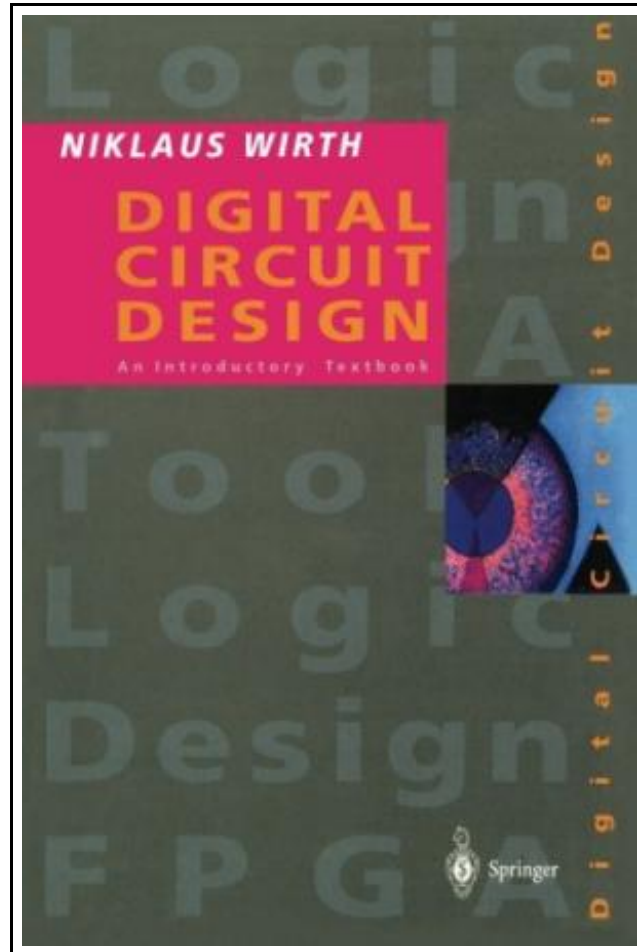


Digital Circuit Design for Computer Science Students



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Reviews

This publication is definitely not simple to begin on studying but really exciting to read. It is actually rally fascinating throgh reading time. Your life span will be enhance when you complete looking at this publication.

(Laurence Littell)

DIGITAL CIRCUIT DESIGN FOR COMPUTER SCIENCE STUDENTS



Book Condition: New. Publisher/Verlag: Springer, Berlin | An Introductory Textbook | This textbook provides a thorough and systematic introduction to designing digital circuits. The author is the leading programming language designer of our time and in this book, based on a course for 2nd-year students at the Federal Institute of Technology (ETH) in Zurich, he aims to close the gap between hardware and software design. He encourages the student to put the theory to work in exercises that include lab work culminating in the design of a simple yet complete computer. The lab work is based on a workstation equipped with a single field programmable gate array chip and software tools for entering, editing, and analyzing designs. This text is a modern introduction to designing circuits using state-of-the-art technology and a concise, easy to master hardware description language (Lola) | 1. Transistors and Gates.- 1.1. Gates with Bipolar Transistors.- 1.2. Gates with Field Effect Transistors.- 1.3. Electrical Characteristics of Gates.- 2. Combinational Circuits.- 2.1. Boolean Algebra.- 2.2. Graphical Notations.- 2.3. Circuit Simplification.- 2.4. The Decoder or Demultiplexer.- 2.5. The Multiplexer.- 2.6. The Adder.- 2.7. The Adder with Fast Carry Generation.- 2.8. The Multiplier.- 2.9. The Read-Only Memory (ROM).- 2.10. The Combinational PLD.- 2.11. The Programmable Gate Array.- 2.12. Dynamic Behaviour of Combinational Circuits.- 3. Latches and Registers.- 3.1. The SR-Latch.- 3.2. The D-Latch.- 3.3. The D-Register.- 3.4. The JK Register.- 4. Synchronous, Sequential Circuits.- 4.1. The State Machine.- 4.2. The Shift Register.- 4.3. The Synchronous Binary Counter.- 4.4. A Design Methodology for State Machines.- 4.5. The PLD and the FPGA with Registers.- 4.6. Timing and Practical Considerations.- 5. Bus Systems.- 5.1. The Concept of a Bus.- 5.2. The Open-Collector Circuit.- 5.3. The Tri-state Gate.- 6. Memories.- 6.1. Static Memories.- 6.2. Dynamic Memories.- 6.3. Dual-Port Memories.- 7. Formal Description of Synchronous Circuits.- 7.1....



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