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Autore	Majki Zoran
Titolo	Big Data Integration Theory : Theory and Methods of Database Mappings, Programming Languages, and Semantics // by Zoran Majki
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Descrizione fisica	1 online resource (528 p.)
Collana	Texts in Computer Science, , 1868-095X
Disciplina	005.7
Soggetti	Database management Computer science Computer science - Mathematics Discrete mathematics Electronic data processing - Management Information technology - Management Database Management Computer Science Logic and Foundations of Programming Discrete Mathematics in Computer Science IT Operations Computer Application in Administrative Data Processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction and Technical Preliminaries -- Composition of Schema Mappings: Syntax and Semantics -- Definition of DB Category -- Functorial Semantics for Database Schema Mappings -- Extensions of Relational Codd's Algebra and DB Category -- Categorical RDB Machines -- Operational Semantics for Database Mappings -- The Properties of DB Category -- Weak Monoidal DB Topos.
Sommario/riassunto	The challenges of big data demand a clear theoretical and algebraic framework, extending the standard relational database (RDB) with more powerful features in order to manage the complex schema mappings. This unique textbook/reference presents a novel approach to database concepts, describing a categorical logic for database schema mapping

based on views, within a very general framework for database integration/exchange and peer-to-peer. Issues of database mappings, database programming languages (algebras), and denotational and operational semantics are discussed in depth. An analysis method is also developed that combines techniques from second order logic, data modeling, co-algebras, and functorial categorical semantics. Topics and features: Provides a concise, formal introduction to logics, (co-) algebras, databases, schema mappings and category theory Describes the core concepts of big data integration theory, supported by a number of practical examples Examines the computational properties of the DB category, compared to the extensions of Codd's SPRJU relational algebra and structured query language (SQL) Defines the abstract computational machine, the categorial RDB machine, able to support all DB computations by SQL embedding Presents full operational semantics for database mappings (programs) Discusses matching and merging operators (tensors) for databases, universal algebra considerations, and algebraic lattices of the databases Explores the relationship of the database weak monoidal topos with respect to intuitionistic logic This self-contained textbook is ideal for graduate courses on database engineering methods, and can also be used as a supplementary text for courses on co-algebras and category theory. Researchers and software engineers interested in databases and logics will also find the book to be a useful reference.
