Hardware and Computer Organization (Embedded Technology)

By Arnold S. Berger

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Hardware and Computer Organization is a practical introduction to the architecture of modern microprocessors. This book from the bestselling author explains how PCs work and how to make them work for you. It is designed to take students "under the hood" of a PC and provide them with an understanding of the complex machine that has become such a pervasive part of everyday life. It clearly explains how hardware and software cooperatively interact to accomplish real-world tasks.

Unlike other textbooks on this topic, Dr. Berger's book takes the software developer's point-of-view. Instead of simply demonstrating how to design a computer's hardware, it provides an understanding of the total machine, highlighting strengths and weaknesses, explaining how to deal with memory and how to write efficient assembly code that interacts directly with, and takes best advantage of the underlying hardware. The book is divided into three major sections: Part 1 covers hardware and computer fundamentals, including logical gates and simple digital design. Elements of hardware development such as instruction set architecture, memory and I/O organization and analog to digital conversion are examined in detail, within the context of modern operating systems. Part 2 discusses the software at the lowest level¸ assembly language, while Part 3 introduces the reader to modern computer architectures and reflects on future trends in reconfigurable hardware.

This book is an ideal reference for ECE/software engineering students as well as embedded systems designers, professional engineers needing to understand the fundamentals of computer hardware, and hobbyists.

- The renowned author's many years in industry provide an excellent basis for the inclusion of extensive real-world references and insights
- Several modern processor architectures are covered, with examples taken from each, including Intel, Motorola, MIPS, and ARM

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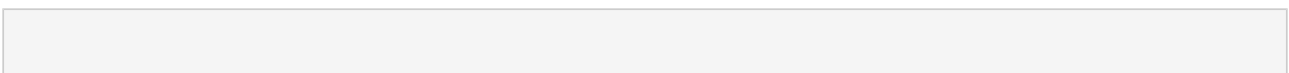
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Editorial Review

About the Author
Dr. Arnold Berger is a Senior Lecturer in the Computing and Software Systems Department at the University of Washington-Bothell. He received his BS and PhD degrees from Cornell University. Dr. Berger has held positions as an R&D Director at Applied Microsystems Corporation, Embedded Tools Marketing Manager at Advanced Micro Devices and R&D Project Manager at Hewlett-Packard. Dr. Berger has published over 40 papers on embedded systems. He holds three patents.

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