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Titolo	All About Maude - A High-Performance Logical Framework [[electronic resource]] : How to Specify, Program, and Verify Systems in Rewriting Logic // by Manuel Clavel, Francisco Durán, Steven Eker, Patrick Lincoln, Narciso Martí-Oliet, José Meseguer, Carolyn Talcott
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Collana	Programming and Software Engineering ; ; 4350
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Soggetti	Programming languages (Electronic computers) Computer programming Software engineering Artificial intelligence Mathematical logic Programming Languages, Compilers, Interpreters Programming Techniques Software Engineering Artificial Intelligence Mathematical Logic and Formal Languages
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	I: Core Maude -- Using Maude -- Syntax and Basic Parsing -- Functional Modules -- A Hierarchy of Data Types: From Trees to Sets -- System Modules -- Playing with Maude -- Module Operations -- Predefined Data Modules -- Specifying Parameterized Data Structures in Maude -- Object-Based Programming -- Model Checking Invariants Through Search -- LTL Model Checking -- Reflection, Metalevel Computation, and Strategies -- Metaprogramming Applications -- Mobile Maude -- User Interfaces and Metalanguage Applications -- II: Full Maude -- Full Maude: Extending Core Maude -- Object-Oriented Modules -- III: Applications and Tools -- A Sampler of Application Areas -- Some Tools -- IV: Reference -- Debugging and

This book gives a comprehensive account of Maude, a language and system based on rewriting logic. Many examples are used throughout the book to illustrate the main ideas and features of Maude, and its many possible uses. Maude modules are rewrite theories. Computation with such modules is efficient deduction by rewriting. Because of its logical basis and its initial model semantics, a Maude module defines a precise mathematical model. This means that Maude and its formal tool environment can be used in three, mutually reinforcing ways: • as a declarative programming language; • as an executable formal specification language; and • as a formal verification system. Maude's rewriting logic is simple, yet very expressive. This gives Maude good representational capabilities as a semantic framework to formally represent a wide range of systems, including models of concurrency, distributed algorithms, network protocols, semantics of programming languages, and models of cell biology. Rewriting logic is also an expressive universal logic, making Maude a flexible logical framework in which many different logics and inference systems can be represented and mechanized. This makes Maude a useful metatool to build many other tools, including those in its own formal tool environment. Thanks to the logic's simplicity and the use of advanced semi-compilation techniques, Maude has a high-performance implementation, making it competitive with other declarative programming languages.