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Featuring a strong emphasis on the fundamentals underlying contemporary logic design using hardware description languages, synthesis, and verification, this book focuses on the ever-evolving applications of basic computer design concepts with strong connections to real-world technology.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. For courses in Logic and Computer design. Understanding Logic and Computer Design for All Audiences Logic and Computer Design Fundamentals is a thoroughly up-to-date text that makes logic design, digital system design, and computer design available to readers of all levels. The Fifth Edition brings this widely recognized source to modern standards by ensuring that all information is relevant and contemporary. The material focuses on industry trends and successfully bridges the gap between the much higher levels of abstraction people in the field must work with today than in the past. Broadly covering logic and computer design, Logic and Computer Design Fundamentals is a flexibly organized source material that allows instructors to tailor its use to a wide range of audiences. Featuring a strong emphasis on the fundamentals underlying contemporary logic design using hardware description languages, synthesis, and verification, this book focuses on the ever-evolving applications of basic computer design concepts with strong connections to real-world technology. Treatment of logic design, digital system design, and computer design. Ideal for self-study by engineers and computer scientists.

Computer Organization and Design Fundamentals takes the reader from the basic design principles of the modern digital computer to a top-level examination of its architecture. This book can serve either as

a textbook to an introductory course on computer hardware or as the basic text for the aspiring geek who wants to learn about digital design. The material is presented in four parts. The first part describes how computers represent and manipulate numbers. The second part presents the tools used at all levels of binary design. The third part introduces the reader to computer system theory with topics such as memory, caches, hard drives, pipelining, and interrupts. The last part applies these theories through an introduction to the Intel 80x86 architecture and assembly language. The material is presented using practical terms and examples with an aim toward providing anyone who works with computer systems the ability to use them more effectively through a better understanding of their design.

Digital Design and Computer Architecture: ARM Edition covers the fundamentals of digital logic design and reinforces logic concepts through the design of an ARM microprocessor. Combining an engaging and humorous writing style with an updated and hands-on approach to digital design, this book takes the reader from the fundamentals of digital logic to the actual design of an ARM processor. By the end of this book, readers will be able to build their own microprocessor and will have a top-to-bottom understanding of how it works. Beginning with digital logic gates and progressing to the design of combinational and sequential circuits, this book uses these fundamental building blocks as the basis for designing an ARM processor. SystemVerilog and VHDL are integrated throughout the text in examples illustrating the methods and techniques for CAD-based circuit design. The companion website includes a chapter on I/O systems with practical examples that show how to use the Raspberry Pi computer to communicate with peripheral devices such as LCDs, Bluetooth radios, and motors. This book will be a valuable resource for students taking a course that combines digital logic

and computer architecture or students taking a two-quarter sequence in digital logic and computer organization/architecture. Covers the fundamentals of digital logic design and reinforces logic concepts through the design of an ARM microprocessor. Features side-by-side examples of the two most prominent Hardware Description Languages (HDLs)—SystemVerilog and VHDL—which illustrate and compare the ways each can be used in the design of digital systems. Includes examples throughout the text that enhance the reader's understanding and retention of key concepts and techniques. The Companion website includes a chapter on I/O systems with practical examples that show how to use the Raspberry Pi computer to communicate with peripheral devices such as LCDs, Bluetooth radios, and motors. The Companion website also includes appendices covering practical digital design issues and C programming as well as links to CAD tools, lecture slides, laboratory projects, and solutions to exercises.

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Fundamentals of Switching Theory and Logic Design discusses the basics of switching theory and logic design from a slightly alternative point of view and also presents links between switching theory and related areas of signal processing and system theory. Switching theory is a branch of applied mathematic providing mathematical foundations for logic design, which can be considered as a part of digital system design concerning realizations of systems whose inputs and outputs are described by logic functions.

