

Digital System And Microprocessor

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Digital Electronics & Microprocessor - Sachan 2019-09-08

In recent years Digital Electronics & Microprocessor is being used extensively in computers, microprocessor and very large scale integration (VLSI) design and digital signal processing research and many other things. This rapid progress in Electronics Engineering has created an increasing demand for trained Digital System Designs personnel. This book is intended for the undergraduate and postgraduate students specializing in Electronics Engineering, Computer Science Engineering and Information Technology. It will also serve as reference material for engineers employed in industry. The fundamental concepts and principles behind Digital Electronics & Microprocessor are explained in a simple, easy-to-understand manner. Each chapter contains a large number of solved example or problem which will help the students in problem solving and designing of Electronics system. This text book is organized into Thirteen chapters. Chapter 1: Number Systems and Boolean Algebra Chapter 2: Combinational Circuits Chapter 3: Sequential Circuits Chapter 4 : Digital Logic Families Chapter 5: Memory & Programmable Logic Chapter 6: Asynchronous Sequential Logic Chapter-7: Digital System Design Using Hardware Chapter 8: Digital System Design Using VHDL Chapter-9: Design of Fast Adder Chapter 10: Design of Fast Multiplier Chapter 11: Basics of Microprocessor Chapter 12: Programing of Microprocessor Chapter 13: Micro Controller & Its Applications The book Digital Electronics & Microprocessor is written to cater to the needs of the undergraduate courses in the discipline of Electronics & Communication Engineering, Computer Science Engineering, Information Technology, Electronics & Instrumentation Engineering, Electrical & Electronics Engineering and postgraduate students specializing in Electronics. It will also serve as reference material for engineers employed in industry. The fundamental concepts and principles behind Digital Electronics & Microprocessor are explained in a simple, easy-to-understand manner. Digital Electronics & Microprocessor also gives the possible experiments of digital logic design using VHDL and Hardware that can be done by students of B.E. /B.Tech./M.Tech. and Ph.D. level. Salient Features *Detailed coverage of Number Systems and Boolean Algebra, Combinational Circuits and Sequential Circuits *Comprehensive chapters on Digital Logic Families, Memory & Programmable Logic and Asynchronous Sequential Logic *Detailed coverage of Digital System Design Using Hardware, Digital System Design Using VHDL, Design of Fast Adder and Design of Fast Multiplier *Comprehensive chapters on Basics of Microprocessor, Programing of Microprocessor, Microcontroller and Its Application. *Each chapter contains a large number of solved example or objective type's problem which will help the students in problem solving and designing of digital system. *Clear perception of the various problems with a large number of neat, well drawn and illustrative diagrams. *Simple Language, easy-to-understand manner. I do hope that the text book in the present form will meet the requirement of the students doing graduation in Electronics & Communication Engineering, Computer Science Engineering, Information Technology, Electronics & Instrumentation Engineering and Electrical & Electronics Engineering. I shall appreciate any suggestions from students and faculty members alike so that we can strive to make the text book more useful in the edition to come.

Digital Logic and Microprocessor Design with Interfacing - ENOCH. HWANG 2017-01

Digital Logic Circuits using VHDL - Atul P. Godse 2021-01-01

The book is written for an undergraduate course on digital electronics. The book provides basic concepts,

procedures and several relevant examples to help the readers to understand the analysis and design of various digital circuits. It also introduces hardware description language, VHDL. The book teaches you the logic gates, logic families, Boolean algebra, simplification of logic functions, analysis and design of combinational circuits using SSI and MSI circuits and analysis and design of the sequential circuits. This book provides in-depth information about multiplexers, de-multiplexers, decoders, encoders, circuits for arithmetic operations, various types of flip-flops, counters and registers. It also covers asynchronous sequential circuits, memories and programmable logic devices.

