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The Definitive, Up-to-Date Guide to Digital Design with SystemVerilog: Concepts, Techniques, and Code To design state-of-the-art digital hardware, engineers first specify functionality in a high-level Hardware Description Language (HDL)—and today's most powerful, useful HDL is now an IEEE standard. Digital System Design with SystemVerilog is the first comprehensive introduction to both SystemVerilog and the contemporary digital hardware design techniques used with it. Building on the proven approach of his bestselling Digital System Design with Verilog, covers everything engineers need to know to automate the entire design process with SystemVerilog—from modeling through functional simulation, synthesis, timing simulation, and verification. Zvolinski teaches through about a hundred and fifty practical examples, each with enough in-depth information to enable rapid hardware design and verification. All examples are available for download from the book's companion Web site, zvolinski.org. Coverage includes Using electronic design automation tools with programmable logic and ASIC technology principles of Boolean algebra and combinational logic design, with discussions of timing and hazards Core modeling techniques: combinational building blocks, buffers, decoders, encoders, multiplexers, adders, and parity checkers Sequential building blocks: latches, flip-flops, registers, memory, and sequential multipliers Designing finite state machines: from ASM chart to D flip-flops, next state, and output logic Modeling interfaces and packages with SystemVerilog Designing testbenches: architecture, constrained random test generation, and assertion-based VLSI RTL and FPGA synthesis models Understanding and implementing Design-for-Test Exploring anomalous behavior in asynchronous sequential circuits Performing Verilog-AMS and mixed-signal modeling Whatever your experience with digital design, older versions of Verilog, or VHDL, help you discover SystemVerilog's full power and use it to the fullest.

Designed as an introductory text for the students of computer science, computer applications, electronics engineering and information technology for their first course on the organization and architecture of computers, this accessible, student friendly text gives a clear and in-depth principles underlying the subject. This self-contained text devotes one full chapter to the basics of digital logic. While the initial chapters describe in detail about computer organization, including CPU design, ALU design, memory design and I/O organization, the text also deals with Language Programming for Pentium using NASM assembler. What distinguishes the text is the special attention it pays to Cache and Virtual Memory organization, as well as to RISC architecture and the intricacies of pipelining. All these discussions are climaxed by an illuminating parallel computers which shows how processors are interconnected to create a variety of parallel computers. KEY FEATURES ? Self-contained presentation starting with data representation and ending with advanced parallel computer architecture. ? Systematic and logical organization Large number of worked-out examples and exercises. ? Contains basics of assembly language programming. ? Each chapter has learning objectives and a detailed summary to help students to quickly revise the material.

A long established reference book: radical revision for the fifteenth edition includes complete rearrangement to take in chapters on new topics and regroup the subjects covered for easy access to information. The Electrical Engineer's Reference Book, first published in 1945, has been revised to reflect the state of the art in electrical science and technology and cater for the needs of practising engineers. Most chapters have been revised and many augmented so as to deal properly with both fundamental developments and new technology and applications that have arisen since the fourteenth edition was published (1985). Topics covered by new chapters or radically updated sections include: * digital and programmable electronic systems * reliability analysis * EMC * power electronics * fundamental properties of materials * optical fibres * maintenance of electrical equipment electroheat and welding * agriculture and horticulture * aeronautic transportation * health and safety * procurement and purchasing * engineering economics