For one- to two-semester Computer Science and Engineering courses in logic and

digital design at the sophomore/junior level. Featuring a strong emphasis on the fundamentals underlying contemporary logic design using hardware description languages, synthesis, and verification, this book focuses on the ever-evolving applications of basic computer design concepts with strong connections to real-world technology.

Based on the book *Computer Engineering Hardware Design* (1988), which presented the same combined treatment of logic design, digital system design and computer design basics. Because of its broad coverage of both logic and computer design, this text can be used to provide an overview of logic and computer hardware for computer science, computer engineering, electrical engineering, or engineering students in general. Annotation copyright by Book News, Inc., Portland, OR.

For courses in Logic and Computer design. Understanding Logic and Computer Design for All Audiences Logic and Computer Design Fundamentals is a thoroughly up-to-date text that makes logic design, digital system design, and computer design available to students of all levels. The Fifth Edition brings this widely recognised source to modern standards by ensuring that all information is relevant and contemporary. The material focuses on industry trends and successfully bridges the gap between the much higher levels of abstraction students in the field must work with today than in the past. Broadly covering logic and computer design, *Logic and Computer Design Fundamentals* is a flexibly organised source material that allows instructors to tailor its use to a wide range of student audiences. The full text downloaded to your computer With eBooks you can: search for key concepts, words and phrases make highlights and notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf (available as a free download), available online and also via the iPad and Android apps. Upon purchase, you'll gain instant access to this eBook. Time limit The eBooks products do not have an expiry date. You will continue to access your digital ebook products whilst you have your Bookshelf installed.

For one- to two-semester Computer Science and Engineering courses in logic and digital design. Featuring a strong emphasis on the fundamentals underlying contemporary logic design using hardware description languages, synthesis, and verification, this book focuses on the ever-evolving applications of basic computer design concepts with strong connections to real-

world technology.

Comprehensive and self contained, this tutorial covers the design of a plethora of combinational and sequential logic circuits using conventional logic design and Verilog HDL. Number systems and number representations are presented along with various binary codes. Several advanced topics are covered, including functional decomposition and iterative networks. A variety of examples are provided for combinational and sequential logic, computer arithmetic, and advanced topics such as Hamming code error correction. Constructs supported by Verilog are described in detail. All designs are continued to completion. Each chapter includes numerous design issues of varying complexity to be resolved by the reader.

"Presents the fundamentals of hardware technologies, assembly language, computer arithmetic, pipelining, memory hierarchies and I/O"--

This complete introduction to computer engineering includes the use of the microprocessor as a building block for digital logic design. The authors offer a top-down approach to designing digital systems, with consideration of both hardware and software. They emphasize structured design throughout, and the design methods, techniques, and notations are consistent with this theme. The first part of the book lays the foundation for structured design techniques; the second part provides the fundamentals of microprocessor and up-based design. Topics covered include mixed logic notation, the algorithm state machine, and structured programming techniques with well-documented programs. Contains an abundance of examples and end-of-chapter problems.

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780131989269 .

For introductory courses in Computer Engineering or Computer Hardware Design in departments of Electrical and Computer Engineering, Computer Science, Electrical Engineering, or Electrical Engineering Technology; also appropriate for a Digital Systems Design course. Covers the fundamentals of hardware and computer design with exceptional breadth and in a very accessible style using abundant examples to build understanding and problem-solving skills. Reflects the current industry trend of designing with hardware description lan-

guages (HDLs) instead of logic diagrams - provides optional introductory treatments of both VHDL and Verilog languages - with additional coverage available on the Companion Website for more substantial treatment. Gives the instructor maximum flexibility in HDL coverage. By covering broadly-based fundamentals, provides an excellent foundation and perspective for more advanced courses in digital hardware design and computer architecture and organization preparation.

