



Computer Architecture and Organization: An Integrated Approach

Miles J. Murdocca, Vincent P. Heuring

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An accessible introduction to computer systems and architecture

Anyone aspiring to more advanced studies in computer-related fields must gain an understanding of the two parallel aspects of the modern digital computer: programming methodology and the underlying machine architecture. The uniquely integrated approach of *Computer Architecture and Organization* connects the programmer's view of a computer system with the associated hardware and peripheral devices, providing a thorough, three-dimensional view of what goes on inside the machine.

Covering all the major topics normally found in a first course in computer architecture, the text focuses on the essentials including the instruction set architecture (ISA), network-related issues, and programming methodology. Using "real world" case studies to put the information into perspective, the chapters examine:

- * Data representation
- * Arithmetic
- * The instruction set architecture
- * Datapath and Control
- * Languages and the machine
- * Memory
- * Buses and peripherals
- * Networking and communication
- * Advanced computer architecture

A valuable feature of this book is the use of ARC, a subset of the SPARC processor, for an instruction set architecture. A platform-independent ARCTools suite, containing an assembler and simulator for the ARC ISA, that supports the examples used in the book is available. Better yet, the content is supplemented by online problem sets available through WileyPlus.

Balanced and thoughtfully designed for use as either a classroom text or self-study guide, *Computer Architecture and Organization: An Integrated Approach* will put you solidly on track for advancing to higher levels in computer-related disciplines.

About the Author:

MILES MURDOCCA serves as the President and CEO of Internet Institute USA (IIUSA), a private postsecondary information technology (IT) school specializing in networking, operating systems, IP telephony, programming, and security. Previously, Dr. Murdocca has been a computer science faculty member at Rutgers University and a research scientist at AT&T Bell Laboratories working in computer architecture, networking, and digital optical computing. He is the author of *A Digital Design Methodology for Optical Computing* and *Principles of Computer Architecture* and a contributing author to *Computer Systems Design and Architecture, Second Edition* as well as the author of dozens of professional papers and patents relating to information technology.

VINCE HEURING is an associate professor and acting chair of the Department of Electrical and Computer Engineering at the University of Colorado at Boulder. He has been at the university since 1984, and prior to that he spent three years at the University of Cincinnati. Professor Heuring's research encompasses computer architectures and programming language design implementation. He and his colleague, Harry Jordan, designed and built the world's first stored program optical computer, "SPOC."

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