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Design and Verification Methods of Digital System: An Overview

Abstract
Digital systems are the backbone of modern computing and embedded system applications. The design and verification of these systems are critical to ensure functionality, performance and reliability. This paper presents an overview of the key design methodologies utilized in digital system development and the verification techniques employed to validate their correctness before fabrication or deployment. Emphasis is placed on design principles, RTL design, simulation, formal verification and contemporary methodologies that address increasing system complexity. Design and verification of digital systems are fundamental aspects of digital electronics and VLSI (Very Large Scale Integration) design. These processes ensure that a digital system performs its intended function correctly, reliably and efficiently.
Key Words: Digital systems, Embedded system, Design and Verification Methods, Fabrication, RTL design, Simulation techniques.
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