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Computer Architecture: From Microprocessors to Supercomputers

By Behrooz Parhami

Oxford University Press Inc. Hardback. Book Condition: new. BRAND NEW, Computer Architecture: From Microprocessors to Supercomputers, Behrooz Parhami, PART I: sets the stage, provides context, reviews some of the prerequisite topics and gives a taste of what is to come in the rest of the book. Included are two refresher-type chapters on digital circuits and components, a discussion of types of computer systems, an overview of digital computer technology, and a detailed perspective on computer system performance. PART II: lays out the user's interface to computer hardware known as the instruction-set architecture (ISA). For better understanding, the instruction set of MiniMIPS (a simplified, yet very realistic, machine for which open reference material and simulation tools exist) is described. Included is a chapter on variations in ISA (e.g. RISC vs CISC) and associated cost performance tradeoffs. The next two parts cover the central processing unit (CPU). PART III: describes the structure of arithmetic/logic units (ALUs) in some detail. Included are discussions of fixed- and floating-point number representations, design of high-speed adders, shift and logical operations, and hardware multipliers/dividers. Implementation aspects and pitfalls of floating-point arithmetic are also discussed. PART IV: is devoted to data path and control circuits comprising the CPU. Beginning...



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