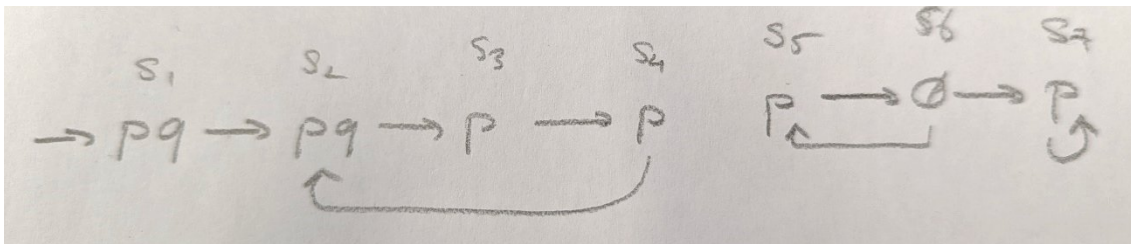


Model Checking Homework 2

Deadline: 24 March 2:00pm

Send solution to: modelchecking@iaik.tugraz.at

Consider the following Kripke structure K with states s_1 through s_7 and atomic propositions p and q .



Task 2a. [5 points]

We want to use BMC to prove whether q is always true. Suppose you are given formulas R , S_0 , and p for the transition relation, the initial states and the property q , resp.

- Will BMC find a counterexample? If so, what is the smallest k such that BMC finds a counterexample?
- Show the BMC formula, using R , S_0 , and q . (You don't have to find R , S_0 , and q .)
- Is the formula satisfiable? Explain.

Task 2b. [5 points]

We want to use k -induction to prove that p is always true

- What is the smallest k such that k -induction can prove the property correct?
- Show the k -induction formula, using R , S_0 , and p for the k you found.
- Is the formula satisfiable? Explain.