This comprehensive text on switching theory and logic design is designed for the undergraduate students of electronics and communication engineering, electrical and electronics engineering, electronics and instrumentation engineering, telecommunication engineering, computer science and engineering, and information technology. It will also be useful to AMIE, IETE and diploma students. Written in a student-friendly style, this book, now in its Second Edition, provides an in-depth knowledge of switching theory and the design techniques of digital circuits. Striking a balance between theory and practice, it covers topics ranging from number systems, binary codes, logic gates and Boolean algebra to minimization using K-maps and tabular method, design of combinational logic circuits, synchronous and asynchronous sequential circuits, and algorithmic state machine design. It discusses threshold gates and programmable logic devices (PLDs). In addition, it elaborates on flip-flops and shift registers. Each chapter includes several fully worked-out examples so that the students get a thorough grounding in related design concepts. Short questions with answers, multiple choice questions, fill in the blanks, multiple choice questions and problems are provided at the end of each chapter. These help the students test their level of understanding of the subject and prepare for examinations confidently. NEW TO THIS EDITION * VHDL programs at the end of each chapter Complete answers with figures * Several new problems with answers

The Hardware Software Interface

Engineering Digital Design

FPGA Prototyping by Verilog Examples

Digital Signal Processing with Field Programmable Gate Arrays

Numerical Algorithms

Digital Electronics (EC8392)

The importance of Digital Electronics is well known in various engineering fields. The book is structured to cover the key aspects of the subject Digital Electronics. The book uses plain, lucid language to explain the fundamentals of this subject. The book provides logical method of explaining various complicated concepts and stepwise methods to explain the important topics. Each chapter is well supported with necessary illustrations, practical examples and solved problems. All the chapters in the book are arranged in a proper sequence that permits each topic to build upon earlier studies. All care has been taken to make students comfortable in understanding the basic concepts of the subject. The book not only covers the entire scope of the subject but explains the philosophy of the subject. This makes the understanding of this subject more clear and makes it more interesting. The book will be very useful not only to the students but also to the subject teachers.

PREFACE OF THE BOOK This book is extensively designed for the second semester CSE/IT students as per Anna university syllabus R-2013. The following chapters constitute the following units Chapter 1 and 2 covers :-Unit 1 Chapter 3 and 8 covers :-Unit 2 Chapter 4 and 5 covers :-Unit 3 Chapter 6 covers :- Unit 4 Chapter 7 covers :- Unit 5 Chapter 8 covers the Verilog HDL:- Unit 2 and 3 CHAPTER 1: Introduces the Number System, binary arithmetic and codes. CHAPTER 2: Deals with Boolean algebra, simplification using Boolean theorems, K-map method, Quine McCluskey method, logic gates, implementation of switching function using basic Logical Gates and Universal Gates. CHAPTER 3: Describes the combinational circuits like Adder, Subtractor, Multiplier, Divider, magnitude comparator, encoder, decoder, code converters, Multiplexer and Demultiplexer. CHAPTER 4: Describes sequential circuits with Latches, Flip-Flops, Registers and Counters CHAPTER 5: Concentrates on the Analysis as well as design of synchronous sequential circuits, Design of synchronous counters, sequence generator and Sequence detector CHAPTER 6: Concentrates the Design as well as Analysis of Fundamental Mode circuits, Pulse mode Circuits, Hazard Free Circuits, ASM Chart and Design of Asynchronous counters. CHAPTER 7: Discussion on memory devices which includes ROM, RAM, PLA, PAL, Sequential logic devices and ASIC. CHAPTER 8: Introduction to Verilog HDL which was chosen as a basis for the high level description used in some parts of this book. We have taken enough care to present the definitions and statements of basic laws and theorems, problems with simple steps to make the students familiar with the fundamentals of Digital Design

Fundamentals of Digital Logic with VHDL Design teaches the basic design techniques for logic circuits. The text provides a clear and easily understandable discussion of logic circuit design without the use of unnecessary formalism. It emphasizes the synthesis of circuits and explains how circuits are implemented in real chips. Fundamental concepts are illustrated by using small examples, which are easy to understand. Then, a modular approach is used to show how larger circuits are designed. VHDL is a complex language so it is introduced gradually in the book. Each VHDL feature is presented as it becomes pertinent for the circuits being discussed. While it includes a discussion of VHDL, the book provides thorough coverage of the fundamental concepts of logic circuit design, independent of the use of VHDL and CAD tools. A CD-ROM containing all of the VHDL design examples used in the book, as well Altera's Quartus II CAD software, is included free with every text.

