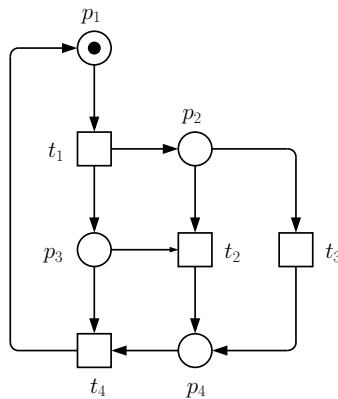


T-79.186
Reactive Systems
Home Exercise 5
Deadline 18.4 16.15

Spring 2005

Return your answers by email (Postscript or PDF) to Misa.Keinanen@hut.fi, or on paper to the lecture. Remember to include your name *and* student number.

For this home exercise round use the automata definition used in the lecture slides.



- 1.) Does “ $N \models \diamond \square (\neg p_4)$ ” hold in the net N above? ($AP = \{p_4\}$, and in the formula above we use the labeling of states by atomic propositions defined as follows: p_4 is true in a marking M iff the place p_4 contains at least one token, i.e., $M(p_4) \geq 1$.)

Follow step-by-step the automata theoretic approach to model checking LTL formulas (i.e., LTL model checking by using Büchi automata) given in the course. In your solution write down all of the intermediate phases needed, and their results in model checking the formula in the net N above.

Hints: 1) See <http://www.tcs.hut.fi/Studies/T-79.231/2003/slides2.pdf> on how to generate a reachability graph from a P/T-net. 2) For the formula above, it is easy to come up with the required Büchi automaton directly. (You do not need to simulate the LTL to Büchi automaton translation procedure!)