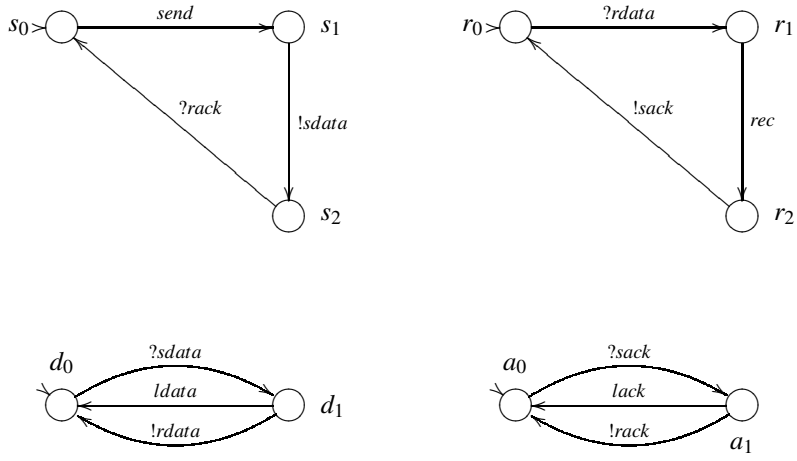
T-79.231 **Autumn 2002**

Parallel and Distributed Digital Systems
Process Algebra
Tutorial 9
Nov 18th 2002

1. Define the following simple protocol (given as a labelled transition system) in CCS process algebra



2. Let us define processes A and B:

$$\begin{aligned} A &\stackrel{def}{=} \mathrm{a}.(\mathrm{c}.A + \mathrm{g}.A + \mathrm{d}.A) \\ B &\stackrel{def}{=} \mathrm{a}.\mathrm{c}.A + \mathrm{a}.\mathrm{g}.A + \mathrm{a}.\mathrm{d}.A \end{aligned}$$

   Draw the transition diagrams of the processes. Are the processes trace or failure equivalent?

3. Let us define processes A_0 and B_1:

$$\begin{aligned} A_0 &\stackrel{def}{=} \mathrm{a}.A_0 + \mathrm{b}.A_1 + \tau.A_1 \\ A_1 &\stackrel{def}{=} \mathrm{a}.A_1 + \tau.A_2 \\ A_2 &\stackrel{def}{=} \mathrm{b}.A_0 \\ B_1 &\stackrel{def}{=} \mathrm{a}.B_1 + \tau.B_2 \\ B_2 &\stackrel{def}{=} \mathrm{b}.B_1 \end{aligned}$$

   Draw the transition diagrams of the processes. Are the processes trace or failure equivalent?