Digital Design of Signal Processing Systems discusses a spectrum of architectures and methods for effective implementation of algorithms in hardware (HW). Encompassing all facets of the subject this book includes conversion of algorithms from floating-point to fixed-point format, parallel architectures for basic computational blocks, Verilog Hardware Description Language (HDL), SystemVerilog and coding guidelines for synthesis. The book also covers system level design of Multi Processor System on Chip (MPSoC); a consideration of different design methodologies including Network on Chip (NoC) and Kahn Process Network (KPN) based connectivity among processing elements. A special emphasis is placed on implementing streaming applications like a digital communication system in HW. Several novel architectures for implementing commonly used algorithms in signal processing are also revealed. With a comprehensive coverage of topics the book provides an appropriate mix of examples to illustrate the design methodology. Key Features: A practical guide to designing efficient digital systems, covering the complete spectrum of digital design from a digital signal processing perspective Provides a full account of HW building blocks and their architectures, while also elaborating effective use of embedded computational resources such as multipliers, adders and memories in FPGAs Covers a system level architecture using NoC and KPN for streaming applications, giving examples of structuring MATLAB code and its easy mapping in HW for these applications Explains state machine based and Micro-Program architectures with comprehensive case studies for mapping complex applications The techniques and examples discussed in this book are used in the award winning products from the Center for Advanced Research in Engineering (CARE). Software Defined Radio, 10 Gigabit VoIP monitoring system and Digital Surveillance equipment has respectively won APICTA (Asia Pacific Information and Communication Alliance) awards in 2010 for their unique and effective designs.

A Practical Approach

Computer Organization and Design RISC-V Edition

The Art of Digital Design

Proceedings of the Sixteenth International Conference on Dependability of Computer Systems DepCoS-RELCOMEX, June 28 – July 2, 2021, Wrocław, Poland

Switching Theory and Logic Design

Methods for Computer Vision, Machine Learning, and Graphics

This introductory text on ' digital logic and computer organization ' presents a logical treatment of all the fundamental concepts necessary to understand the organization and design of a computer. It is designed to cover the requirements of a first-course in computer organization for undergraduate Computer Science, Electronics, or MCA students. Beginning from first principles, the text guides students through to a stage where they are able to design and build a small computer with available IC chips. Starting with the foundation material on data representation, computer arithmetic and combinational and sequential circuit design, the text explains ALU design and includes a discussion on an ALU IC chip. It also discusses Algorithmic State Machine and its representation using a Hardware Description Language before shifting to computer organization. The evolutionary development of a small hypothetical computer is described illustrating hardware-software trade-off in computer organization. Its instruction set is designed giving reasons why each new instruction is introduced. This is followed by a description of the general features of a CPU, organization of main memory and I/O systems. The book concludes with a chapter describing the features of a real computer, namely the Intel Pentium. An appendix describes a number of laboratory experiments which can be put together by students, culminating in the design of a toy computer. Key Features • Self-contained presentation of digital logic and computer organization with minimal pre-requisites • Large number of examples provided throughout the book • Each chapter begins with learning goals and ends with a summary to aid self-study by students.

This book uses a "learn by doing" approach to introduce the concepts and techniques of VHDL and FPGA to designers through a series of hands-on experiments. FPGA Prototyping by VHDL Examples provides a collection of clear, easy-to-follow templates for quick code development; a large number of practical examples to illustrate and reinforce the concepts and design techniques; realistic projects that can be implemented and tested on a Xilinx prototyping board; and a thorough exploration of the Xilinx PicoBlaze soft-core microcontroller.

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

SWITCHING THEORY AND LOGIC DESIGNPHI Learning Pvt. Ltd.

