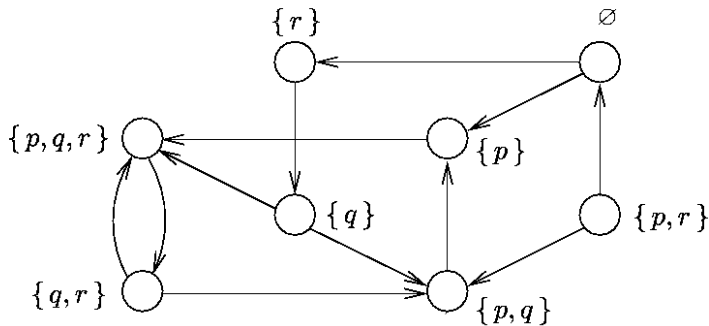


**Exercises for “Formal Specification and Verification”**  
**Exercise sheet 8**

**Exercise 8.1:**

Consider the following transition system:



Use the system NuSMV to compute  $sat(E(p\mathcal{U}q))$

**Exercise 8.2:**

Show that the following formulae are valid in propositional dynamic logic (i.e. true in all PDL Kripke models) :

- (1)  $[\alpha](A \wedge B) \leftrightarrow [\alpha]A \wedge [\alpha]B$
- (2)  $[\alpha; \beta]A \leftrightarrow [\alpha][\beta]A$
- (3)  $[\alpha \cup \beta]A \leftrightarrow [\alpha]A \wedge [\beta]A$
- (4)  $[A?]B \leftrightarrow (A \rightarrow B)$
- (5)  $[\alpha^*]A \leftrightarrow A \wedge [\alpha][\alpha^*]A$
- (6)  $[\alpha^*](A \rightarrow [\alpha]A) \rightarrow (A \rightarrow [\alpha^*]A)$

Please submit your solution until Wednesday, July 16, 2014 at 11:00. Please do not forget to write your name on your solution.

Submission possibilities:

- By e-mail to [horbach@uni-koblenz.de](mailto:horbach@uni-koblenz.de) with the keyword “Homework FSV” in the subject.
- Drop it in the box in front of Room B224.