Complete Digital Design: A Comprehensive Guide to Digital Electronics and Computer System Architecture - Mark Balch 2003-06-22

YOUR ONE-STOP RESOURCE FOR DIGITAL SYSTEM DESIGN! The explosion in communications and embedded computing technologies has brought with it a host of new skill requirements for electrical and electronics engineers, students, and hobbyists. With engineers expected to have such diverse expertise, they need comprehensive, easy-to-understand guidance on the fundamentals of digital design. Enter McGraw-Hill's Complete Digital Design. Written by an experienced electrical engineer and networking hardware designer, this book helps you understand and navigate the interlocking components, architectures, and practices necessary to design and implement digital systems. It includes: * Real world implementation of microprocessor-based digital systems * Broad presentation of supporting analog circuit principles * Building complete systems with basic design elements and the latest technologies Complete Digital Design will teach you how to develop a customized set of requirements for any design problem—and then research and evaluate available components and technologies to solve it. Perfect for the professional, the student, and the hobbyist alike, this is one volume you need handy at all times! What you'll find inside: * Digital logic and timing analysis * Integrated circuits * Microprocessor and computer architecture * Memory technologies * Networking and serial communications * Finite state machine design * Programmable logic: CPLD and FPGA * Analog circuit basics * Diodes, transistors, and operational amplifiers * Analog-to-digital conversion * Voltage regulation * Signal integrity and PCB design * And more!

Digital Systems Design Using Verilog - Charles Roth 2015-01-01

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.

Microprocessors in Signal Processing, Measurement and Control - S.G. Tzafestas 2012-12-06

In recent years the LSI technology has witnessed a revolutionary development, and allowed substantial reductions in the size and cost of digital logic circuitry. Computer system building blocks have progressed from the level of discrete components to the level of complex ICs involving many logic circuits on a single

"chip". The invention and wide applications of microprocessors have changed the philosophy of the signal processing, measurement and control engineering fields. The microprocessor-based digital signal processing systems and controllers have replaced the conventional ones based on standard analog and digital computing equipment. The first microprocessors and "on-chip" computers have appeared towards the end of 71 beginning 72. Their evolution since then and the number of applications, in which they have been utilized, have both been extremely spectacular. New system concepts and hardware/software tools are steadily under development to support the microprocessor in its multiple and complex tasks. The goal of this book is to provide a cohesive and well-balanced set of contributions dealing with important aspects and applications of microprocessors to signal processing, measurement and system control. The majority of contributions include sufficient review material and present rather complete treatments of the respective topics.

Digital Logic and Microprocessor Design with VHDL - Enoch O. Hwang 2006

This book will teach students how to design digital logic circuits, specifically combinational and sequential circuits. Students will learn how to put these two types of circuits together to form dedicated and general-purpose microprocessors. This book is unique in that it combines the use of logic principles and the building of individual components to create data paths and control units, and finally the building of real dedicated custom microprocessors and general-purpose microprocessors. After understanding the material in the book, students will be able to design simple microprocessors and implement them in real hardware.

Computer Architecture - Arroz Guiherme 2018-08-23

An introductory text to computer architecture, this comprehensive volume covers the concepts from logic gates to advanced computer architecture. It comes with a full spectrum of exercises and web-downloadable support materials, including assembler and simulator, which can be used in the context of different courses. The authors also make available a hardware description, which can be used in labs and assignments, for hands-on experimentation with an actual, simple processor. This unique compendium is a useful reference for undergraduates, graduates and professionals majoring in computer engineering, circuits and systems, software engineering, biomedical engineering and aerospace engineering.

Fundamental of Digital Electronics And Microprocessors - A.K.Chhabra 2005-01-01

In the recent years there has been rapid advances in the field of Digital Electronics and Microprocessor. This book is intended to help students to keep pace with these latest developments. The Present book is revised version of earlier book 'Introduction to Digital Computers' by the same author. Now this book is written in a lucid and simple language, which gives clear explanation of basics of Digital Electronics, Computers and microprocessors.

Microprocessor System Design - Michael J. Spinks 2013-10-22

Microprocessor System Design: A Practical Introduction describes the concepts and techniques incorporated into the design of electronic circuits, particularly microprocessor boards and their peripherals. The book reviews the basic building blocks of the electronic systems composed of digital (logic levels, gate output circuitry) and analog components (resistors, capacitors, diodes, transistors). The text also describes operational amplifiers (op-amp) that use a negative feedback technique to improve the parameters of the op-amp. The design engineer can use programmable array logic (PAL) to replace standard discrete TTL and CMOS gates in circuits. The PAL is programmable and configurable to match the requirement of a given circuit. Using PAL can save space, a very important factor in the miniaturization process. Examples of PAL applications include the BCD counter, the LS 138 emulator, and a priority interrupt encoder. The book also explains the operation and function of a microprocessor, the bus-based systems, analog-to-digital conversion, and vice-versa. The text is suitable for programmers, computer engineers, computer technicians, and computer instructors dealing with many aspects of computers such as programming, networking, engineering or design.

