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Deterministic pushdown-CD-systems of stateless deterministic $R(1)$ -automata. (English)

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Summary: Recently the one-counter trace languages and the context-free trace languages have been characterized through restricted types of cooperating distributed systems (CD-systems) of stateless deterministic restarting automata with window size one (so-called $stl\text{-}det\text{-}R(1)$ -automata) that work in mode ‘=1’ and that use an external counter or pushdown store to determine the successor components within computations. Here we study the deterministic variants of these CD-systems, comparing the resulting language classes to the classes of languages defined by CD-systems of $stl\text{-}det\text{-}R(1)$ -automata without such an external device and to some classical language families, among them in particular the classes of rational, one-counter, and context-free trace languages. In addition, we present a large number of (non-)closure properties for our language classes.

MSC:

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