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Titolo	Concise Guide to Formal Methods : Theory, Fundamentals and Industry Applications // by Gerard O'Regan
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Descrizione fisica	1 online resource (XXVI, 322 p. 81 illus., 56 illus. in color.)
Collana	Undergraduate Topics in Computer Science, , 2197-1781
Disciplina	004.0151
Soggetti	Machine theory Software engineering Computers Computer science - Mathematics Formal Languages and Automata Theory Software Engineering Hardware Performance and Reliability Mathematical Applications in Computer Science
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Software Engineering -- Software Reliability and Dependability -- Overview of Formal Methods -- Sets, Relations and Functions -- A Short History of Logic -- Propositional and Predicate Logic -- Advanced Topics in Logic -- Z Formal Specification Language -- Vienna Development Method -- Irish School of VDM -- Unified Modelling Language -- Dijkstra, Hoare and Parnas -- Automata Theory -- Model Checking -- The Nature of Theorem Proving -- Probability and Statistics -- Industrial Tools for Formal Methods -- Technology Transfer to Industry -- Epilogue.
Sommario/riassunto	This invaluable textbook/reference provides an easy-to-read guide to the fundamentals of formal methods, highlighting the rich applications of formal methods across a diverse range of areas of computing. Topics and features: Introduces the key concepts in software engineering, software reliability and dependability, formal methods, and discrete mathematics Presents a short history of logic, from

Aristotle's syllogistic logic and the logic of the Stoics, through Boole's symbolic logic, to Frege's work on predicate logic Covers propositional and predicate logic, as well as more advanced topics such as fuzzy logic, temporal logic, intuitionistic logic, undefined values, and the applications of logic to AI Examines the Z specification language, the Vienna Development Method (VDM) and Irish School of VDM, and the unified modelling language (UML) Discusses Dijkstra's calculus of weakest preconditions, Hoare's axiomatic semantics of programming languages, and the classical approach of Parnas and his tabular expressions Provides coverage of automata theory, probability and statistics, model checking, and the nature of proof and theorem proving Reviews a selection of tools available to support the formal methodist, and considers the transfer of formal methods to industry Includes review questions and highlights key topics in every chapter, and supplies a helpful glossary at the end of the book This stimulating guide provides a broad and accessible overview of formal methods for students of computer science and mathematics curious as to how formal methods are applied to the field of computing. Dr. Gerard O'Regan is a CMMI software process improvement consultant with research interests including software quality and software process improvement, mathematical approaches to software quality, and the history of computing. He is the author of such Springer titles as Concise Guide to Software Engineering, Guide to Discrete Mathematics, Introduction to the History of Computing, Pillars of Computing, Introduction to Software Quality, Giants of Computing, and Mathematics in Computing.
