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Soggetti	Systems on a chip Field programmable gate arrays Computer input-output equipment - Design and construction VHDL (Computer hardware description language)
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Embedded SOPC Design with Nios II Processor and VHDL Examples; CONTENTS; Preface; Acknowledgments; 1 Overview of Embedded System; 1.1 Introduction; 1.1.1 Definition of an embedded system; 1.1.2 Example systems; 1.2 System design requirements; 1.3 Embedded SoPC systems; 1.3.1 Basic development flow; 1.4 Book organization; 1.5 Bibliographic notes; PART I BASIC DIGITAL CIRCUITS DEVELOPMENT; 2 Gate-level Combinational Circuit; 2.1 Overview of VHDL; 2.2 General description; 2.2.1 Basic lexical rules; 2.2.2 Library and package; 2.2.3 Entity declaration; 2.2.4 Data type and operators 2.2.5 Architecture body 2.2.6 Code of a 2-bit comparator; 2.3 Structural

description; 2.4 Testbench; 2.5 Bibliographic notes; 2.6 Suggested experiments; 2.6.1 Code for gate-level greater-than circuit; 2.6.2 Code for gate-level binary decoder; 3 Overview of FPGA and EDA Software; 3.1 FPGA; 3.1.1 Overview of a general FPGA device; 3.1.2 Overview of the Altera Cyclone II devices; 3.2 Overview of the Altera DE1 and DE2 boards; 3.3 Development flow; 3.4 Overview of Quartus II; 3.5 Short tutorial of Quartus II; 3.5.1 Create the design project; 3.5.2 Create a testbench and perform the RTL simulation  
3.5.3 Compile the project3.5.4 Perform timing analysis; 3.5.5 Program the FPGA device; 3.6 Short tutorial on the ModelSim HDL simulator; 3.7 Bibliographic notes; 3.8 Suggested experiments; 3.8.1 Gate-level greater-than circuit; 3.8.2 Gate-level binary decoder; 4 RT-level Combinational Circuit; 4.1 RT-level components; 4.1.1 Relational operators; 4.1.2 Arithmetic operators; 4.1.3 Other synthesis-related VHDL constructs; 4.1.4 Summary; 4.2 Routing circuit with concurrent assignment statements; 4.2.1 Conditional signal assignment statement; 4.2.2 Selected signal assignment statement  
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5.6 Case study

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## Sommario/riassunto

The book is divided into four major parts. Part I covers HDL constructs and synthesis of basic digital circuits. Part II provides an overview of embedded software development with the emphasis on low-level I/O access and drivers. Part III demonstrates the design and development of hardware and software for several complex I/O peripherals, including PS2 keyboard and mouse, a graphic video controller, an audio codec, and an SD (secure digital) card. Part IV provides three case studies of the integration of hardware accelerators, including a custom GCD (greatest common divisor) circuit, a Mandelb

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