FUNDAMENTALS OF DIGITAL CIRCUITS

Switching Theory & Logic Design

Theory and Engineering of Dependable Computer Systems and Networks

Design of Computers and Other Complex Digital Devices

Digital Design of Signal Processing Systems

This popular volume provides a solid foundation in the elements of basic digital electronics and switching theory that are used in most practical digital design today -- and builds on that theory with discussions of real-world digital components, design methodologies, and tools. Covers a full range of topics -- number systems and codes, digital circuits, combinational logic design principles and practices, combinational logic design with PLDs, sequential logic design principles and practices, sequential logic design with PLDs, memory, and additional real-world topics (e.g., computer-aided engineering tools, design for testability, estimating digital system reliability, and transmission lines, reflections, and termination). This edition introduces PLDs as soon as possible, emphasizes CMOS logic families and introduces digital circuits in a strongly technology-independent fashion, covers the latest Generic Array Logic (GAL) devices, offers expanded coverage of ROM and RAM system-level design, and provides additional design examples. For those needing a solid introduction or review of the principles and practices of modern digital design. Previously announced in Oct. 1992 PTR Catalogue.

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.

DIGITAL SYSTEMS DESIGN USING VERILOG integrates coverage of logic design principles, Verilog as a hardware design language, and FPGA implementation to help electrical and computer engineering students master the process of designing and testing new hardware configurations. A Verilog equivalent of authors Roth and John's previous successful text using VHDL, this practical book presents Verilog constructs side-by-side with hardware, encouraging students to think in terms of desired hardware while writing synthesizable Verilog.

Following a review of the basic concepts of logic design, the authors introduce the basics of Verilog using simple combinational circuit examples, followed by models for simple sequential circuits. Subsequent chapters ask readers to tackle more and more complex designs.

Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

A comprehensive guide to the theory and design of hardware-implemented finite state machines, with design examples developed in both VHDL and SystemVerilog languages. Modern, complex digital systems invariably include hardware-implemented finite state machines. The correct design of such parts is crucial for attaining proper system performance. This book offers detailed, comprehensive coverage of the theory and design for any category of hardware-implemented finite state machines. It describes crucial design problems that lead to incorrect or far from optimal implementation and provides examples of finite state machines developed in both VHDL and SystemVerilog (the successor of Verilog) hardware description languages. Important features include: extensive review of design practices for sequential digital circuits; a new division of all state machines into three hardware-based categories, encompassing all possible situations, with numerous practical examples provided in all three categories; the presentation of complete designs, with detailed VHDL and SystemVerilog codes, comments, and simulation results, all tested in FPGA devices; and exercise examples, all of which can be synthesized, simulated, and physically implemented in FPGA boards. Additional material is available on the book's Website. Designing a state machine in hardware is more complex than designing it in software. Although interest in hardware for finite state machines has grown dramatically in recent years, there is no comprehensive treatment of the subject. This book offers the most detailed coverage of finite state machines available. It will be essential for industrial designers of digital systems and for students of electrical engineering and computer science.

Digital Design and Implementation with Field Programmable Devices

Digital Systems Design Using Verilog

DIGITAL LOGIC AND COMPUTER ORGANIZATION

Computer Organization and Design

Modern Digital Design

Logic Design with Pascal

Starts with an overview of today's FPGA technology, devices, and tools for designing state-of-the-art DSP systems. A case study in the first chapter is the basis for more than 30 design examples throughout. The following chapters deal with computer arithmetic concepts, theory and the implementation of FIR and IIR filters, multirate digital signal processing systems, DFT and FFT algorithms, and advanced algorithms with high future potential. Each chapter contains exercises. The VERILOG source code and a glossary are given in the appendices, while the accompanying CD-ROM contains the examples in VHDL and Verilog code as well as the newest Altera "Baseline" software. This edition has a new chapter on adaptive filters, new sections on division and floating point arithmetics, an up-date to the current Altera software, and some new exercises.

