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Laboratory Explorations to Accompany Microelectronic Circuits
Pearson New International Edition
VHDL for Logic Synthesis
Design Recipes for FPGAs: Using Verilog and VHDL
Circuit Design and Simulation with VHDL
Using Verilog, State Machines, and Synthesis for FPGAs
FPGA Prototyping by VHDL Examples
SOPC Edition
Digital Signal Processing with Field Programmable Gate Arrays
Digital Design
Digital Design and Computer Architecture, RISC-V Edition
Digital Design Using VHDL
The Designer's Guide to VHDL
Circuit Design with VHDL, third edition
Digital Systems Design Using VHDL
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GUNNER RIDDLE

Laboratory Explorations to Accompany Microelectronic Circuits

Pearson

Get started with FPGA programming using SystemVerilog, and develop real-world skills by building projects, including a calculator and a keyboard

Key Features Explore different FPGA usage methods and the FPGA tool flow

Learn how to design, test, and implement hardware circuits using SystemVerilog

Build real-world FPGA projects such as a calculator and a keyboard using FPGA resources

Book Description Field Programmable Gate Arrays (FPGAs) have now become a core part of most modern electronic and computer systems. However, to implement your ideas in the real world, you need to get your head around the FPGA architecture, its toolset, and critical design considerations. FPGA Programming for Beginners will help you bring your ideas to life by guiding you through the entire process of programming FPGAs and designing hardware circuits using SystemVerilog. The book will introduce you to the FPGA and Xilinx architectures and show you how to work on your first project, which includes toggling an LED. You'll then cover SystemVerilog RTL designs and their implementations. Next, you'll get to grips with using the combinational Boolean logic design and work on several projects, such as creating a calculator and updating it using FPGA resources. Later, the book will take you through the advanced concepts of AXI and show you how to create a keyboard using PS/2. Finally, you'll be able to

consolidate all the projects in the book to create a unified output using a Video Graphics Array (VGA) controller that you'll design. By the end of this SystemVerilog FPGA book, you'll have learned how to work with FPGA systems and be able to design hardware circuits and boards using SystemVerilog programming. What you will learn

- Understand the FPGA architecture and its implementation
- Get to grips with writing SystemVerilog RTL
- Make FPGA projects using SystemVerilog programming
- Work with computer math basics, parallelism, and pipelining
- Explore the advanced topics of AXI and keyboard interfacing with PS/2
- Discover how you can implement a VGA interface in your projects

Who this book is for This FPGA design book is for embedded system developers, engineers, and programmers who want to learn FPGA and SystemVerilog programming from scratch. FPGA designers looking to gain hands-on experience in working on real-world projects will also find this book useful.

Pearson New International Edition

Morgan Kaufmann

Delivering a solid introduction to assembly language and embedded systems, ARM Assembly Language: Fundamentals and Techniques, Second Edition continues to support the popular ARM7TDMI, but also addresses the latest architectures from ARM, including CortexTM-A, Cortex-R, and Cortex-M processors—all of which have slightly different instruction sets, programmer's models, and exception handling. Featuring three brand-new chapters, a new appendix, and expanded coverage of the ARM7TM, this edition: Discusses IEEE 754 floating-point arithmetic and explains how to program with the IEEE standard notation Contains step-by-step

directions for the use of Keil™ MDK-ARM and Texas Instruments (TI) Code Composer Studio™ Provides a resource to be used alongside a variety of hardware evaluation modules, such as TI's Tiva Launchpad, STMicroelectronics' iNemo and Discovery, and NXP Semiconductors' Xplorer boards Written by experienced ARM processor designers, *ARM Assembly Language: Fundamentals and Techniques, Second Edition* covers the topics essential to writing meaningful assembly programs, making it an ideal textbook and professional reference.

VHDL for Logic Synthesis Packt Publishing Ltd

This textbook is intended to serve as a practical guide for the design of complex digital logic circuits such as digital control circuits, network interface circuits, pipelined arithmetic units, and RISC microprocessors. It is an advanced digital logic design textbook that emphasizes the use of synthesizable Verilog code and provides numerous fully worked-out practical design examples including a Universal Serial Bus interface, a pipelined multiply-accumulate unit, and a pipelined microprocessor for the ARM THUMB architecture.

Design Recipes for FPGAs: Using Verilog and VHDL McGraw Hill Professional

Top-down approach to practical, tool-independent, digital circuit design, reflecting how circuits are designed.

