Problem #60 (Solved !)

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Summary: Does termination of a many-sorted rewrite system reduce to the one-sorted case in case all variables are of the same sort?

Let $R$ be a many-sorted term-rewriting system and $R'$ the one-sorted system consisting of the same rules, but in which all operation symbols are considered to be of the same sort. Any rewrite in $R$ is also a rewrite in $R'$. The converse does not hold, since terms and rewrite steps in $R'$ are allowed that are not well-typed in $R$. In [Zan94] it was shown that termination of $R$ is in general not equivalent to termination of $R'$, but it is if $R$ does not contain both collapsing and duplicating rules. Are termination of $R$ and of $R'$ equivalent in the case where all variables occurring in $R$ are of the same sort? If this statement holds, it would follow that simulating operation symbols of arity $n$ greater than 2 by $n - 1$ binary symbols in a straightforward way does not affect termination behavior.

Remark

This has been solved positively by Takahito Aoto [Aot01].
Bibliography


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