

Digital System Designs and Practices: Using Verilog HDL and FPGAs

By Ming-Bo Lin

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System-on-a-chip (SoC) has become an essential technique to lower product costs and maximize power efficiency, particularly as the mobility and size requirements of electronics continues to grow. It has therefore become increasingly important for electrical engineers to develop a strong understanding of the key stages of hardware description language (HDL) design flow based on cell-based libraries or field-programmable gate array (FPGA) devices. Honed and revised through years of classroom use, Lin focuses on developing, verifying, and synthesizing designs of practical digital systems using the most widely used hardware description Language: Verilog HDL.

- Explains how to perform synthesis and verification to achieve optimized synthesis results and compiler times
- Offers complete coverage of Verilog syntax
- Illustrates the entire design and verification flow using an FPGA case study
- Presents real-world design examples such as LED and LCD displays, GPIO, UART, timers, and CPUs
- Emphasizes design/implementation tradeoff options, with coverage of ASICs and FPGAs
- Provides an introduction to design for testability
- Gives readers deeper understanding by using problems and review questions in each chapter
- Comes with downloadable Verilog HDL source code for most examples in the text
- Includes presentation slides of all book figures for student reference

Digital System Designs and Practices Using Verilog HDL and FPGAs is an ideal textbook for either fundamental or advanced digital design courses beyond the digital logic design level. Design engineers who want to become more proficient users of Verilog HDL as well as design FPGAs with greater speed and accuracy will find this book indispensable.

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From the Back Cover
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About the Author
Ming-Bo Lin is a Professor of Electronic Engineering at National Taiwan University of Science and Technology, and has served as adjunct Professor at National Taiwan University. He has been teaching Computer Engineering and Microelectronics for over twenty years. Lin's research interests include VLSI system design, mixed-signal integrated circuit designs, parallel architectures and algorithms, and embedded computer systems. He has published over forty journal and conference papers in these areas. In addition, Lin has directed the designs of over thirty ASICs and has consulted in industry extensively in the fields of ASIC, SoC, and embedded system designs. During the past twenty years, he has translated two books and authored over ten books in Traditional Chinese.
Lin holds a B.Sc.degree in Electronic Engineering from the National Taiwan Institute of Technology, an M.Sc.degree in Electrical Engineering from National Taiwan University, and a Ph.D. in Electrical Engineering from the University of Maryland, College Park.

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