Introduction to Computer Engineering - Richard E. Haskell 1993

Briefly traces the history of computers and microprocessors, and discusses basic logic gates, programmable logic devices, Boolean algebra, combinational logic, sequential logic, computer memory, and 8086 instruction sets

Digital Logic and Microprocessor Design with Interfacing - Enoch O. Hwang 2016-12-05

DIGITAL LOGIC AND MICROPROCESSOR DESIGN WITH INTERFACING, 2E provides a solid foundation for designing digital logic circuits. This unique approach combines the use of logic principles and the building of individual components to create data paths and control units so readers can build dedicated custom microprocessors and general-purpose microprocessors. Readers design simple microprocessors from the ground up, implement them in real hardware, and interface them to actual devices. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Digital Systems - Ronald J. Tocci 1981

Digital Electronics - Anil K. Maini 2007-09-27

The fundamentals and implementation of digital electronics are essential to understanding the design and working of consumer/industrial electronics, communications, embedded systems, computers, security and military equipment. Devices used in applications such as these are constantly decreasing in size and employing more complex technology. It is therefore essential for engineers and students to understand the fundamentals, implementation and application principles of digital electronics, devices and integrated circuits. This is so that they can use the most appropriate and effective technique to suit their technical need. This book provides practical and comprehensive coverage of digital electronics, bringing together information on fundamental theory, operational aspects and potential applications. With worked problems, examples, and review questions for each chapter, Digital Electronics includes: information on number systems, binary codes, digital arithmetic, logic gates and families, and Boolean algebra; an in-depth look at multiplexers, de-multiplexers, devices for arithmetic operations, flip-flops and related devices, counters and registers, and data conversion circuits; up-to-date coverage of recent application fields, such as programmable logic devices, microprocessors, microcontrollers, digital troubleshooting and digital instrumentation. A comprehensive, must-read book on digital electronics for senior undergraduate and graduate students of electrical, electronics and computer engineering, and a valuable reference book for professionals and researchers.

Digital Circuits and Microprocessors - Herbert Taub 1982

A General Guide on Logic Design. The Book Expands upon the Applications of Logic Design in Relation to Microprocessors

Digital Systems - Sanjay K. Bose 1986-04-04

A self-contained, balanced introduction to digital system design using SSI and MSI. Following a discussion of basic concepts, Bose focuses on microprocessors and their peripherals, discussing both general principles of microprocessor-based system design and specific details of various commonly used devices.

Analog Interfacing to Embedded Microprocessor Systems - Stuart Ball 2004

System Design; Digital to Analog Converters; Sensors; Time-Based Measurements; Output Control Methods; Solenoids, Relays, and Other Analog Outputs; Motors; EMI; High Precision Applications; Standard Interfaces.

Practical Design of Digital Circuits - Ian Kampel 2015-08-11

Practical Design of Digital Circuits: Basic Logic to Microprocessors demonstrates the practical aspects of digital circuit design. The intention is to give the reader sufficient confidence to embark upon his own design projects utilizing digital integrated circuits as soon as possible. The book is organized into three parts. Part 1 teaches the basic principles of practical design, and introduces the designer to his "tools" — or rather, the range of devices that can be called upon. Part 2 shows the designer how to put these together into viable designs. It includes two detailed descriptions of actual design exercises. The first of these is a fairly simple exercise in CMOS design; the second is a much more complex design for an electronic game, using TTL devices. Part 3 focuses on microprocessors. It illustrates how a particular design problem changes emphasis when a microprocessor is introduced. This book is aimed at a fairly broad market: it is intended to aid the linear design engineer to cross the barrier into digital electronics; it should provide interesting supporting reading for students studying digital electronics from the more academic viewpoint; and it should enable the enthusiast to design much more ambitious and sophisticated projects than he could otherwise attempt if restricted to linear devices.

