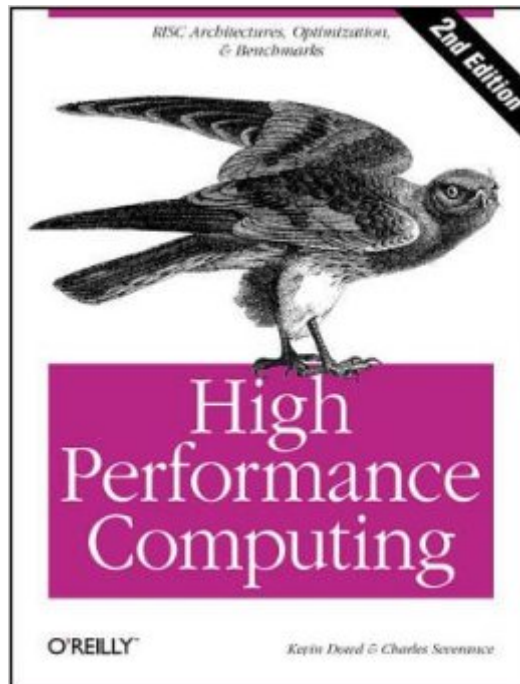


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# High Performance Computing (RISC Architectures, Optimization & Benchmarks)



## Synopsis

This book is a "must" for anyone who needs to worry about computer performance, either as a software developer or as a buyer. But it also provides valuable insights for those among us who do relatively little programming and run mostly third-party application software. Even if you never touch a line of code, High Performance Computing will give you a feel for how the most recent generation of computer hardware works. If you work with computers, you owe it to yourself to understand the new directions that workstation architecture has taken in the last half decade, including RISC-based workstation architectures like DEC Alpha/AXP, the IBM RS/6000 and the HP 9000/700 series. This book covers everything, from the basics of modern workstation architecture, to structuring benchmarks, to squeezing more performance out of critical applications. It also explains how optimizing compilers work: it discusses what a good compiler can do for you and, more important, what you have to do yourself. The author also discusses techniques for improving memory access patterns and taking advantage of parallelism. The book closes with a look at the high-performance future: parallel computers, including exotic distributed memory multiprocessors, and the more "garden-variety" shared memory processors that are already appearing on people's desktops. High Performance Computing pays special attention to memory issues; perhaps the most important story in high performance computing (and one you're not likely to be told by vendors) is the increasing disparity between CPU speeds and memory speeds. Another valuable section of the book discusses the benchmarking process: how to evaluate a computer's performance. Kevin Dowd discusses several of the "standard" industry benchmarks, explaining what they measure and what they don't. He also explains how to set up your own benchmark: how to structure the code, how to measure the results, and how to interpret them.

## Book Information

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## Customer Reviews

Materials covered in certain chapters are equivalent to a one semester class at MIT.. though in less detail, the lucid explanation of the fundamental concepts are impressive.. this book is a very good start for someone who has never touched the subject of Parallel Computing before.

This book provides great insight into the \_performance\_ of hardware. How can one be a good programmer without knowing how it is that data gets to memory, how data flows through the CPU and what it is in the hardware that makes ones code fast or slow? It amazes me that most of the developers that I work with are ignorant or could not care less about the effects of cache misses, what superscalar/superpipelined really means, and how a "improper" stride through their array can make the performance of their code deplorable. This book makes for a great read and is guaranteed to make a programmer a better programmer.

Explains very nicely and precisely the HW fundamentals of the multiprocessors, memory, RISC, insights in software and optimization concepts like register stacks and nested loops. Very much useful for not to get confused by the buzzwords in the super computer industry. Good book for both the engineers and managers of hardware companies. It is simple and non intrusive read. If you are new engineer in processor design or compiler architecture jobs, this book gives lot of insight and learning needed for your job. However this book is not a bible on computer architecture like Hennessy's books.

It is an excellent book I have read. It includes the latest state of art IA-64 architure, RISC, compiler ...

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