FPGA Prototyping Using Verilog Examples will provide you with a hands-on introduction to Verilog synthesis and FPGA programming through a "learn by doing" approach. By following the clear, easy-to-understand templates for code development and the numerous practical examples, you can quickly develop and simulate a sophisticated digital circuit, realize it on a prototyping device, and verify the operation of its physical implementation. This introductory text that will provide you with a solid foundation, instill confidence with rigorous examples for complex systems and prepare you for future development tasks.

Written for advanced study in digital systems design, Roth/John's DIGITAL SYSTEMS DESIGN USING VHDL, 3E integrates the use of the industry-standard hardware description language, VHDL, into the digital design process. The book begins with a valuable review of basic logic design concepts before introducing the fundamentals of VHDL. The book concludes with detailed coverage of advanced VHDL topics. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. "Engineering Digital Design" provides the most extensive coverage of any available textbook in digital logic and design. Modern notation combines with a state-of-the-art treatment of the most important subjects in digital design to provide the student with the background needed to enter industry or graduate study at a competitive level. Software programs, including a logic minimizer and a logic simulator, are provided on a CD-ROM and include detailed instructions for use.

Electrical Engineer's Reference Book

Xilinx Spartan-3 Version

With an Introduction to the Verilog HDL

SWITCHING THEORY AND LOGIC DESIGN

An Introduction to Top-down Design

The Z80 Microprocessor

Switching Theory and Logic Design is for a first-level introductory course on digital logic design. This book illustrates the usefulness of switching theory and its applications, with examples to acquaint the student with the necessary background. This book has been designed as a prerequisite to many other courses like Digital Integrated Circuits, Computer Organisation, Digital Instrumentation, Digital Control, Digital Communications and Hardware Description Languages.

Numerical Algorithms: Methods for Computer Vision, Machine Learning, and Graphics presents a new approach to numerical analysis for modern computer scientists. Using examples from a broad base of computational tasks, including data processing, computational photography, and animation, the textbook introduces numerical modeling and algorithmic design

The Fourth edition of this well-received text continues to provide coherent and comprehensive coverage of digital circuits. It is designed for the undergraduate students pursuing courses in areas of engineering disciplines such as Electrical and Electronics, Electronics and Communication, Electronics and Instrumentation, Telecommunications, Medical Electronics, Computer Science and Engineering, Electronics, and Computers and Information Technology. It is also useful as a text for MCA, M.Sc. (Electronics) and M.Sc. (Computer Science) students. Appropriate for self study, the book is useful even for AMIE and grad IETE students. Written in a student-friendly style, the book provides an excellent introduction to digital concepts and basic design techniques of digital circuits. It discusses Boolean algebra concepts and their application to digital circuitry, and elaborates on both combinational and sequential circuits. It provides numerous fully worked-out, laboratory tested examples to give students a solid grounding in the related design concepts. It includes a number of short questions with answers, review questions, fill in the blanks with answers, multiple choice questions with answers and exercise problems at the end of each chapter.

This book constitutes the proceedings of the 20th International Conference on Computer Information Systems and Industrial Management Applications, CISIM 2021, held in Elk, Poland, September 24–26, 2021. The 38 papers presented together with 1 invited speech and 3 abstracts of keynotes were carefully reviewed and selected from 69 submissions. The main topics covered by the chapters in this book are mobile and pervasive computing, machine learning, high performance computing, image processing, industrial management. Additionally, the reader will find interesting papers on computer information systems, biometrics, security systems, and sensor network service. The contributions are organized in the following topical sections: biometrics and pattern recognition applications; computer information systems and security; industrial management and other applications; machine learning and artificial neural networks; modelling and optimization, and others.Chapter 24 "A first step towards automated species recognition from camera trap images of mammals using AI in a European temperate forest" is published open access under a CC BY license (Creative Commons Attribution 4.0 International License).

