Membrane Systems and Their Relation to the Chemical Programming Paradigm *

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Abstract

Membrane systems, see [2], are models of computation inspired by some basic features of biological membranes. Multisets of objects stored in compartments are the subjects of computations, the rules contain prescriptions for obtaining new objects from existing ones together with the description in which compartment should the new elements be placed. When no rule can be applied any further, the result of the computation is determined. Membrane computation yield a parallel, nondeterministic way of computation. The chemical model of computation is a rewriting system based on multiset manipulations. The chemical metaphor describes terms as molecules and reactions as rewriting rules between them. Hence a chemical calculus is obtained, having rules allowing nondeterministic, non-sequential computations, see [1].

Continuing the work started in [3], we explore several aspects of the relationship of the two models, and study how the programming paradigm based on this chemical calculus can be connected to the theory of membrane computing.

References

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