This textbook for courses in Digital Systems Design introduces students to the fundamental hardware used in modern computers. Coverage includes both the classical approach to digital system design (i.e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). Using this textbook enables readers to design digital systems using the modern HDL approach, but they have a broad foundation of knowledge of the underlying hardware and theory of their designs. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds foundational knowledge before moving onto advanced topics. The author has designed the presentation with learning Goals and assessment at its core. Each section addresses a specific learning outcome that the student should be able to "do" after its completion. The concept checks and exercise problems provide a rich set of assessment tools to measure student performance on each outcome.

This textbook provides semester-length coverage of computer architecture and design, providing a strong foundation for students to understand modern computer system architecture and to apply these insights and principles to future computer designs. It is based on the author's decades of industrial experience with computer architecture and design, as well as with teaching students focused on pursuing careers in computer engineering. Unlike a number of existing textbooks for this course, this one focuses not only on CPU architecture, but also covers in great detail in system buses, peripherals and memories. This book teaches every element in a computing system in two steps. First, it introduces the functionality of each topic (and subtopics) and then goes into "from-scratch design" of a particular digital block from its architectural specifications using timing diagrams. The author describes how the data-path of a certain digital block is generated using timing diagrams, a method which most textbooks do not cover, but is valuable in actual practice. In the end, the user is ready to use both the de-



sign methodology and the basic computing building blocks presented in the book to be able to produce industrial-strength designs.

This book presents the basic concepts used in the design and analysis of digital systems and introduces the principles of digital computer organization and design. For the first time in book form, this comprehensive and systematic monograph presents methods for the reversible synthesis of logic functions and circuits. It is illustrated with a wealth of examples and figures that describe in detail the systematic methodologies of synthesis using reversible logic.

Updated with modern coverage, a streamlined presentation, and an excellent CD-ROM, this fifth edition achieves a balance between theory and application. Author Charles H. Roth, Jr. carefully presents the theory that is necessary for understanding the fundamental concepts of logic design while not overwhelming students with the mathematics of switching theory. Divided into 20 easy-to-grasp study units, the book covers such fundamental concepts as Boolean algebra, logic gates design, flip-flops, and state machines. By combining flip-flops with networks of logic gates, students will learn to design counters, adders, sequence detectors, and simple digital systems. After covering the basics, this text presents modern design techniques using programmable logic devices and the VHDL hardware description language.

Not only does almost everyone in the civilized world use a personal computer, smartphone, and/or tablet on a daily basis to communicate with others and access information, but virtually every other modern appliance, vehicle, or other device has one or more computers embedded inside it. One cannot purchase a current-model automobile, for example, without several computers on board to do everything from monitoring exhaust emissions, to operating the anti-lock brakes, to telling the transmission when to shift, and so on. Appliances such as clothes washers and dryers, microwave ovens, refrigerators, etc. are almost all digitally controlled. Gaming consoles like Xbox, PlayStation, and Wii are powerful computer systems with enhanced capabilities for user interaction. Computers are everywhere, even when we don't see them as such, and it is more important than ever for students who will soon enter the workforce to understand how they work. This book is completely updated and revised for a one-semester upper level undergraduate course in Computer Architecture, and suitable for use in an undergraduate CS, EE, or CE curriculum at

the junior or senior level. Students should have had a course(s) covering introductory topics in digital logic and computer organization. While this is not a text for a programming course, the reader should be familiar with computer programming concepts in at least one language such as C, C++, or Java. Previous courses in operating systems, assembly language, and/or systems programming would be helpful, but are not essential.

This highly acclaimed, well established, book now in its fifth edition, is intended for an introductory course in digital computer design for B.Sc. students of computer science, B.Tech. students of computer science and engineering, and BCA/MCA students of computer applications. A knowledge of programming in C or Java would be useful to give the student a proper perspective to appreciate the development of the subject. The first part of the book presents the basic tools and develops procedures suitable for the design of digital circuits and small digital systems. It equips students with a firm understanding of logic principles before they study the intricacies of logic organization and architecture of computers in the second part. Besides discussing data representation, arithmetic operations, Boolean algebra and its application in designing combinatorial and sequential switching circuits, the book introduces the Algorithmic State Machines which are used to develop a hardware description language for the design of digital systems. The organization of a small hypothetical computer is described to illustrate how instruction sets are evolved. Real computers (namely, Pentium and MIPS machines) are described and compared with the hypothetical computer. After discussing the features of a CPU, I/O devices and I/O organization, cache and virtual memory, the book concludes with a new chapter on the use of parallelism to enhance the speed of computers. Besides, the fifth edition has new material in CMOS gates, MSI/ALU and Pentium5 architecture. The chapter on Cache and Virtual Memory has been rewritten.