Digital Interface Design and Application - Jonathan A. Dell 2015-06-26

Many computer applications require microprocessors to reliably interconnect and communicate with other peripherals in order to perform their intended functions. Interface design, which includes the development of the methods and processes by which two or more components communicate, is a crucial step in the deployment of microprocessors in an embedded computing environment. ARM-based microprocessors are a leading technology in this field, offering a wide range of performance for different applications. This book provides a comprehensive treatment of interface design from basic logical and theoretical principles to practical implementation on an ARM-based microprocessor, addressing both hardware and software considerations. The microprocessor's high level of complexity is carefully analysed in the text to provide clear guidance for the reader in the design of new applications, resulting in an invaluable reference resource for graduates and engineers involved in the design of electronic products and systems. Key Features: Brings together aspects of digital hardware, interface design and software integration in a single text to make clear the link between low and high level languages for interface control Categorises interface techniques into easily distinguished chapters, progressively involving greater complexity, enabling the reader to quickly find relevant material for a particular application Provides many practical C-coded examples showing both the preparation and use of complex programmable subsystems implemented in a typical commercial product Presents in each chapter an introduction to the essential theoretical aspects and the development of simple interface designs using basic logical building blocks

Digital System Design and Microprocessors - John Patrick Hayes 1984

Hardware -- Integrated Circuits.

Introduction to Digital Systems - John Crisp 2000-02-24

Introduction to Digital Systems introduces digital electronics from first principles and goes on to cover all the main areas of knowledge and expertise needed by students up to first year degree level, as well as technicians and other professionals. Unlike most texts, Introduction to Digital Systems also covers the practicalities of designing and building circuits, including fault-finding and use of test equipment. Students will find the text ideally matched for courses covering electronics, systems and control, and electronic servicing. Whether you are looking for a complete self-study course in digital electronics, a concise reference text to dip into or a course text that is readable and straightforward, John Crisp has provided the solution. A concise, readable introductory text ideal for self-study by professionals or students on courses with limited contact time Covers the practical side from a technician/professional viewpoint Content carefully matched to a range of BTEC and C&G syllabuses

Digital System Clocking - Vojin G. Oklobdzija 2005-03-11

Provides the only up-to-date source on the most recent advances in this often complex and fascinating topic. The only book to be entirely devoted to clocking Clocking has become one of the most important topics in the field of digital system design A "must have" book for advanced circuit engineers

Programming Embedded Systems - Michael Barr 2006-10-11

Authored by two of the leading authorities in the field, this guide offers readers the knowledge and skills needed to achieve proficiency with embedded software.

Digital and Microprocessor Fundamentals - William Kleitz 2003

Focusing on the must know essentials, this text is designed for one-semester consolidated courses in digital and microprocessor fundamentals, or one-semester courses in digital fundamentals followed by one-semester courses in microprocessor fundamentals.

Digital Systems - Jean-Pierre Deschamps 2016-10-12

This textbook for a one-semester course in Digital Systems Design describes the basic methods used to develop "traditional" Digital Systems, based on the use of logic gates and flip flops, as well as more advanced techniques that enable the design of very large circuits, based on Hardware Description Languages and Synthesis tools. It was originally designed to accompany a MOOC (Massive Open Online Course) created at the Autonomous University of Barcelona (UAB), currently available on the Coursera platform. Readers will learn what a digital system is and how it can be developed, preparing them for steps toward other technical disciplines, such as Computer Architecture, Robotics, Bionics, Avionics and others. In particular, students will learn to design digital systems of medium complexity, describe digital systems

using high level hardware description languages, and understand the operation of computers at their most basic level. All concepts introduced are reinforced by plentiful illustrations, examples, exercises, and applications. For example, as an applied example of the design techniques presented, the authors demonstrate the synthesis of a simple processor, leaving the student in a position to enter the world of Computer Architecture and Embedded Systems.

Digital Systems and Applications - Vojin G. Oklobdzija 2017-12-19

New design architectures in computer systems have surpassed industry expectations. Limits, which were once thought of as fundamental, have now been broken. Digital Systems and Applications details these innovations in systems design as well as cutting-edge applications that are emerging to take advantage of the fields increasingly sophisticated capabilities. This book features new chapters on parallelizing iterative heuristics, stream and wireless processors, and lightweight embedded systems. This fundamental text— Provides a clear focus on computer systems, architecture, and applications Takes a top-level view of system organization before moving on to architectural and organizational concepts such as superscalar and vector processor, VLIW architecture, as well as new trends in multithreading and multiprocessing. includes an entire section dedicated to embedded systems and their applications Discusses topics such as digital signal processing applications, circuit implementation aspects, parallel I/O algorithms, and operating systems Concludes with a look at new and future directions in computing Features articles that describe diverse aspects of computer usage and potentials for use Details implementation and performance-enhancing techniques such as branch prediction, register renaming, and virtual memory Includes a section on new directions in computing and their penetration into many new fields and aspects of our daily lives Interfacing Techniques in Digital Design with Emphasis on Microprocessors - R. L. Krutz 1988-03-03 Hardware -- Input/Output and Data Communications.

