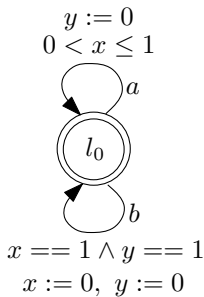


Formal Methods

Tutorial 5 - Timed Automata

Indian Institute of Technology, Kharagpur

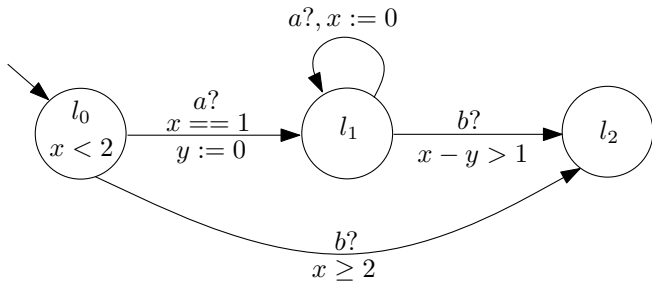
1. Draw a region graph of the following timed automaton using standard timed regions.



Using the region graph decide whether the following configurations are reachable from the initial configuration.

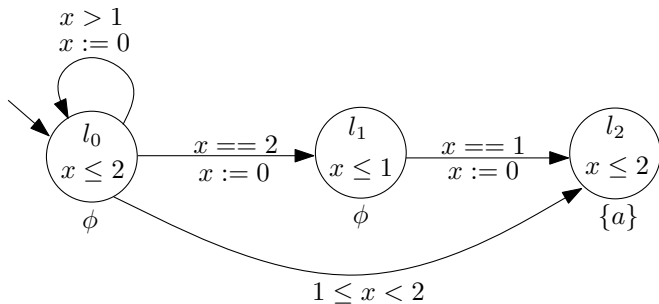
- ▶ (l_0, ν) , where $\nu(x) = 0.7$ and $\nu(y) = 0.61$
- ▶ (l_0, ν) , where $\nu(x) = 0.2$ and $\nu(y) = 0.41$

2. For the timed automaton given below,



- 2.1 Does \mathcal{A} have a computation path with Zeno behavior? If so, which one?
- 2.2 Does \mathcal{A} have a computation path with a timelock? If so, which one?
- 2.3 Does \mathcal{A} have a run? Explain.
- 2.4 Is the location l_2 reachable? Explain.

3. Given the following timed automaton TA:



3.1 Determine the region transition system for the automaton.