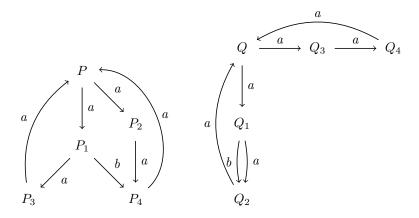
Assignment 10: CCS advanced concepts

ETH Zurich

1 Strong Bisimulation

Consider the following labelled transition system:



Show that $P \sim Q$ by finding a strong bisimulation \mathcal{R} such that $P \mathcal{R} Q$.

2 Weak Bisimulation

Suppse we have the following definitions of processes

$$egin{array}{lll} \mathbf{S} & \stackrel{\mathsf{def}}{=} & a.\overline{b}.\mathbf{S} \\ \mathbf{T} & \stackrel{\mathsf{def}}{=} & \overline{a}.e.b.\mathbf{T} \\ \mathbf{ST} & \stackrel{\mathsf{def}}{=} & (\mathbf{S} \,|\, \mathbf{T}) \smallsetminus \{a,b\} \end{array}$$

Further we have

$$\begin{array}{ccc}
\mathbf{U} & \stackrel{\mathsf{def}}{=} & e.x.y.\mathbf{U} \\
\mathbf{V} & \stackrel{\mathsf{def}}{=} & \overline{x}.\overline{y}.\mathbf{V} \\
\mathbf{UV} & \stackrel{\mathsf{def}}{=} & (\mathbf{U} \mid \mathbf{V}) \smallsetminus \{x,y\}
\end{array}$$

Your task is to

- 1. Represent ST and UV as LTSs.
- 2. Show that ST and UV are weakly bisimilar.
- 3. Suppose we further have $UV' \stackrel{\mathsf{def}}{=} (U \mid V) \setminus \{y\}$. Show that ST and UV' are not weakly bisimilar.