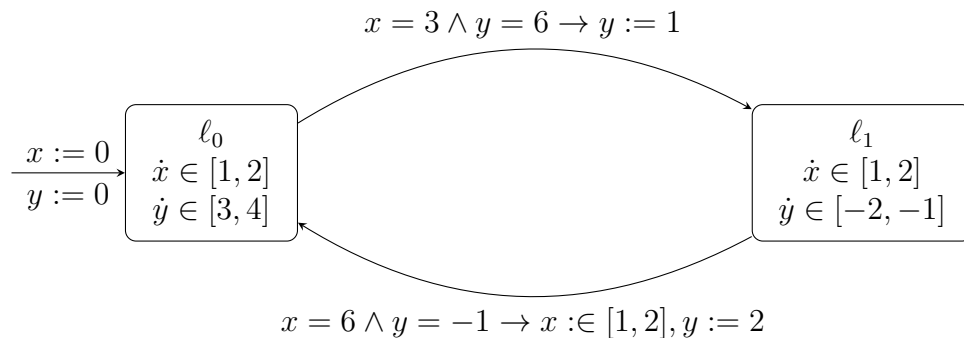




## Tutorial for Cyber-Physical Systems - Hybrid Models Exercise Sheet 7

### Exercise 1: Rectangular automaton

Consider the following initialized rectangular automaton  $\mathcal{H}$ :



- Construct an initialized singular automaton  $\mathcal{H}_1$  which is equivalent to  $\mathcal{H}$ .
- Construct an initialized stopwatch automaton  $\mathcal{H}_2$  which is equivalent to  $\mathcal{H}_1$ .
- Construct a timed automaton  $\mathcal{H}_3$  which is equivalent to  $\mathcal{H}_2$ .

Use the constructions according to the lecture script. Note that *equivalent* here does not mean that the automata have the same behaviors, but that the reachability analysis of one can be used for the reachability analysis of the other.