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Nota di contenuto	; Part I Introduction -- ; Chapter 1 Introduction to Modeling and Simulation -- ; Chapter 2 A Quick Tour of Modelica -- ; Part II The Modelica Language -- ; Chapter 3 Classes, Types, and Declarations -- ; Chapter 4 Inheritance, Modifications, and Generics -- ; Chapter 5 Components, Connectors, and Connections. -- ; Chapter 6 Literals, Operators, and Expressions -- ; Chapter 7 Arrays -- ; Chapter 8 Equations -- ; Chapter 9 Algorithms and Functions -- ; Chapter 10 Packages -- ; Chapter 11 Annotations, Units, and Quantities -- ; Part III Modeling and Applications -- ; Chapter 12 System Modeling Methodology and Continuous Model Representation -- ; Chapter 13 Discrete Event, Hybrid, and Concurrency Modeling -- ; Chapter 14 Basic Laws of Nature -- ; Chapter 15 Application Examples -- ; Chapter 16

Modelica Library Overview -- ; Part IV Technology and Tools -- ; Chapter 17 A Mathematical Representation for Modelica Models -- ; Chapter 18 Techniques and Research -- ; Chapter 19 Environments -- ; Appendix A Modelica Formal Syntax -- ; Appendix B Mathematica-style Modelica Syntax -- ; Appendix C Solutions for Exercises -- ; Appendix D Modelica Standard Library -- ; Appendix E Modelica Scripting Commands -- ; Appendix F Related Object-Oriented Modeling Languages -- ; Appendix G A Modelica XML Representation.

Sommario/riassunto

"Object-oriented modeling is a fast-growing area of modeling and simulation that provides a structured, computer-supported way of doing mathematical and equation-based modeling. Modelica is today's most promising modeling language in that it effectively unifies and generalizes previous object-oriented modeling languages and provides a sound basis for the basic concepts.Principles of Object-Oriented Modeling and Simulation with Modelica 2.1 introduces the latest methods of object-oriented component-based system modeling and simulation, and provides a tutorial and reference for the latest version of Modelica complete with a comprehensive overview of application model libraries from many domains. Executable examples are included from many areas–physics, mechanics, electrical systems, thermodynamics, flow systems, computer science, concurrent and real-time processes, biology, ecology, chemistry, economy, etc. Designed for students, researchers, and engineers familiar with basic programming concepts, the text: • Introduces the concepts of physical modeling, object-oriented modeling, and component-based modeling. • Includes both visual and textual modeling/programming. • Provides a complete yet informal overview of the Modelica language. • Demonstrates modeling examples for a wide range of applications. • Acts as a reference guide for the most commonly used Modelica libraries. • Features the current version of Modelica 2.1 including some anticipated extentions. Its flexible format, comprehensive coverage of the field, and practical focus makes Principles of Object-Oriented Modeling and Simulation with Modelica 2.1 an indispensable teaching tool, a timely reference source for modeling and programming with Modelica, and a valuable hands-on guide for doing physical modeling in a broad range of application areas.Visit the book Web page www.mathcore.com/drmodelica for samples of executable models, teaching material, interactive tutorials, and recent updates of the book."--Provided by publisher.