Digital System Design - Use of Microcontroller - Shenouda Dawoud 2022-09-01

Embedded systems are today, widely deployed in just about every piece of machinery from toasters to spacecraft. Embedded system designers face many challenges. They are asked to produce increasingly complex systems using the latest technologies, but these technologies are changing faster than ever. They are asked to produce better quality designs with a shorter time-to-market. They are asked to implement increasingly complex functionality but more importantly to satisfy numerous other constraints. To achieve the current goals of design, the designer must be aware with such design constraints and more importantly, the factors that have a direct effect on them. One of the challenges facing embedded system designers is the selection of the optimum processor for the application in hand; single-purpose, general-purpose or application specific. Microcontrollers are one member of the family of the application specific processors. The book concentrates on the use of microcontroller as the embedded system's processor, and how to use it in many embedded system applications. The book covers both the hardware and software aspects needed to design using microcontroller. The book is ideal for undergraduate students and also the engineers that are working in the field of digital system design. Contents • Preface; • Process design metrics; • A systems approach to digital system design; • Introduction to microcontrollers and microprocessors; • Instructions and Instruction sets; • Machine language and assembly language; • System memory; Timers, counters and watchdog timer; • Interfacing to local devices / peripherals; • Analogue data and the analogue I/O subsystem; • Multiprocessor communications; • Serial Communications and Network-based interfaces.

Digital Systems Design and Prototyping - Zoran Salcic 2007-05-08

Digital Systems Design and Prototyping: Using Field Programmable Logic and Hardware Description Languages, Second Edition covers the subject of digital systems design using two important technologies: Field Programmable Logic Devices (FPLDs) and Hardware Description Languages (HDLs). These two technologies are combined to aid in the design, prototyping, and implementation of a whole range of digital systems from very simple ones replacing traditional glue logic to very complex ones customized as the applications require. Three HDLs are presented: VHDL and Verilog, the widely used standard languages, and the proprietary Altera HDL (AHDL). The chapters on these languages serve as tutorials and comparisons are made that show the strengths and weaknesses of each language. A large number of examples are used in the description of each language providing insight for the design and implementation

of FPLDs. With the addition of the Altera UP-1 prototyping board, all examples can be tested and verified in a real FPLD. *Digital Systems Design and Prototyping: Using Field Programmable Logic and Hardware Description Languages*, Second Edition is designed as an advanced level textbook as well as a reference for the professional engineer.

Digital Logic and Microprocessor Design with Interfacing - Enoch O. Hwang 2016-12-05

DIGITAL LOGIC AND MICROPROCESSOR DESIGN WITH INTERFACING, 2E provides a solid foundation for designing digital logic circuits. This unique approach combines the use of logic principles and the building of individual components to create data paths and control units so readers can build dedicated custom microprocessors and general-purpose microprocessors. Readers design simple microprocessors from the ground up, implement them in real hardware, and interface them to actual devices. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Microprocessor-Based Parallel Architecture for Reliable Digital Signal Processing Systems - Alan D. George 2018-01-18

This book presents a distributed multiprocessor architecture that is faster, more versatile, and more reliable than traditional single-processor architectures. It also describes a simulation technique that provides a highly accurate means for building a prototype system in software. The system prototype is studied and analyzed using such DSP applications as digital filtering and fast Fourier transforms. The code is included as well, which allows others to build software prototypes for their own research systems. The design presented in *Microprocessor-Based Parallel Architecture for Reliable Digital Signal Processing Systems* introduces the concept of a dual-mode architecture that allows users a dynamic choice between either a conventional or fault-tolerant system as application requirements dictate. This volume is a "must have" for all professionals in digital signal processing, parallel and distributed computer architecture, and fault-tolerant computing.

Digital Design and Computer Organisation - D. Nasib S. Gill 2008-12

Digital Design and Computer Organization introduces digital design as it applies to the creation of computer systems. It summarizes the tools of logic design and their mathematical basis, along with in depth coverage of combinational and sequential circuits. The book includes an accompanying CD that includes the majority of circuits highlighted in the text, delivering you hands-on experience in the simulation and observation of circuit functionality. These circuits were designed and tested with a user-friendly Electronics Workbench package (Multisim Textbook Edition) that enables your progression from truth tables onward to more complex designs. This volume differs from traditional digital design texts by providing a complete design of an AC-based CPU, allowing you to apply digital design directly to computer architecture. The book makes minimal reference to electrical properties and is vendor independent, allowing emphasis on the general design principles.

