

PREFACE

The papers collected here are reports of tutorial courses or keynote speeches selected by the editors for the *Fourth International Conference on Software Engineering and Knowledge Engineering*. The aim of this book is to offer a wide coverage of the main topics related to the specification, prototyping, development, and maintenance of software systems and knowledge-based systems.

In Chapter one, an introduction to the field of software architecture is provided by highlighting the current state of the discipline and examining the ways in which architectural design affects software design.

Chapter two focusses on software process modeling. The main aspects of process modeling are described from the perspective of the Oikos project, guiding the reader through the specification, enactment and performance of the software process for a standard case study.

Chapter three analyzes how current design methods face the problem of knowledge representation. In particular, it points out the methods used for requirement analysis, design architecture, and detailed design of software projects.

The area of software system design is further investigated in Chapter four, where a multi-paradigm approach to software design is described in order to offer the software engineer the capability of using the best suitable paradigm for each class of problems in software system design.

Chapter five examines the methods and techniques offered by logic programming to the software engineer, particularly in the approaches to the design and the prototyping of software engineering applications.

In Chapter six, the problem of formal specification of hard real-time systems is considered by focussing on the execution of formal specifications in terms of the formal notations of RT-nets (Real Time nets). Then, the main strategies for decomposing RT net execution into concurrent tasks are described. Finally, transputer-based implementations of RT net executors are presented together with some experimental results.

In the area of Software Reuse, Chapter seven faces the problem of building software libraries that help locating software components. Both the knowledge-based approach and the Information Retrieval approach are considered and compared. Finally, some guidelines and algorithms for building simple IR-based tools for reuse are provided.

Chapter eight deals with the verification and validation of software systems and of knowledge-based systems. It is especially concerned with the problem of verification and validation of knowledge representation.

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