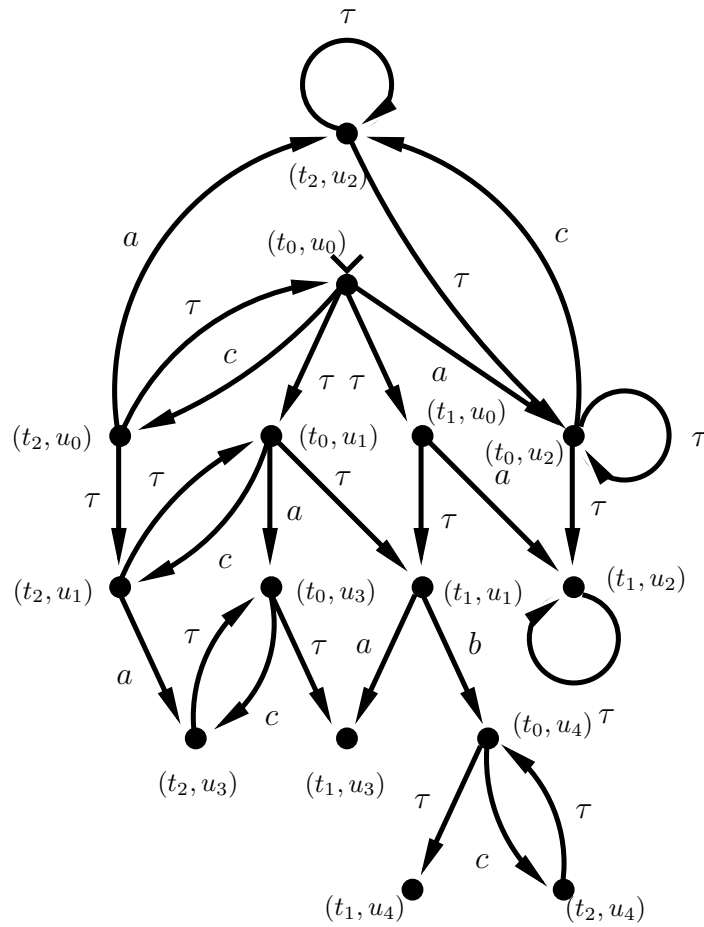
b) $L_2 \parallel L_3 = (\Sigma_{23}, S_{23}, S_{23}^0, \Delta_{23})$, where

$$\Sigma_{23} = \Sigma_2 \cup \Sigma_3 = \{a, b, c\},$$

$$S_{23} = S_2 \times S_3 = \{(t_0, u_0), (t_0, u_1), \dots, (t_2, u_4)\},$$

$$S_{23}^0 = S_2^0 \times S_3^0 = \{(t_0, u_0)\}, \text{ and}$$

Δ_{23} :



c) $L_1 \parallel L_2 \parallel L_3 = (\Sigma_{123}, S_{123}, S_{123}^0, \Delta_{123})$, where

$$\begin{aligned} \Sigma_{123} &= \Sigma_1 \cup \Sigma_2 \cup \Sigma_3 = \{a, b, c\}, \\ S_{123}^1 &= S_1 \times S_2 \times S_3 = \{(s_0, t_0, u_0), (s_0, t_0, u_1), \dots, (s_2, t_2, u_4)\}, \\ S_{123}^0 &= S_1^0 \times S_2^0 \times S_3^0 = \{(s_0, t_0, u_0)\}, \text{ and} \end{aligned}$$

Δ_{123} :

