1. Record Nr. UNINA9910254817403321

Autore	Omodeo Eugenio G
Titolo	On Sets and Graphs : Perspectives on Logic and Combinatorics / / by Eugenio G. Omodeo, Alberto Policriti, Alexandru I. Tomescu
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-54981-2
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XIX, 275 p. 150 illus.)
Disciplina	511.5
Soggetti	Computer logic Algorithms Graph theory Combinatorics Logics and Meanings of Programs Algorithm Analysis and Problem Complexity Graph Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Part I: Basics -- Membership and Edge Relations -- Sets, Graphs, and Set Universes -- Part II: Graphs as Sets -- The Undirected Structure Underlying Sets -- Graphs as Transitive Sets -- Part III: Sets as Graphs -- Counting and Encoding Sets -- Random Generation of Sets -- Infinite Sets and Finite Combinatorics -- Appendix: Excerpts from a Referee-Checked Proof-Script.
Sommario/riassunto	This unique treatise presents an integrated perspective on the relationship and interplay of set theory and graph theory, providing an extensive selection of examples that highlight how methods from one theory can be used to better solve problems originated in the other. This combined viewpoint not only simplifies the manipulation of sets and enriches the potential of graphs, but also permits a more profound understanding of the multi-faceted nature of sets and graphs. Topics and features: Explores the interrelationships between sets and graphs and their applications to finite combinatorics, with a focus on proof methods and proof technology Introduces the fundamental graph-

theoretical notions from the standpoint of both set theory and dyadic logic, and presents a short discussion on set universes Explains how, and under what circumstances, sets can conveniently model graphs, discussing set graphs and set-theoretic representations of claw-free graphs Investigates when it is convenient to represent sets by graphs, covering counting and encoding problems, the random generation of sets, and the analysis of infinite sets Presents excerpts of formal proofs concerning graphs, whose correctness was verified by means of an automated proof-assistant Contains numerous exercises, examples, definitions, problems and insight panels throughout the text This accessible textbook/reference offers an illuminating read for graduate students of computer science and mathematics. The work is also ideal as a self-study resource for other non-specialists pursuing a deeper understanding of the subject matter. Dr. Eugenio G. Omodeo is a professor in the Department of Mathematics and Geosciences at the University of Trieste, Italy. His other publications include the Springer title Computational Logic and Set Theory. Dr. Alberto Policriti is a Professor of Computer Science in the Department of Mathematics, Computer Science, and Physics at the University of Udine, Italy. Together with Dr. Eugenio G. Omodeo, he is co-author of the Springer title Set Theory for Computing. Dr. Alexandru I. Tomescu is postdoctoral researcher in the Department of Computer Science at the University of Helsinki, Finland.