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This form is a summary description of the model entitled "RERS17pb113" proposed for the Model Checking Contest @ Petri Nets. Models can be given in several instances parameterized by scaling parameters. Colored nets can be accompanied by one or many equivalent, unfolded P/T nets. Models are given together with property files (possibly, one per model instance) giving a set of properties to be checked on the model.

Description

RERS17pb113 belongs to the parallel training problems of the RERS (Rigorous Examination of Reactive Systems) challenge in 2017 [(a)]. This model has been elaborated to preserve some properties by construction [1] and does not represent a real problem. However, it is built from patterns making it of interest to evaluate tools.

References

1. B. Steffen, M. Jasper, J. Meijer, and J. van de Pol. Property-preserving generation of tailored benchmark Petri nets. In 17th International Conference on Application of Concurrency to System Design, ACSD 2017, Zaragoza, Spain, June 25-30, 2017, pages 1–8

Scaling parameter

Parameter name	Parameter description	Chosen parameter values
N	Initial Marking Multiplier	1, 2, 3, 4, 5, 6, 7, 8, 9

Size of the model

Although the model is parameterized, its size does not depend on parameter values.

number of places:	1 293
number of transitions:	62 707
number of arcs:	250 837

Structural properties

ordinary — *all arcs have multiplicity one* ..... ?
simple free choice — *all transitions sharing a common input place have no other input place* ..... ?
extended free choice — *all transitions sharing a common input place have the same input places* ..... ?
state machine — *every transition has exactly one input place and exactly one output place* ..... ?
marked graph — *every place has exactly one input transition and exactly one output transition* ..... ?
connected — *there is an undirected path between every two nodes (places or transitions)* ..... ?
strongly connected — *there is a directed path between every two nodes (places or transitions)* ..... ?
source place(s) — *one or more places have no input transitions* ..... ?
sink place(s) — *one or more places have no output transitions* ..... ?
source transition(s) — *one or more transitions have no input places* ..... ?
sink transitions(s) — *one or more transitions have no output places* ..... ?
loop-free — *no transition has an input place that is also an output place* ..... ?
conservative — *for each transition, the number of input arcs equals the number of output arcs* ..... ?
subconservative — *for each transition, the number of input arcs equals or exceeds the number of output arcs* ..... ?
nested units — *places are structured into hierarchically nested sequential units* [(b)] ..... ? [(c)]

[(a)] See http://www.rers-challenge.org/2017/.
[(b)] the definition of Nested-Unit Petri Nets (NUPN) is available from http://mcc.lip6.fr/nupn.php
[(c)] This information exists and is valid when $N = 1$, NUPN information is not relevant otherwise.

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Behavioural properties

safe — *in every reachable marking, there is no more than one token on a place* ..... ? [(d)]
deadlock — *there exists a reachable marking from which no transition can be fired* ..... ?
reversible — *from every reachable marking, there is a transition path going back to the initial marking* ..... ?
quasi-live — *for every transition t, there exists a reachable marking in which t can fire* ..... ?
live — *for every transition t, from every reachable marking, one can reach a marking in which t can fire* ..... ?

[(d)] This is structurally true when $N = 1$, otherwise it is not.