Advanced Topics in Computational Complexity

Exercise Session 7

Due 7.12.2015.

Exercise 1

Let $K = (W, R, V)$ be a Kripke model such that $W = \{1, 2, 3, 4\}$, $R = \{(1, 1), (1, 3), (2, 1), (3, 2)\}$, $V(p) = \{1, 2\}$, and $V(q) = \{1, 3\}$. Compute the Hintikka formulas $\chi^2_{K,1}$ and $\chi^1_{K,2}$.

Exercise 2

Let Φ be a finite set of proposition symbols. Show that there are only finitely many non-equivalent Hintikka formulae $\chi^k_{K,w}$ over Φ for each fixed k.

Exercise 3

Let Φ be a set of proposition symbols, and let $\mathcal{K}$ be class of team-pointed Kripke models over Φ. Show that, if $\mathcal{K}$ is definable in $\mathrm{ML}(\textcircled{\scriptsize\vee})$, then there is a $k \in \mathbb{N}$ such that $\mathcal{K}$ is closed under k-bisimulation.

Exercise 4

Let Φ be a finite set of proposition symbols and K, w a pointed Kripke model over Φ. Show that, for every k, $K, w \models \chi^k_{K,w}$.