COMPUTER ORGANIZATION AND ARCHITECTURE

EBOOK: Fundamentals of Digital Logic

Principles and Practices

Digital System Design with SystemVerilog

20th International Conference, CISIM 2021, Elk, Poland, September 24–26, 2021, Proceedings

Digital Design

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/B.Com. students. The book provides a thorough grounding in the fundamentals of digital logic and computer organization and architecture of computers in the second part. Besides discussing data representation, arithmetic operation and 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 hypoth-

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, a 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 book contains papers on selected aspects of dependability analysis in computer systems and networks, which were chosen for discussion during the 16th DepCoS-RELCOMEX conference held in Wrocław, Poland, from June 28 to July 1, 2000. This book is a source material for scientists, researchers, practitioners and students who are dealing with design, analysis and engineering of computer systems and networks and must ensure their dependable operation. Being probably the most complete (and also—the most dynamically evolving ones), organization of contemporary computer systems cannot be interpreted only as structures built on the basis of (unreliable) technical resources. Their evaluation must take into account a special set of constraints (and behaviours), networks (together with mobile properties, cloud organization, Internet of Everything, etc.) and a large number of users dispersed geographically and constantly producing an unconceivable number of applications. Ever-growing complexity continuously developed for dependability analyses apply the newest techniques of artificial and computational intelligence. Selection of papers in these proceedings illustrates diversity of multi-disciplinary topics which are considered in proceedings. New, updated and expanded topics in the fourth edition include: EBCDIC, Grey code, practical applications of flip-flops, linear and shaft encoders, memory elements and FPGAs. The section on fault-finding has been expanded. A new chapter on digital components and analog voltages. *A highly accessible, comprehensive and fully up to date digital systems text *A well known and respected text now revamped for current courses *Part of the Newnes suite of texts for HND/1st year

Hardware -- Logic Design.

AN INTRODUCTION TO DIGITAL COMPUTER DESIGN

The Hardware/software Interface

Logic and Computer Design Fundamentals

DSP Applications Using C and the TMS320C6x DSK

Theory and Design (with VHDL and SystemVerilog)

Computer Information Systems and Industrial Management

For courses on digital design in an Electrical Engineering, Computer Engineering, or Computer Science department. Digital Design, fifth edition is a modern update of the classic authoritative text on digital design. This book teaches the basic concepts of digital design in a clear and concise manner. The book presents the basic tools for the design of digital circuits and provides procedures suitable for a variety of digital applications.

Uniquely, this advanced digital logic design textbook has as its design target an actual commercial 8-bit processor, the Intel 8080, serving as an extended example of the effective use of VHDL (a hardware description language), EPGLAs (field programmable gate arrays), and the State Machine method to achieve this end. Part I provides a refresher course in basic digital logic design. Part II examines the use of programmable logic devices, hardware description languages, and the ASM method for implementation of general algorithms.

microprocessor's design and implementation specifications. Appends an overview of the Intel 8080 instruction set, and suggested lab projects for junior and senior-level students in electrical and computer engineering. Covers the principles of designing digital electronic circuits and presents realistic applications using integrated circuit devices. The book also discusses ways to utilize programmable logic device software and hardware.

The new RISC-V Edition of Computer Organization and Design features the RISC-V open source instruction set architecture, the first open source architecture designed to be used in modern computing environments such as cloud computing, mobile devices, and the post-PC era now upon us. Computer Organization and Design moves forward to explore this generational change with examples, exercises, and material highlighting the emergence of mobile computing and the Cloud. Updated content featuring tablet computers and smartphones.

