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Guest editorial: Special Issue on Programming Theory, Information System Engineering, Software Engineering, and Artificial Intelligence

Albertas ČAPLINSKAS
Institute of Mathematics and Informatics
Akademijos 4, 2600 Vilnius, Lithuania
e-mail: alcapl@ktl.mii.lt

The international quarterly journal INFORMATICA publishes papers on mathematical simulation and optimization, recognition and control, automation systems and elements, programming theory, information systems, software engineering, and artificial intelligence. As a rule, each number contains papers on related topics. Traditionally, one number per year, usually the first one, is devoted to programming theory, information system engineering, software engineering, artificial intelligence, 2and related topics. This tradition has been already existing for three years. It is an especially gratifying circumstance that since the current issue INFORMATICA has changed its "clothes" and is published in a new, improved, edition.

The special issue contains six papers, covering significant aspects of programming theory, relational and deductive databases, and learning.

Two papers are devoted to the programing theory. Vytautas Čyras discusses data dependency of a nested loop program which is obtained by inserting one loop into another. The paper contributes to the structural blanks approach that aims at expressing solutions to mutually dependent recurrences in the form of reusable program components. It extends the imperative programming language with constructs to explicitly define the dependency pattern of a recurrence. The paper of Merik Meriste, Jaan Penjam, and Varmo Vene aims to develop a new attributed automaton specification method. The proposed method is based on functional combinators and has good compositional and algebraic properties. The attributed automaton is specified in the form that allows us to derive an efficient implemetation using correctness preserving transformations.

Three papers discuss database systems. The paper of Valery Grechko, Peter Tulchinsky, Vadim Tulchinsky proposes an extension of the QBE language in the form of graph queries. The method is applicable to the ER-described databases. Günther Specht discusses how to combine logic programming and object-oriented programming in a deductive database system. He proposes a single integrated language that uses fix-point semantics. The proposed approach is based on the "objects as theories with state evolution" model. The paper of Bertram Ludäscher and Georg Lausen also deals with the

deductive databases. It considers the rule termination problem in the Statelog language that provides a logical framework to integrate deductive rules, production rules, and many essential features of active rules.

The paper of Mária Bieliková and Pavol Návrat describes the authors' experience in teaching of functional programming. The main idea of the paper is that when the students learn a set of program schemata and how to apply them, they will be also able to solve other similar problems.

I believe that each of these papers is of interest to the readers of INFORMATICA working in the feld of information and computer sciences.

Finally, I thank all the people involved in the preparation of this issue, especially the authors and reviewers.