This textbook covers digital design, fundamentals of computer architecture, and assembly language. The book starts by introducing basic number systems, character coding, basic knowledge in digital design, and components of a computer. The book goes on to discuss information representation in computing; Boolean algebra and logic gates; sequential logic; input/output; and CPU performance. The author also covers ARM architecture, ARM instructions and ARM assembly language which is used in a variety of devices such as cell phones, digital TV, automobiles, routers, and

switches. The book contains a set of laboratory experiments related to digital design using Logisim software; in addition, each chapter features objectives, summaries, key terms, review questions and problems. The book is targeted to students majoring Computer Science, Information System and IT and follows the ACM/IEEE 2013 guidelines. • Comprehensive textbook covering digital design, computer architecture, and ARM architecture and assembly • Covers basic number system and coding, basic knowledge in digital design, and components of a computer • Features laboratory exercises in addition to objectives, summaries, key terms, review questions, and problems in each chapter

Fundamentals of Digital Logic and Microcomputer Design, has long been hailed for its clear and simple presentation of the principles and basic tools required to design typical digital systems such as microcomputers. In this Fifth Edition, the author focuses on computer design at three levels: the device level, the logic level, and the system level. Basic topics are covered, such as number systems and Boolean algebra, combinational and sequential logic design, as well as more advanced subjects such as assembly language programming and microprocessor-based system design. Numerous examples are provided throughout the text. Coverage includes: Digital circuits at the gate and flip-flop levels Analysis and design of combinational and sequential circuits Microcomputer organization, architecture, and programming-concepts Design of computer instruction sets, CPU, memory, and I/O System design features associated with popular microprocessors from Intel and Motorola Future plans in microprocessor development An instructor's manual, available upon request Additionally, the accompanying CD-ROM, contains step-by-step procedures for installing and using Altera Quartus II software, MASM 6.11 (8086), and 68asm (68000), provides valuable simulation results via screen shots. Fundamentals of Digital Logic and Microcomputer Design is an essential reference that will provide you with the fundamental tools you need to design typical digital systems.

CD-ROMs contain: Schematic editor -- State diagram editor -- Abel HDL text entry -- VHDL and Verilog synthesis tool -- Xilinx FPGA implementation tools -- Logic simulator.

Fundamentals of Digital Logic With Verilog Design teaches the basic design techniques for logic circuits. It emphasizes the synthesis of circuits and explains how circuits are implemented in real chips. Fundamental concepts are illustrated by using

small examples. Use of CAD software is well integrated into the book. A CD-ROM that contains Altera's Quartus CAD software comes free with every copy of the text. The CAD software provides automatic mapping of a design written in Verilog into Field Programmable Gate Arrays (FPGAs) and Complex Programmable Logic Devices (CPLDs). Students will be able to try, first-hand, the book's Verilog examples (over

140) and homework problems. Engineers use Quartus CAD for designing, simulating, testing and implementing logic circuits. The version included with this text supports all major features of the commercial product and comes with a compiler for the IEEE standard Verilog language. Students will be able to: enter a design into the CAD system compile the design into a selected

device simulate the functionality and timing of the resulting circuit implement the designs in actual devices (using the school's laboratory facilities) Verilog is a complex language, so it is introduced gradually in the book. Each Verilog feature is presented as it becomes pertinent for the circuits being discussed. To teach the student to use the Quartus CAD, the book includes three tutorials.