(cloud computing) and ARM (mobile computing devices) architectures is included. An online companion Web site provides advanced content for further study, appendices, glossary, references, and recommended reading. Features RISC-V, the first such architecture for embedded computing environments, such as cloud computing, mobile devices, and other embedded systems Includes relevant examples, exercises, and material highlighting the emergence of mobile computing and the cloud

Finite State Machines in Hardware

Digital Logic Design

Digital Principles and Design

Digital Principles and System Design

Architecture, Interfacing, Programming, and Design

FPGA Prototyping by VHDL Examples

The performance of software systems is dramatically affected by how well software designers understand the basic hardware technologies at work in a system. Similarly, hardware designers must understand the far-reaching effects their design decisions have on software applications. For readers in either category, this classic introduction to the field provides a look deep into the computer. It demonstrates the relationships between the software and hardware and focuses on the foundational concepts that are the basis for current computer design.

This book is on digital system design for programmable devices, such as FPGAs, CPLDs, and PALs. A designer wanting to design with programmable devices must understand digital system design at the RT (Register Transfer) level, circuitry and programming of programmable devices, digital design methodologies, use of hardware description languages in design, design tools and environments; and finally, such a designer must be familiar with one or several digital design tools and environments.

Books on these topics are many, and they cover individual design topics with very general approaches. The number of books a designer needs to gather the necessary information for a practical knowledge of design with field programmable devices can easily reach five or six, much of which is on theoretical concepts that are not directly applicable to RT level design with programmable devices. The focus of this book is on a practical knowledge of digital system design for programmable devices. The book covers all necessary topics under one cover, and covers each topic just enough that is actually used by an advanced digital designer. In the three parts of the book, we cover digital system design concepts, use of tools, and systematic design of digital systems. In the first chapter, design methodologies, use of simulation and synthesis tools and programming programmable devices are discussed. Based on this automated design methodology, the next four chapters present the necessary background for digital logic design, the Verilog language, programmable devices, and computer architectures.

The TMS320C6x is Texas Instrument's next generation DSP found in over 60 percent of wireless devices from leading manufacturers such as Ericsson, Nokia, Sony, and Handspring Author has many years experience working with the TI line of TMS DSPs and his books are based on courses and seminars given at TI sponsored meetings All programs listed in the text will be available on the Wiley FTP site In addition to its wireless applications, the TMS DSP is tailored to enable a new generation of Internet media entertainment appliances

Number Systems and CodesPhilosophy of number systems - complement representation of negative numbers - binary arithmetic - binary codes - error detecting and error correcting codes - hamming codes.Boolean Algebra and Switching FunctionsFundamental postulates of Boolean Algebra-Basic theorems and properties - switching functions - Canonical and Standard forms - Algebraic simplification - digital logic gates, properties of XOR gates - universal gates - Multilevel NAND/NOR realizations.Minimization of Switching FunctionsMap method, Prime implicants, Don't care combinations, Minimal SOP and POS forms, Tabular Method, Prime - Implicant chart, simplification rules.Combinational Logic DesignDesign using conventional logic gates, Encoder, Decoder, Multiplexer, De-Multiplexer, Modular design IC chips, MUX Realization of switching functions Parity bit generator, Code-converters, Hazards and hazard free realizations.Programmable Logic Devices, Threshold LogicBasic PLD's-ROM, PROM, PLA, PLD Realization of Switching functions using PLD's. Capabilities and limitations of Threshold gate, Synthesis of Threshold functions, Multigate Synthesis.Sequential Circuits - IClassification of sequential circuits (Synchronous, Asynchronous, Pulse mode, Level mode with examples) Basic flop-flops-Triggering and excitation tables. Steps in synchronous sequential circuit design. Design of modulo-N Ring and shift counters, Serial binary adder, sequence detector.Sequential Circuits - IIFinite state machine-capabilities and limitations, Mealy and Moore models-minimization of completely specified and incompletely specified sequential machines, Partition techniques and Merger chart methods-concept of minimal cover table.Algorithmic State MachinesSalient features of the ASM chart-Simple examples-System design using data path and control subsystems-control implementations-examples of Weighing machine and Binary multiplier.

Digital Systems Design Using VHDL

Digital Logic and Computer Design

Computer-aided Design Techniques