1. Record Nr. UNISA996205710403316

Autore	Fritzson Peter A. <1952->
Titolo	Principles of object-oriented modeling and simulation with Modelica 2.1 / / Peter Fritzson
Pubbl/distr/stampa	Piscataway, New Jersey : , : IEEE Press, , c2004 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2010]
ISBN	0-470-93761-0 9786612783449 1-282-78344-0 0-470-54566-6
Descrizione fisica	1 online resource (xlii, 897 p.) : ill
Disciplina	005.117
Soggetti	Object-oriented methods (Computer science) Computer simulation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Formerly CIP.
Nota di bibliografia	Includes bibliographical references and index.
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. -- References. -- Index.

Sommario/riassunto

A timely introduction to the latest modeling and simulation techniques 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.