Circuit Design and Simulation with VHDL John Wiley & Sons

Design Recipes for FPGAs: Using Verilog and VHDL provides a rich toolbox of design techniques and templates to solve practical, every-day problems using FPGAs. Using a modular structure, the book gives 'easy-to-find' design

techniques and templates at all levels, together with functional code. Written in an informal and 'easy-to-grasp' style, it goes beyond the principles of FPGA and hardware description languages to actually demonstrate how specific designs can be synthesized, simulated and downloaded onto an FPGA. This book's 'easy-to-find' structure begins with a design application to demonstrate the key building blocks of FPGA design and how to connect them, enabling the experienced FPGA designer to quickly select the right design for their application, while providing the less experienced a 'road map' to solving their specific design problem. The book also provides advanced techniques to create 'real world' designs that fit the device required and which are fast and reliable to implement. This text will appeal to FPGA designers of all levels of experience. It is also an ideal resource for embedded system development engineers, hardware and software engineers, and undergraduates and postgraduates studying an embedded system which focuses on FPGA design. A rich toolbox of practical FPGA design techniques at an engineer's finger tips Easy-to-find structure that allows the engineer to quickly locate the information to solve their FPGA design problem, and obtain the level of detail and understanding needed

Using Verilog, State Machines, and Synthesis for FPGAs Cambridge University Press

Master FPGA digital system design and implementation with Verilog and VHDL This practical guide explores the development and deployment of FPGA-based digital systems using the two most popular hardware description languages, Verilog and VHDL. Written by a pair of digital circuit design experts,

the book offers a solid grounding in FPGA principles, practices, and applications and provides an overview of more complex topics. Important concepts are demonstrated through real-world examples, ready-to-run code, and inexpensive start-to-finish projects for both the Basys and Arty boards. Digital System Design with FPGA:

Implementation Using Verilog and VHDL covers:

- Field programmable gate array fundamentals
- Basys and Arty FPGA boards
- The Vivado design suite
- Verilog and VHDL
- Data types and operators
- Combinational circuits and circuit blocks
- Data storage elements and sequential circuits
- Soft-core microcontroller and digital interfacing
- Advanced FPGA applications
- The future of FPGA

FPGA Prototyping by VHDL

Examples Morgan Kaufmann

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. *SOPC Edition* John Wiley & Sons

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Pearson's MyLab & Mastering products exist for each title, including customized versions for individual schools, and registrations are not transferable. In addition, you may need a CourseID, provided by your instructor, to register for and use Pearson's MyLab & Mastering products. Packages Access codes for Pearson's MyLab & Mastering products may not be included when purchasing or renting from companies other than Pearson; check with the seller before completing your purchase. Used or rental books If you rent or purchase a used book with an access code, the access code may have been redeemed previously and you may have to purchase a new access code. Access codes Access codes that are purchased from sellers other than Pearson carry a higher risk of being either the wrong ISBN or a previously redeemed code. Check with the seller prior to purchase.

- With Astronomy Today, Seventh Edition, trusted authors Eric Chaisson and Steve McMillan communicate their excitement about astronomy and awaken you to the universe around you. The text emphasizes critical thinking and visualization, and it focuses on the process of scientific discovery, making "how we know what we know" an integral part of the text. The revised edition has been thoroughly updated with the latest astronomical discoveries and theories, and it has been streamlined to keep you focused on the essentials and to develop an understanding of the "big picture." Astronomy Today is available with an interactive Pearson eText and MasteringAstronomy®--the most powerful astronomy tutorial and assessment system ever built. Alternate Versions Astronomy Today, Volume 1: The Solar System, Seventh Edition--

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Digital Signal Processing with Field Programmable Gate Arrays MIT Press Provides students with a system-level perspective and the tools they need to understand, analyze and design complete digital systems using Verilog. It goes beyond the design of simple combinational and sequential modules to show how such modules are used to build complete systems, reflecting digital design in the real world.

Digital Design Cengage Learning

* Teaches VHDL by example * Includes tools for simulation and synthesis * CD-ROM containing Code/Design examples and a working demo of ModelSIM

Digital Design and Computer Architecture, RISC-V Edition MIT Press

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 Using VHDL McGraw Hill Professional

The newest addition to the Harris and Harris family of Digital Design and Computer Architecture books, this RISC-V Edition covers the fundamentals of digital logic design and reinforces logic concepts through the design of a RISC-V 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 a processor. By the end of this book, readers will be able to

build their own RISC-V 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 a RISC-V 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 SparkFun's RED-V RedBoard 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 a RISC-V microprocessor Gives students a full understanding of the RISC-V instruction set architecture, enabling them to build a RISC-V processor and program the RISC-V processor in hardware simulation, software simulation, and in hardware Includes both SystemVerilog and VHDL designs of fundamental building blocks as well as of single-cycle, multicycle, and pipelined versions of the RISC-V architecture Features a companion website with a bonus chapter on I/O systems with practical examples that show how to use SparkFun's RED-V RedBoard 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 See the companion EdX MOOCs ENGR85A and ENGR85B with video lectures and interactive problems
The Designer's Guide to VHDL MIT Press

