

CONTENTS

EDITORS' FOREWORD	iii
1. SYSTEM DESIGN	1
The Advanced Information Management Prototype Peter Pistor and Peter Dadam	3
VERSO: A Database Machine Based on Nested Relations Michel Schoil, Serge Abiteboul, François Bancilhon, Nicole Bidoit, Sophie Gamerman, Didier Plateau, Philippe Richard and Anne Verroust	27
The Two Roles of Nested Relations in the DASDBS Project Hans-J. Schek and Marc H. Scholl	50
A Storage Structure for Nested Relational Databases Anand Deshpande and Dirk Van Gucht	69
2. FUNDAMENTAL ISSUES	85
Four Views of Complex Objects: A Sophisticate's Introduction Richard Hull	87
An Introduction to the Completeness of Languages for Complex Objects and Nested Relations Serge Abiteboul, Catriel Beeri, Marc Gyssens and Dirk Van Gucht	117
On the Uniqueness of Nested Relations Koichi Takeda	139
3. DATABASE MODELING	151
An Introduction to the Nested Sequences of Tuples Data Model and Algebra Ralf H. Güting and Roberto Zicari	153
Recursively Defined Complex Objects Winfried Lamersdorf	176
Query Languages for Nested Relational Databases Henry F. Korth and Mark A. Roth	190
Nested Relations and Recursive Queries Volker Linnemann	205
Realization of Nested Relation Interfaces for Relational and Network Databases Yahiko Kambayashi, Tetsuya Furukawa and Hideki Yamamoto	217
An Approach to Manage Large Inheritance Networks Within a DBS Supporting Nested Relations Rudi Studer and Stefan Börner	229

4. DATABASE DESIGN	241
On the Normalization in Nested Relational Databases Z. Meral Ozsoyoglu and Li-Yan Yuan	243
Complex Objects Modeling: An Entity-Relationship Approach Christine Parent and Stefano Spaccapietra	272
A Data Model for Complex Objects Based on a Semantic Database Model and Nested Relations Andreas Heuer	297
γ -Acyclic Database Schemes and Nested Relations Mark Levene and George Loizou	313