Lecture

Topics:

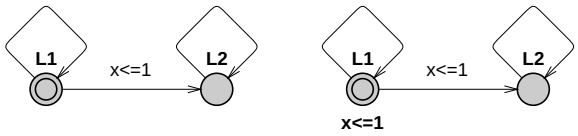
1. Review of Timed CTL
2. Model checking of CTL
3. Region automata
4. Extending model checking of CTL to Timed CTL

Readings

Skim Section 3.5 in [HuthRyan] and pages 709–714 in [BKch9RTS].

Exercise 1: Constructing Region Automata

Consider the following two timed automata:

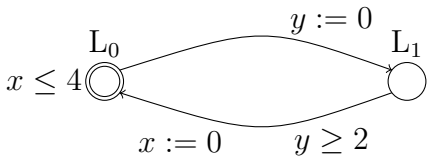


(a) A_1 (b) A_2

1. Construct the region automata $R(A_1)$ and $R(A_2)$ for $c_x = 1$.
2. Explain the differences and indicate for both region automata the unbounded regions.

Exercise 2: Transition systems and region automata

In this problem we consider the following timed automaton Q with two locations: L_0 and L_1.



The timed automaton Q

1. The semantics of a timed automaton is given in terms of a transition system.
   - Give a brief informal account of the *states* of a transition system underlying a timed automaton.
   - Give two states of the transition system underlying the timed automaton Q.
   - Give a brief informal account of the *transitions* of a transition system underlying a timed automaton.
   - Give two transitions of the transition system underlying the timed automaton Q.
2. A region automaton is a finite automaton constructed on the basis of a timed automaton.
   - Give a brief informal account on the notion *clock region.*
   - Give two states in the region automaton for Q.
   - Give two transitions in the region automaton for Q.