Reminder: Bisimulation

Definition 2.10. Let $\mathcal{M} = (W, R, V)$ and $\mathcal{M}' = (W', R', V')$ be two models. A non-empty relation $Z \subseteq W \times W'$ is called a *bisimulation between* $\mathcal{M}$ *and* $\mathcal{M}'$ if the following conditions are satisfied:

(i) If wZw', then w and w' satisfy the same propositional letters;

(ii) If wZw' and $(w, v) \in R$, then there exists $v' \in W'$ such that vZv' and $(w', v') \in R'$ (the *forth condition*);

(iii) If wZw' and $(w', v') \in R'$, then there exists $v \in W$ such that vZv' and $(w, v) \in R$ (the *back condition*);

We write $\mathcal{M}, w \underline{\leftrightarrow} \mathcal{M}', w'$ if there exists a bisimulation Z between $\mathcal{M}$ and $\mathcal{M}'$ with wZw'.