Exercise 3.1. One of the optimization techniques in tableaux procedures is absorption. What is the goal of applying this technique? Apply absorption to the TBox $T = \{ A \sqsubseteq B, B \equiv C \cap D, C \cap A \sqsubseteq E, D \cap E \sqsubseteq A \}$.

Exercise 3.2. Markus wants to apply the tableau algorithm for checking the satisfiability of the concept $B \sqcap \exists r^- . A$ w.r.t. the TBox $\{ A \sqsubseteq \exists r^- . A \sqcap \exists r . B, \top \sqsubseteq \leq 1 r \}$. He arrives at the situation depicted below and concludes that no further rules are applicable, since $v_2$ is blocked by $v_1$. What is Markus’ error? Continue the algorithm until its termination. (You don’t have to illustrate all intermediate steps, just provide the final state.)

$$
\begin{align*}
L(v_0) &= \{ B \sqcap \exists r^- . A, B, \exists r^- . A, C_T, \neg A, \leq 1 r \} \\
L(v_1) &= \{ A, C_T, \exists r^- . A, \exists r . B, \leq 1 r \} \\
L(v_2) &= \{ A, C_T, \exists r^- . A, \exists r . B, \leq 1 r \}.
\end{align*}
$$