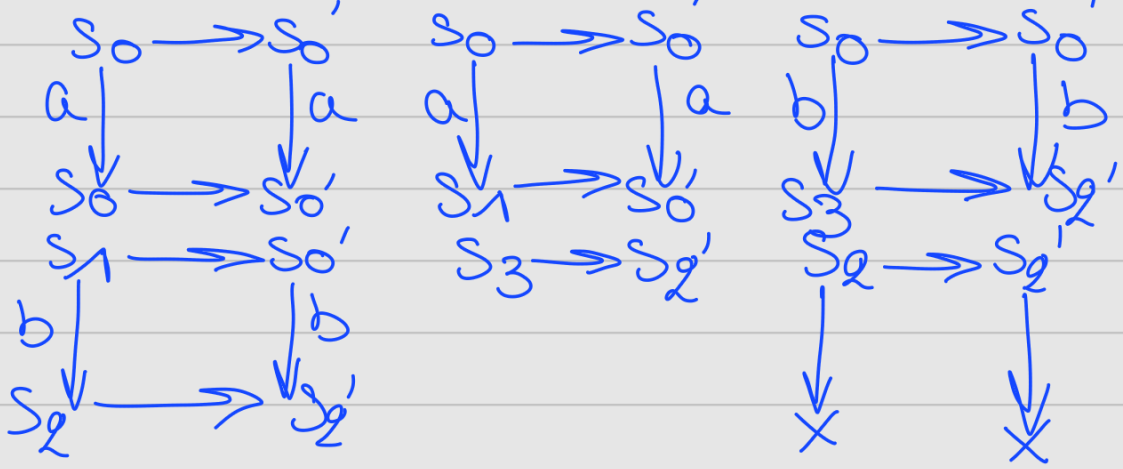
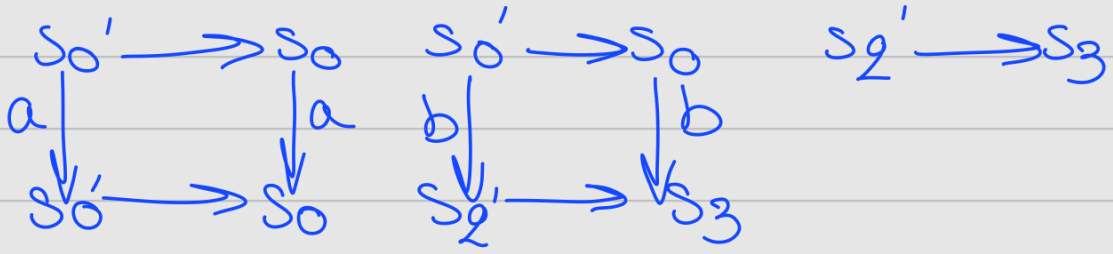
exo 1:

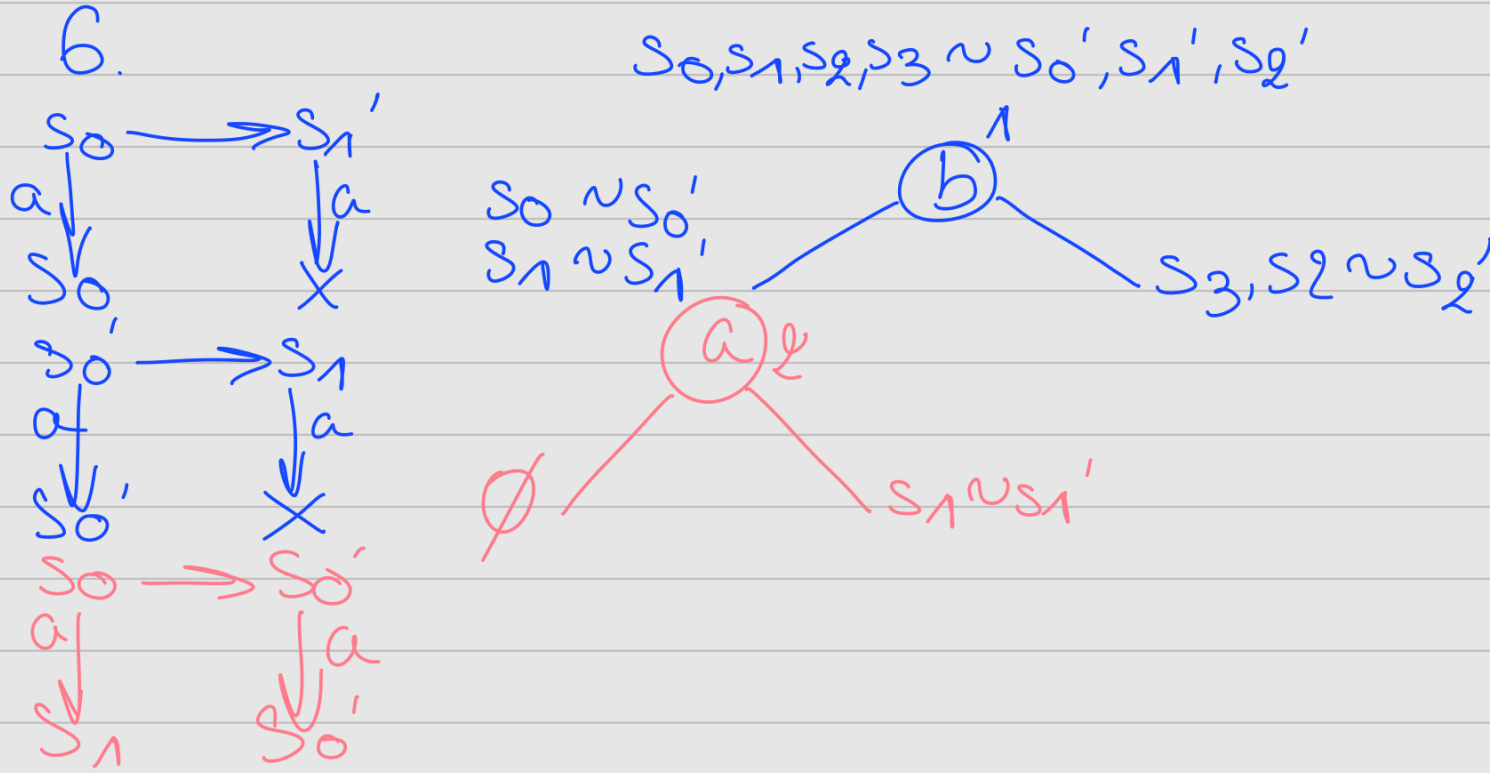
2. $R = \langle s_0, s_0' \rangle, \langle s_1, s_0' \rangle, \langle s_3, s_2' \rangle, \langle s_2, s_2' \rangle, \langle s_3, s_2' \rangle$



4. $R = \langle s_0', s_0 \rangle \langle s_2', s_3 \rangle$



6.



exo 3:

1. $Q \equiv va(b \| b \| P) \xrightarrow{b} va(b \| P) \xrightarrow{b} va(P)$

2. $R \equiv va(\bar{a} \| \bar{a} \| P)$

$\downarrow \tau$

$va(\bar{a} \| (b \| P)) \xrightarrow{b} va(\bar{a} \| P)$

$va(b \xrightarrow{\tau} (b \| P)) \xrightarrow{b} va(b \xrightarrow{\tau} P)$

$va(P \xrightarrow{b})$

3. $S \equiv va(\bar{a} \| b \| P) \xrightarrow{\tau} va(b \| (b \| P))$

$va(\bar{a} \| P) \xrightarrow{\tau} va(b \| P) \xrightarrow{b} va(P)$

ex 4:

1. $R_0 = poser.R_1$
   $R_1 = poser.R_2 + saisir.R_0$
   $R_2 = poser.R_3 + saisir.R_1$
   $R_3 = saisir.R_2$

2. $P_V = \overline{saisir}.P_C$
   $P_C = \overline{poser}.P_V + \overline{donner}.P_S$
   $P_S = rendre.P_C$

3. $E_V = donner.E_C$
   $E_C = ecrire.E_C + \overline{rendre}$

4. $Salle = vsaisir.vposer.vdonner.vrendre.(R_0 \| P_V \| E_V)$

5. $E_V' = donner.initial.E_C'$
   $E_C' = ecrire.E_C' + \overline{rendre}.final$
   $Salle' = vsaisir.vposer.vdonner.vrendre.(R_0 \| P_V' \| E_V')$

6. $SalleAbstraite = initial.final$