Digital System Design - Dawoud Shenouda Dawoud 2010-04-10

Today, embedded systems are widely deployed in just about every piece of machinery from toasters to spacecrafts, and embedded system designers face many challenges. They are asked to produce increasingly complex systems using the latest technologies, but these technologies are changing faster than ever. They are asked to produce better quality designs with a shorter time-to-market. They are asked to implement increasingly complex functionality but, more importantly, to satisfy numerous other constraints. To achieve these current goals, the designer must be aware of such design constraints and, more importantly, the factors that have a direct effect on them. One of the challenges facing embedded system designers is the selection of the optimum processor for the application in hand: single-purpose, general-purpose, or application specific. Microcontrollers are one member of the family of the application specific processors. *Digital System Design* concentrates on the use of a microcontroller as the embedded system's processor and how to use it in many embedded system applications. The book covers both the hardware and software aspects needed to design using microcontrollers and is ideal for undergraduate students and engineers that are working in the field of digital system design.

Digital Electronics with Microprocessor Applications - Alan C. Dixon 1987

A textbook for courses in digital electronics and microprocessors offered in departments of electrical

engineering technology or computer science. The book covers the basics of digital logic design and the design of microprocessor-based systems. Also covered are computer fundamentals and microprocessor hardware and software (8085), with many programming examples. The text describes most important available microprocessors, with laboratory exercises, instructional objectives and self-evaluation questions.

Digital Design and Computer Architecture - Sarah Harris 2015-04-09

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.

Microprocessor 2 - Philippe Darche 2020-12-15

Calculation is the main function of a computer. The central unit is responsible for executing the programs. The microprocessor is its integrated form. This component, since the announcement of its marketing in 1971, has not stopped breaking records in terms of computing power, price reduction and integration of functions (calculation of basic functions, storage with integrated controllers). It is present today in most electronic devices. Knowing its internal mechanisms and programming is essential for the electronics engineer and computer scientist to understand and master the operation of a computer and advanced concepts of programming. This first volume focuses more particularly on the first generations of microprocessors, that is to say those that handle integers in 4 and 8-bit formats. The first chapter presents the calculation function and reminds the memory function. The following is devoted to notions of calculation model and architecture. The concept of bus is then presented. Chapters 4 and 5 can then address the internal organization and operation of the microprocessor first in hardware and then software. The mechanism of the function call, conventional and interrupted, is more particularly detailed in a separate chapter. The book ends with a presentation of architectures of the first microcomputers for a historical perspective. The knowledge is presented in the most exhaustive way possible with examples drawn from current and old technologies that illustrate and make accessible the theoretical concepts. Each chapter ends if necessary with corrected exercises and a bibliography. The list of acronyms used and an index are at the end of the book.

Microprocessors and Digital Systems - Douglas V. Hall 1983

Discusses the Shift from the 8080 Chip to the 8085 8-Bit Microprocessor & Introduces the 16-Bit Microprocessor

Fundamentals of Digital Logic and Microcomputer Design - M. Rafiquzzaman 2005-07-08

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.

Fundamentals of Digital Logic and Microcontrollers - M. Rafiquzzaman 2014-11-06

Updated to reflect the latest advances in the field, the Sixth Edition of Fundamentals of Digital Logic and Microcontrollers further enhances its reputation as the most accessible introduction to the basic principles and tools required in the design of digital systems. Features updates and revision to more than half of the material from the previous edition Offers an all-encompassing focus on the areas of computer design, digital logic, and digital systems, unlike other texts in the marketplace Written with clear and concise explanations of fundamental topics such as number system and Boolean algebra, and simplified examples and tutorials utilizing the PIC18F4321 microcontroller Covers an enhanced version of both combinational and sequential logic design, basics of computer organization, and microcontrollers

Fundamental of Digital Electronics And Microprocessors - A.K.Chhabra 2005

In the recent years there has been rapid advances in the field of Digital Electronics and Microprocessor. This book is intended to help students to keep pace with these latest developments. The Present book is revised version of earlier book 'Introduction to Digital Computers' by the same author. Now this book is written in a lucid and simple language, which gives clear explanation of basics of Digital Electronics, Computers and microprocessors.