Technische Universität München
Institut für Informatik I07
Theoretical Computer Science

Quantitative Verification 3

Ex 1: Region Construction

Draw the region automaton simulating the timed automaton in Fig. 1.

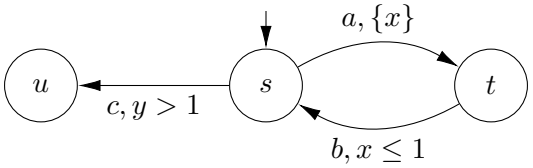
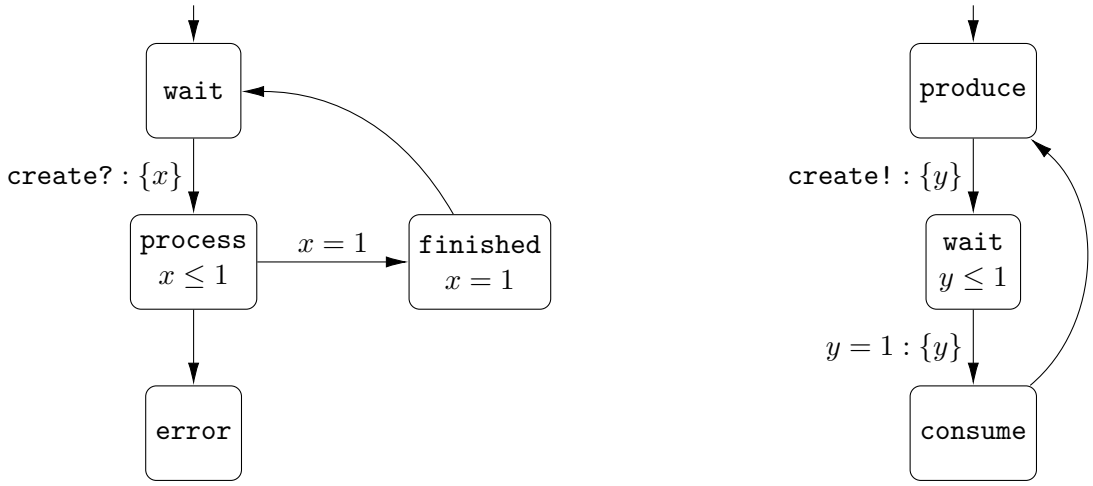


Figure 1: A Timed Automaton

Ex 2: TA Network

Consider the parallel composition of the following timed automata.



Which of the following sets of states is reachable in the composition? For each reachable set, write down a path to this set. For unreachable sets, (informally) argue why you think it is unreachable.

1. $(\texttt{error}, \cdot, \cdot)$
2. $(\texttt{finished}, \texttt{consume}, \{x \mapsto 1, y \mapsto 1\})$
3. $(\texttt{wait}, \texttt{produce}, \{x \mapsto 2, y \mapsto 2\})$
4. $(\texttt{process}, \texttt{produce}, \cdot)$
5. $(\texttt{wait}, \cdot, \{x \mapsto 3, y \mapsto 2\})$

Note: The semantics from the lecture are slightly different from those of `UPPAAL`.

HW 1: TCTL

Briefly read through the lecture notes regarding TCTL (slides 61-68). TCTL modelling will be practised next session.