Digital Design: Basic Concepts and Principles

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In today's digital design environment, engineers must achieve quick turn-around time with ready accesses to circuit synthesis and simulation applications. This type of productivity relies on the principles and practices of computer aided design (CAD). **Digital Design: Basic Concepts and Principles** addresses the many challenging issues critical to today's digital design practices such as hazards and logic minimization, finite-state-machine synthesis, cycles and races, and testability theories while providing hands-on experience using one of the industry's most popular design application, Xilinx Web PACK™.

The authors begin by discussing conventional and unconventional number systems, binary coding theories, and arithmetic as well as logic functions and Boolean algebra. Building upon classic theories of digital systems, the book illustrates the importance of logic minimization using the Karnaugh map technique. It continues by discussing implementation options and examining the pros and cons of each method in addition to an assessment of tradeoffs that often accompany design practices. The book also covers testability, emphasizing that a good digital design must be easy to verify and test with the lowest cost possible. Throughout the text, the authors analyze combinational and sequential logic elements and illustrate the designs of these components in structural, hierarchical, and behavior VHDL descriptions.

Coveringfundamentals and best practices**, Digital Design: Basic Concepts and Principles** provides you with critical knowledge of how each digital component ties together to form a system and develops the skills you need to design and simulate these digital components using modern CAD software.

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