Making VHDL a simple and easy-to-use hardware description language Many engineers encountering VHDL (very high speed integrated circuits hardware description language) for the first time can feel overwhelmed by it. This book bridges the gap between the VHDL language and the hardware that results from logic synthesis with clear organisation, progressing from the basics of combinational logic, types, and operators; through special structures such as tristate buses, register banks and memories, to advanced themes such as developing your own packages, writing test benches and using the full range of synthesis types. This third edition has been substantially rewritten to include the new VHDL-2008 features that enable synthesis of fixed-point and floating-point hardware. Extensively updated throughout to reflect modern logic synthesis usage, it also contains a complete case study to demonstrate the updated features. Features to this edition include: a common VHDL subset which will work across a range of different synthesis systems, targeting a very wide range of technologies a design style that results in long design lifetimes, maximum design reuse and easy technology retargeting a new chapter on a large scale design example based on a digital filter from design objective and design process, to testing strategy and test benches a chapter on writing test benches, with everything needed to implement a test-based design strategy

extensive coverage of data path design, including integer, fixed-point and floating-point arithmetic, logic circuits, shifters, tristate buses, RAMs, ROMs, state machines, and decoders. Focused specifically on logic synthesis, this book is for professional hardware engineers using VHDL for logic synthesis, and digital systems designers new to VHDL but familiar with digital systems. It offers all the knowledge and tools needed to use VHDL for logic synthesis. Organised in themed chapters and with a comprehensive index, this complete reference will also benefit postgraduate students following courses on microelectronics or VLSI/ semiconductors and digital design.

Circuit Design with VHDL, third edition

Springer Science & Business Media

An integrated presentation of electronic circuit design and VHDL, with an emphasis on system examples and laboratory exercises.

Digital Systems Design Using VHDL

Springer

The methodology described in this book is the result of many years of research experience in the field of synthesizable VHDL design targeting FPGA based platforms. VHDL was first conceived as a documentation language for ASIC designs. Afterwards, the language was used for the behavioral simulation of ASICs, and also as a design input for synthesis tools. VHDL is a rich language, but just a small subset of it can be used to write synthesizable code, from which a physical circuit can be obtained.

Usually VHDL books describe both, synthesis and simulation aspects of the language, but in this book the reader is conducted just through the features acceptable by synthesis tools. The book introduces the subjects in a gradual and concise way, providing just enough

information for the reader to develop their synthesizable digital systems in VHDL. The examples in the book were planned targeting an FPGA platform widely used around the world.

Coding for Efficiency, Portability, and Scalability CRC Press

Circuit Design and Simulation with VHDL MIT Press

VHDL: Programming by Example

Springer Science & Business Media

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.

Synthesizable VHDL Design for FPGAs

MIT Press

A completely updated and expanded comprehensive treatment of VHDL and its applications to the design and simulation of real, industry-standard circuits. This comprehensive treatment of VHDL and its applications to the design and simulation of real, industry-standard circuits has been completely updated and expanded for the third edition. New features include all

VHDL-2008 constructs, an extensive review of digital circuits, RTL analysis, and an unequalled collection of VHDL examples and exercises. The book focuses on the use of VHDL rather than solely on the language, with an emphasis on design examples and laboratory exercises. The third edition begins with a detailed review of digital circuits (combinatorial, sequential, state machines, and FPGAs), thus providing a self-contained single reference for the teaching of digital circuit design with VHDL. In its coverage of VHDL-2008, it makes a clear distinction between VHDL for synthesis and VHDL for simulation. The text offers complete VHDL codes in examples as well as simulation results and comments. The significantly expanded examples and exercises include many not previously published, with multiple physical demonstrations meant to inspire and motivate students. The book is suitable for undergraduate and graduate students in VHDL and digital circuit design, and can be used as a professional reference for VHDL practitioners. It can also serve as a text for digital VLSI in-house or academic courses.

Digital Systems Design Using VHDL

Morgan Kaufmann

Suitable for use in a one- or two-semester course for computer and electrical engineering majors. VHDL for Engineers teaches readers how to design and simulate digital systems using the hardware description language, VHDL. These systems are designed for implementation using programmable logic devices (PLDs) such as complex programmable logic devices (CPLDs) and field programmable gate arrays (FPGAs). The book focuses on writing VHDL design descriptions and VHDL testbenches. The steps in VHDL/PLD design methodology are also a key focus. Short presents the complex VHDL language in a logical manner, introducing concepts in an order that allows the readers to begin producing synthesizable designs as soon as possible.

Circuit Design with VHDL John Wiley & Sons

This textbook is intended for a senior-level course in digital systems design. The book covers both basic principles of digital systems design and the use of a hardware description language, VHDL, in the design process.

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