HDL with Digital Design: VHDL and Verilog

By Nazeih Botros

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This book provides the basic knowledge necessary to understand how to design and analyze basic digital logic systems and to know how to simulate these systems using hardware description languages. The systems here include digital logic circuits such as: adders, multiplexers, decoders, multipliers, flip-flops, latches, counters, sequential state machines, cache memories, and basic computers, simplified biological mechanisms that describe the operation of organs such as the kidney, mathematical models (e.g., factorial, greatest of N numbers, multiplication algorithms, polynomials), and artificial intelligence (e.g., artificial neural networks). The book covers, in detail, Very High Speed Integrated Circuit Hardware Description Language (VHDL) and Verilog HDL. The book also covers a very important tool in writing the HDL code, the mixed language description where both VHDL and Verilog constructs are implemented in one HDL program. It also covers fundamentals of hardware synthesis. The book classifies the HDL styles of writing into six groups: data flow, behavioral, structural or gate-level, switch-level, mixed-type, and mixed language descriptions.

Features:
+Covers both VHDL and Verilog side by side
+Uses the latest versions of both Verilog and VHDL
+Includes fundamentals of synthesis and FPGAs implementation
+Instructor's resources available upon adoption

Brief Table of Contents
1: Introduction. 2. Data Flow Description. 3. Behavioral Description. 4. Structural Description . 5. Switch-Level Description. 6. Procedures, Tasks, and Functions. 7. Mixed-Type Description. 8. Advanced HDL Description. 9. Mixed-Language Description. 10. Synthesis Basics. Appendix: Creating a VHDL or Verilog Project Using a CAD Software Package.

About the Author:
Nazeih M. Botros is a professor in the Department of Electrical and Computer Engineering at the Southern Illinois University-Carbondale. He had previously authored the book HDL Programming Fundamentals with Charles River Media/Cengage.

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Editorial Review

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